



**Forestry for the Next Decade**  
***Managing Thrust Areas....***

**Ajoy Kumar Bhattacharya**

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#### **BIBLIOGRAPHY**

## **FOREWORD**

**(To be collected from the office of the DGF - Mrs Batra, PA to DGF)**

**(G K Prasad)**

Director General of Forests

Government of India, Ministry of Environment and Forests

## PREFACE

The management of our forests is moving towards sector wide approaches and focus is on supporting sustainable livelihoods of rural and tribal population with their active involvement on natural resource conservation and utilisation. Though we have developed many participatory policies and devolve authority to manage forests sustainably, still their roles on active forest management are largely undermined or often ignored. Likewise, most of the recent policies and programmes have placed more emphasis on improving forest cover outside forests. People generally account environmental goods received from the forests and often ignore environmental services and non-tangible benefits. Hence, emerging challenge for the foresters and forestry sector professionals is to look forests beyond its physical boundary. Now, the time has come to adapt more holistic approaches and strategies in our forest conservation and development endeavours.

Sustainable development of forests has become the most challenging job for the Indian foresters. We need to deliberate on "how can we integrate other themes or areas of forests, where lot of our professionals are working for its development such as tree outside forests, ecotourism in protected areas, joint forest management, sustainable conservation and management of NTFPs, public private partnership etc. With this book, I am confident that most of our challenges on managing the forests for next decade can be addressed.

I appreciate the efforts of Dr A K Bhattacharya IFS, Conservator of Forests and Chief Executive Officer, Madhya Pradesh Ecotourism Development Board for bringing out this book "*Forestry for the Next Decade: Managing Thrust Areas*". The book successfully integrates above emerging issues of forestry, based on his national and international experiences and supported by a series of his publications in peer reviewed scientific journals. This book is one of its kinds, which focuses on five major contemporary themes: Agroforestry; Ecotourism; Joint Forest Management; Non Timber Forest Products Management and Public People Private Partnership in Forestry. These are the areas of the present day forestry priorities, which need to be addressed to achieve the goal of the sustainable development.

I am confident that this attempt will not only help Government officials, academicians, researchers and students involved in forestry research but would also encourage further research and emphasis in these areas. Once again I compliment Dr Ajoy Kumar Bhattacharya, IFS and all the authors who have co-authored with Dr Bhattacharya for bringing aforesaid issues and challenges to the forefront to achieve sustainability in forestry.

I strongly feel that this book will be quite useful to analyse past policies and strategies and identify management options to meet the goal of 33 % forest cover in the country by 2012, as per the mandate fixed by the Ministry of Environment and Forests, Government of India.



**(M Hashim)**

Principal Chief Conservator of Forests  
Government of Madhya Pradesh

## PROLOGUE

The forests are renewable resources that sustain and supports millions of people. India with 1.8 % of global forest area is facing a strong challenge of meeting the needs of 16 % world's human and 17 % of cattle population. The natural forests of the country are confronting threat of destruction and degradation due demographic pressure of humans and cattle, insufficient infrastructure, inadequate investments and inappropriate planning and management. It is high time to investigate the future approaches, strategies and management options, to prevent the further degradation and improve the forest cover.

The recent trends in forestry sector indicate the emergence of areas, which address issues related to the sustainable livelihood and promotion of participatory management approach for sustainable forest development. In the last decade, expansion of Agroforestry programmes, promotion of Ecotourism, Joint Forest Management (JFM) programme, management of Non Timber Forest Products (NTFP) and Public People Private Partnership (PPPP) for the rehabilitation of degraded forests received attention of our policy makers and planners and emerge as key management options for the coming years. Adequate attention need to be paid in these thrust areas to achieve the goal of sustainability.

Since ancient time, Indian farmers have practised agroforestry in many forms. In recent years, scope of agroforestry has increased considerably because of being an ecologically sound natural resources management system, which diversifies and sustains production for increased social, economic and environmental benefits. There is increasing evidence that biggest threat to our forests is attributable to ever increasing demand of fuel-wood, fodder and unsustainable agriculture. A time bound and need based agroforestry and farm forestry programmes are very crucial for meeting the sustenance demand of forest produces of the people.

These days, Ecotourism is emerging as an important component of the Indian tourism industry and a tool for sustainable development of natural resources. Ecotourism is a responsible travel to natural areas that conserves the environment and sustains the well-being of the local people. It is considered as sustainable, equitable, community based endeavor for improving the living standards of indigenous host communities. Economic benefits to local community, generation of environment awareness among people and involvement of private investment for biodiversity conservation are some of the advantages of this novel concept.

The Joint Forest Management concept is sharing of responsibilities, products, control and joint decision making authority over forest lands covered under JFM based on a formal agreement between Forest Department and local user groups. The main objective of JFM is to provide a visible role to the local communities in planning, management and protection of forests and to give them a share in the benefits from these forests. It recognises the livelihood and sustenance needs of the people through the principle of 'care and share'. JFM in India has emerged as a powerful tool for sustainable forestry. The further strengthening of this programme will prevent degradation of forest resources and even promote rehabilitation.

Sustainable management of NTFP in particular the bamboo and medicinal plants, is essential in view of their importance in uplifting the socio-economic condition of the rural people and in earning foreign exchange for the country. Sustainable harvest, best management practices, ex-situ cultivation, marketing linkages, certification are some of the major areas which require adequate management interventions over the next decade for the sustainable development of NTFP.

Partnership with Indian corporate sector with “ Green face “ to attract private investment for the afforestation of degraded forests/wastelands, will not only help in the rehabilitation of these lands but also in generating employment for the local people and raw material supply to the forest based industries. However, in India, forestry professionals and Government have yet to be convinced for increasing private sector involvement for the promotion of forest cover. The process of public private partnership, the criteria and the implications have to be meticulously examined and the suitable models acceptable to all stakeholders be worked out.

In the above backdrop, this book contains various articles relevant to Agroforestry Systems, Ecotourism, Joint Forest Management, NTFP Management and Public People Private Partnership in forestry. The papers are the outcome of the research works carried out by the author over the last years. Out of 55 papers included in the book 23 papers have been published in national and international journals. The book is divided in five sections focusing aforesaid topics separately. I congratulate and compliment the authors and coauthors for their fruitful contribution to the world of forestry.

**(A K Bhattacharya)**



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**PART-I**  
**AGROFORESTRY**

1.

## **A STUDY OF AGROFORESTRY SYSTEMS IN MADHYA PRADESH, INDIA**

A K Bhattacharya, Bijendra Basnyat, Bharat Chowdhary and Mamuni Pandit

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### **Abstract**

*Farmers in India have practised agroforestry in many forms for years, but the various systems have not been scientifically documented. The study in villages around Bhopal region of Madhya Pradesh, has revealed that farmers are developing many innovative systems. Various agroforestry models adopted by the farmers have been analysed and suggestions for suitable models made.*

### **INTRODUCTION**

As is well known, agroforestry is a generic term and the various forms, which it can take, can be classified into various groups based on the way trees are planted and the products that are harvested. The study has revealed that agroforestry in this region is still in its infancy. A farmer knows how to plant a tree but fails to identify the right mix of crops and trees. Awareness about management options too is less. This hasn't deterred innovative farmers but it has led to the wide spread acceptance of a small number of tree species which have a proven successful track record.

The agroforestry systems in the study area can be classified as *Agrisilvicultural*, and all the agroforestry in the region is limited to this system. This was found to be the only type of practice currently in existence. Further grouping of the systems with respect to time led to the conclusion that all of the systems were of 'Simultaneous' types. Again in simultaneous systems, practices can be organized according to whether they are mixed or zonal. Largely, spatially zoned practices are being followed in this area with very few examples of spatially mixed practices. If classified on a socio-economic basis, the practices are of subsistence, intermediate as well as commercial type of practices.

### **THE SYSTEMS**

As mentioned above, trees with crops or Agrisilviculture were found to be far more popular with the farmers than any other practice. An account of the various tree-crop combinations found in the study area has been provided here.

#### **Eucalyptus + Wheat + Soyabean**

One of the most popular and common tree-crop combinations is Eucalyptus and wheat. Eucalyptus trees have been found in the form of boundary plantations and are mainly planted for commercial purposes.

#### **Mango + Wheat + Soyabean**

Mango, being an evergreen, perennial tree, is preferred a lot. Mango trees are found in either separate patches on croplands or in the form of rows between crop areas. Wheat and soyabean are cultivated in different seasons annually while fruiting in mango trees starts around the fifth year.

#### **Gram + Wheat + Orange + Mango**

Horticultural trees too are gaining popularity among farmers as fruiting starts early and returns are good. They are grown generally with wheat and gram.

### **Wheat + Khejari**

Khejri, a small to medium sized thorny tree, is grown with wheat. Farmers are fully convinced that this tree species improves fertility beneath its canopy and has no competition with arable crop for soil moisture and nutrients.

### **Soyabean + Jamun + Aonla + Neem**

Although this combination was not a popular one, it was found to be existing in a small area.

### **Eucalyptus + Wheat + Teak**

This combination was found at some places and was one of the few successful ones.

Many more tree species like *Gmelina*, Shisham, Babul, Mahua, Arjun and Tamarind were seen with crops.

Major function of the woody component is for demarcation of boundaries and commercial wood production. Agri-horti-silviculture is more popular with farmhouse owners. *Citrus* sp and *Mangifera indica* are most commonly planted woody components.. More technical interventions and inputs are provided during the plantation of woody component and less or no intensive care are taken after it is established. No silvicultural operations as thinning, pruning are carried out although they plant timber species like Eucalypts and Teak. Whenever, they prepare fields for the seasonal cultivation, management of woody components are also given due care.

The farmers cultivate wheat and soyabean along with woody component. The farmers are cultivating these crops on the basis of their traditional knowledge and skills. No improved varieties of wheat or soyabean are cultivated. Farmers use only bio-fertilizers and very few are applying the chemical fertilizers. Application of fertilizers and irrigation is almost nil for both of crops. Weeding is generally done for soyabean only. No intensive care is given for both the crops as they are planted.

The agroforestry is the traditional practice over India. Farmers are not calculating financial return from it. Whenever they were asked information related to cost and benefits, common answer to these questions are:

*"No sir, actually I'm just not able to recollect the exact amounts on a yearly basis, but yes, I can certainly tell you what I had to shell out at the time of planting these trees."*

*"Sir, things are not so easy as you might think. Remembering how much fuel-wood, fruits or fodder these 100 trees produce and that too for the past 8 years is not an easy job. I'm sorry"*

*"What economics! I'm just bothered about my costs. Hardly do I recognize any major financial gains of planting these trees"*

However, attempt has been made to calculate benefit cost ratio (BCR) based on farmers' recall methods on the yeild over last five years by different crops and woody component. BCR of different agroforestry model is summarized in table 1 below. The BCR was highest in agri-horticulture system (fruit trees with soyabean) followed by agri-horti-silviculture system (mixture of trees, fruit tree and soyabean). The return from agri-silviculture model was low because farmers are not getting benefits from tree economically though it might have contributed ecologically by preventing erosion or increasing the productivity of soil.

**Table 1 - Cost and Benefit of different agroforestry models after five years of plantation per acre**

In Rs

S No	Models	Cost	Benefit	BCR
1	Trees with cereal crops	1720	3140	1.8
2	Trees with cash crops	2150	3800	1.8
3	Fruit trees with cereal crops	1950	5200	2.7
4	Fruit trees with cash crops	2180	6425	2.9

Source: Field Survey

### SOME PRACTICAL OBSERVATIONS

A farmer who plants trees or other woody perennial plants instead of seasonal crops has a different set of commitments. Trees, however, are not a panacea for all ills. To achieve the full potential, a farmer must be able to carry out all those operations that control how an agroforestry system functions in a timely and skillful way. But in the study area it was found that farmers aren't really aware of any new technological or management systems. This can be one of the reasons why agroforestry is still struggling.

There are other reasons too. Poor land productivity, water shortage and lack of technological know how have been found to be the main reasons which prevent farmers from replacing the traditional ways of growing crops with agroforestry. In other words, richer is the environment, greater will be the choice of landuse practices that can successfully be undertaken.

Farmers associate risk with agroforestry and try to avoid the consequences of making a wrong decision. Farm size is an important issue here because farmers with access to only small areas of land protect their families' subsistence needs first and plant food and other preferred crops. Thus agroforestry options have been found to be more readily acceptable as the farm size increases.

Agroforestry, a means of minimizing risk, is actually associated with a lot of risks. Then at the same time, agroforestry is not covered by the extension services, and is never considered as a potential intervention. Moreover farmers are more interested in the tangible economic benefits from agroforestry and care little for the long term ecological benefits derived from incorporating trees on farmlands. Younger farmers are more inclined to plant crops, while tree planting is favoured by the older generation.

### CONCLUSION

There is clearly much more to agroforestry than simply mixing a few trees and crops together and hoping for the best. Different tree-crop and their interaction with crops have to be understood, and this hasn't received any research in the area. There is a critical need to allocate scarce resources in the right way.

Exchange of information and ideas between all the groups involved is essential. We can see that agroforestry is really not a new discovery at all, even for scientists. Much of what we need to know in order to supply a scientific basis for advice on how to practise agroforestry successfully has already been studied to a degree in many other disciplines. Certainly, existing knowledge needs extending and elaborating, but, hopefully, progress can rapidly be achieved.

At the same time, we must temper enthusiasm about what agroforestry might achieve with a considered view of its limitations derived from a sound knowledge of how agroforestry systems function and what may constrain farmers who want to use it. The farmer is always the final arbiter.

2.

## DIVERSIFYING LIVELIHOOD OPPORTUNITIES OF RURAL POOR THROUGH FORESTRY- A STUDY OF MULTI - LAYERED IRRIGATED PLANTATION IN MADHYA PRADESH (INDIA)

A K Bhattacharya and Bijendra Basnyat

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### **Abstract**

*Madhya Pradesh Forest Department (MPFD) has implemented a multi-layered irrigated Plantation (MLP) for twin objectives of improving the livelihoods of people below poverty line and rehabilitation of the degraded forests through active participation of village forest committees. Since the livelihoods of the poor and landless people revolve around the forests, MLP recognizes them as a key partner or stakeholder in forestry development activities. Not only is MLP an innovative approach, but also follows participatory approach. However, replicating it in other areas might be problematic in the absence of process documentation and preliminary assessment. Analyzing the process and approaches critically, the paper assesses the strengths and weaknesses of MLP based on the review of the program document, interactions with the beneficiaries' families and forestry officials. Shifting from watch and ward approach, to multi-storey management, MLP has shown how livelihoods of the local communities could be diversified through intensive management of degraded forests. This study found MLP's potential in terms of providing diversified livelihood opportunities through the development of village infrastructures, creating local employment, involving the poor and landless in forestry development activities such as cultivation of medicinal and aromatic plants. Based on the preliminary assessment of MLP, the study suggests to give due considerations to certain aspects such as proper planning and selection of beneficiaries, timely technical guidance, and monitoring needs to have better impact in the field.*

### **INTRODUCTION**

Realizing the role of local communities in the forest management, the National Forest Policy 1988<sup>1</sup> envisaged that local communities should be motivated for development and protection of forests. Based on the broad framework and guidelines provided by it, the Joint Forest Management (JFM) programs were formulated and implemented in almost all States of India. After formulation of JFM resolution, all the forestry activities centered around the basic preamble of people's participation. Giving due recognition to the above policies and resolutions, Madhya Pradesh Forest Department (MPFD) has implemented different programs and projects in partnership with local community institutions for facilitating sustainable management and joint benefit sharing under the JFM. Some of the most promising projects include rehabilitation of degraded forests, sustainable employment through irrigated plantation, rehabilitating degraded Bamboo forests, other forest development activities and so forth. These projects focused on improving people's control over material resources and strengthening economic security through income generations, skills oriented training, new technologies development and marketing along with providing ancillary services as health, literacy programs, legal educations and aids etc. Most of above projects and schemes related to forestry development are implemented through JFM committees. Field experiences and studies indicate that above approaches have made spectacular impact on forests specially in rehabilitation of degraded forestlands. This led MPFD to design and implement multi-layered irrigated

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<sup>1</sup> MoEF, 1988. *National Forest Policy Resolution, 1988*. No. 6-21/89-P.P. Ministry of Environment and Forests, Paryavaran Bhavan, Lodi Road, New Delhi.

plantation (**MLP**) scheme for improving the livelihoods of people below poverty line along with rehabilitating the degraded forests with active participation of village forest committees (VFCs). This scheme is currently implemented in 69 villages from 10 districts where 1670 families have been participating. The MLP is under its fourth year of implementation and has been gradually expanding to other degraded forests as well. Though MLP has followed very innovative and participatory approaches, there exists dearth of information on process documentation as well as its preliminary assessment for replicating the scheme in other areas. Since it will be too early to assess the impacts of the project within its short duration of implementation, this paper has critically analyzed its processes, approaches, strengths and weaknesses. Understanding these issues and learning lessons from the project provides valuable insights and experiences for replicating it elsewhere. The paper first provides salient features of the scheme and then assesses the strengths and weaknesses of the project on the basis of review of the program document, interactions with the beneficiaries' families and forestry officials.

## THE PROCESS

### THE EVOLUTION OF CONCEPT

According to a report of MPFD, annually about 2 lakhs ha of forests have been degrading due to excessive biotic pressure in Madhya Pradesh (MPFD, 2003)<sup>2</sup>. The major constraints and problems in rehabilitating the degraded forests include lack of funds and difficulties in systematic and scientific working on forestry management. While the MPFD is facing problems to rehabilitate the degraded forests, development planners have been looking ways to enhance employment opportunities in the rural and geographically disadvantageous locations as a result of increasing population. Having recognized the need to involve local communities in forestry development activities, MPFD had initiated several approaches (Table 1) but these approaches did not significantly contribute to improve people's control over material resources and strengthening economic security. (Bhattacharya and Basnyat, 2003)<sup>3</sup>.

**Table 1 - Involvement of the people in forestry development activities**

S No	Forest development activity	No of committees / families involved	Area of plantation (ha)	Amount spent (Rs crore)
1	Rehabilitating degraded forests	3000 committees	1,00,000	27.9
2	Sustainable employment through irrigated plantation	1670 families	1,670	10.0
3	Rehabilitating degraded bamboo forests	56 committees	4,700	1.41
4	Other Forest development activities	282 committees	2,050	21.57

Source: Bhattacharya and Basnyat, 2003

As a result, the MPFD initiated MLP, the purpose of which is to improve productivity of the land and make it more productive, aesthetic and eco-friendly as well as contribute to the socio-economic upliftment of the rural people.

Specific objectives of MLP include sustainable employment to families living below poverty line, enhancing productivity of degraded forests, ensuring income to community,

<sup>2</sup> MPFD, 2003. *JFM Statistics*. JFM Cell, Madhya Pradesh Forest Department, Bhopal.

<sup>3</sup> Bhattacharya A K and Basnyat B, 2003. *Empowerment through Joint Forest Management: A study from Madhya Pradesh*. Unpublished Study Report. M P Forest Department, Bhopal, India.



provide basic infrastructural subsistence facilities for sustainable development, promote competence building and skill development among the beneficiaries, ecological amelioration, transfer of technology on cultivation, processing and marketing of medicinal plants and essential grasses.

Thus the programme has dual objectives of rehabilitation of degraded lands and reduction of rural poverty simultaneously.

### **THE APPROACH**

The MLP adopted time bound programme for rehabilitating the degraded forests. For generating income and employment, it promotes scientific harvesting and processing of medicinal and aromatic plants. Initially, MPFD provided support during the early year of implementation where as in later stages, responsibilities are to be gradually handed over to the beneficiary communities themselves. The role of MPFD will then be of motivator and facilitator.

### **THE METHOD**

Under this scheme, the poor and landless families in the villages are identified through participatory techniques such as wealth ranking and interactions with the local communities. The degraded forest areas are allocated to identified poor and landless families for assisting them to enhance and diversify the livelihood opportunities. Having provided irrigation facilities to the degraded lands, multi-layer cropping are promoted to ensure optimum utilization of the land. Timber, Bamboo and Aonla plants in upper canopy and herbs, shrubs and tubers of medicinal or aromatic value in under storey are planted in the degraded forests. The MLP has promoted six different combinations of species, which include Aonla and Aromatic grass model, Aonla and Ashwagandha model, Bamboo and Ashwagandha model,

Bamboo and aromatic grass, Teak and Safed Musli, and Teak and Ashwagandha model. For timber and fruit bearing plants and aromatic grasses, MPFD assists to raise clonal saplings. Central Institute of Medicinal and Aromatic Plants provides seeds of medicinal plants to beneficiary communities as per their needs. The MPFD attempts to ensure that each of the products has well established market linkages either at local markets or through linkages with the industries or marketing agencies. MPFD provides technical skills and knowledge on cultivation practices, cultural operations, harvesting, processing and value addition of the products. The linkages and coordination with the knowledge institutions are established in delivering specific activities or programs such as monitoring and evaluation by external agencies namely State Forest Research Institute, Jabalpur, Tropical Forests Research Institute, Jabalpur or any other Non-Governmental Agency, supply of seeds by Central Institute of Medicinal and Aromatic Plants, Lucknow. The major activities under the MPL are as follows -

- Selection of Village and formation of Village Forest Committees
- Establishment of Committees' bank account and selection of Committees' coordinator.
- Wealth ranking
- Selection of Beneficiary families
- Signing of Memorandum of Understanding (MOU)
- Training President and Coordinator
- Enumeration, demarcation and allocation of forest land
- Opening of Beneficiary Bank Account Capacity development of families on plantation
- Field Preparation and establishment of irrigation facilities
- Plantation
- Irrigation
- Fertilizer application
- Weeding and Soil working
- Insecticide application

- Protection
- Harvesting

### MANAGEMENT INTERVENTIONS

With a view to analyse management system practised in the field, Table 2 summarizes technological interventions carried out by few Forest Divisions in managing MLP. The table shows that MLP has followed the high-technology plantation, by giving due care to management aspects such as selection of species, spacing, application of irrigation, fertilizer, pesticides etc. Though these were applied at regular intervals, variations were observed among different Forest Divisions based on site conditions, year of plantations and requirement of species. In all the studied Forest Divisions, the scheme was started during the 2002-03. The most common species promoted across include Anola, Eucalyptus and Bamboo followed by medicinal and aromatic plants such as lemon grass, CNS grass etc. The irrigation was done in all the Divisions. Both organic and inorganic fertilizers were applied at early stages of plantation as well as during the soil working. The most commonly used organic fertilizers were farmyard manure, cow dung and compost where as inorganic fertilizer included Urea, DAP, Potash, NPK etc. Soil working was carried out in most of the divisions for providing early support for establishment of seedlings.

**Table 2: Technological Interventions**

Parameters	Forest Divisions				
	Chindwada			North Seoni	South Betul
	East	West	South		
Initiated Year	2002/03	2002/03	2002/03	2002/03	2002/03
Number of Demo plots	4	5	4	3	2
Area (ha)	65	75	40	30	80
Major Species	Aonla, Eucalyptus, Bamboo, Aloe Vera, Kalmegh	Bamboo, Lemon Grass	Aonla, Aloe Vera	Aonla, Lemon Grass	Bamboo
Number of seedlings planted	284600	3282000	100150	6762	24000
Irrigation (Total No)	73	95	71		24
Application of Fertilizer	Yes	Yes	Yes	Yes	Yes
Chemical fertilizer	Urea, DAP, Potash, Themate, Phosphorus	DAP, Urea, phosphate, PK	Grow Mix RPI	DAP, Urea, Phosphate, NPK	Urea, NPK
Organic fertilizer		Farm yard manure		Farm yard manure	Cow dung
Soil working/treatment (Number)	37	57	42	12	6
Any other inputs	Neem Cake, Indane, Copper oxide, Chloride etc		Farm yard manure, Non Lindane	Ti-termite Pesticide, Lindane, Monochrotophas, BSC Powder	
Expense (Rs lakh)	36.67	48.26	10.76	18.50	5.04

## SPECIALTIES

MLP is innovative and participatory scheme that seems to address all the three key elements of sustainable livelihoods. These key elements are undermining pressure on natural resources, maintaining or enhancing assets and capabilities and recovering or maintaining from the shocks and stresses. The scheme follows result demonstration methods, which is said to be one of the best extension approaches for transforming new technologies. Some of the specialties of the MLP are as follows-

- **Optimum utilization of land:** The MLP has promoted multi layer plantation with timber, Bamboo and Aonla plants in upper canopy and herbs, shrubs and tubers in lower layer.
- **Reinforce existing legislations and policy:** This program has reinforced on the government's commitments towards participatory forestry. It has given due recognition to principle and preamble of forest policy and MP JFM resolution, which intends to empower forest dwelling community both socially and economically.
- **Addressing the Poverty:** The program identifies poor and landless communities as its target group through wealth ranking exercise. This has created direct access and opportunities to poor and landless communities in diversifying their livelihoods through sustained local employment opportunities and sharing of revenue and benefits from forestry development activities.
- **Use of modern technologies and inputs:** The program uses better clonal and planting materials for rehabilitating degraded forests. Modern inputs such as chemical fertilizer, pesticides and irrigation are used at regular intervals to obtain better results or performance of forestry crops.
- **Dissemination of technologies:** The program promotes six different combinations of woody and non-woody species types for the economic benefits. It has adopted result demonstration to show impacts of the scheme. Beneficiaries are trained on cultivation, collection, processing, value addition and marketing of medicinal plants and essential grasses. The skills and capacities are enhanced for better management and then the management responsibilities are handed gradually over to the beneficiaries themselves.
- **Partnership with local community / improvised community forestry concept:** The program is implemented in partnership with the local communities. MPFD provides modern technologies and inputs where as local communities provide labor contribution as well as watch and ward of the forest area. The revenue is shared as per the contribution i.e. 30% of voluntary labor inputs are provided by farmers and hence they are entitled for 30% share in final harvest. This is the improvised way of community forestry in sharing the cost as well as benefits from management of the forests.
- **Coordinated and collaborative linkages with stakeholders:** The program is being implemented in coordination and collaboration with different stakeholders with defined roles and responsibilities. The roles of higher level to lower level management staff along with communities has been clearly spelt out. Apart from this, role of different institutions in managing MLP has been identified with their key support area or their potential stake in managing the MLP.
- **An innovative and participatory benefit sharing mechanism:** The MLP has an innovative way of benefit sharing arrangement. Communities are provided with free Nistar and 100 percent share from minor forest products and intermediate harvest where as 30% share from final harvest of timber and Bamboo. This corresponds to their voluntary labor contribution to protecting the forest.
- **Employment for poor:** Families living below poverty line whether land holders or landless get employment under the project. Landless families having minimum

income and at the bottom of the other families are considered in ascending order based on the results of the wealth-ranking list. Thus the poor and vulnerable groups have direct access to the project benefits specially on local employment.

- **Immediate return:** Compared to other schemes, MLP has very short gestation period. The local community starts getting benefits from the second year of plantation due to multi-storey management and hence the farmers can enjoy the benefits from the second year of their work. Hence, it is more likely to empower local community as well as on the sustainability of the project due to immediate return.

## ECONOMICS OF MLP

As discussed earlier, MLP has promoted six different models on multiplayer plantation, which primarily include the multi- storey crop management. The plantations are completed in two years and start yielding from the lower storey crops. After two years, maintenance of the plantations are done through the income accrued from cultivation of medicinal /aromatic plants and other silvicultural operations.

- **Aonla (*Emblica officinalis*) and Aromatic grass model:** Aonla starts giving benefits from 5th year whereas the aromatic grasses fetch profits from 2nd year onwards. The net profit in the 2nd year is Rs. 25,000 whereas the profits accruing in 3rd year onwards is 50,000/-ha.
- **Aonla and Ashwagandha (*Withania somnifera*) model:** The benefits from Aonla would be same as above. From 3rd year onwards, committee will get about Rs. 24,000/- on a sustainable basis from Ashwagandha.
- **Bamboo and Ashwagandha model:** There will be no profit from Bamboo up to four years. But Ashwagandha will provide profit of about Rs. 24,000 from the second years onwards.
- **Bamboo and aromatic grass (Lemon grass) model:** There will be no profit from Bamboo up to 4 years. But lemon grass will fetch approximately Rs. 50,000 in 3rd and subsequent years. This ensures sustainability of employment.
- **Teak (*Tectona grandis*) and Safed Musli (*Chlorophytum spp*) model:** There will be no profit from Teak up to five years but Safed Musli will fetch approximately Rs 25,000 from 3rd onwards
- **Teak and Ashwagandha model:** There will be no profit from Teak up to five years but Ashwagandha will fetch profit of about Rs. 24,000 from 3rd year onwards.

Since most of the models are labor intensive and demand intensive management, these ensure sustainable employment to the local communities. Table 3 summarizes costs and returns under different combinations of MLP.

**Table 3: Cost and return from different models upto 5 years of plantation**

S No	Combination	Cost (Rs)/ha	Return (Rs)/ha	Benefit cost ratio
1	Aonla and Aromatic grass	116,000	250,000	2.2
2	Aonla and <i>Ashwangandha</i>	94,000	148,000	1.6
3	Bamboo and Ashwangadha	104,400	121,200	1.2
4	Bamboo and aromatic grass	106,600	223,860	2.1
5	Teak and Safed Musli	150,500	250,000	1.7
6	Teak and <i>Ashwangandha</i>	104,000	158,000	1.5

The accrued cost and benefits are calculated on the basis of cash flow analysis taking five years duration though some of the upper storey crops would provide benefits up to 20 years only. All the models show benefits exceeding the cost. In short, the program appears very useful for diversifying the livelihoods of the people due to its short duration as well as high financial gain from the model. It has provided an excellent program to attack the poverty of poorest of the poor and landless.

### STRENGTHS AND WEAKNESSES

The strengths and weaknesses of project have been assessed on the basis of field observations and interactions with the stakeholders. The strengths of the project reflected from its origin itself as it attempts to reduce poverty through sustainable management of forests. Major strengths and weaknesses of the project are highlighted in Table 4. As discussed earlier, it would be too early to assess the impacts of the project, since it has not completed even a five years of duration. But it seems that this scheme has been evolving as a promising approach to address the poverty of the rural people. Some JFM committees have already started getting benefits from the schemes e.g. Kalapani FPC from North Betul has earned Rs. 88,000 from grass seeds and Rs. 12,094 from Mahua collection. Similarly, MLP has provided sustainable rural employment to the landless and poor families for their diversifying livelihood opportunities. Apart from this, support to the local infrastructure and community development has further supported to improve livelihoods of the people.

Although program has contributed significantly to biodiversity conservation, increasing extent of the forest cover and improvement of site quality, its advantages / benefits could have been further increased through proper planning, and timely implementation.

**Table 4: Strengths and weakness of MLP**

Strengths	Weakness
<ul style="list-style-type: none"> <li>▪ Regular employment to landless and poor family</li> <li>▪ Participatory, flexible and innovative</li> <li>▪ Promoted involvement of the villagers in JFM</li> <li>▪ Diversify the livelihoods</li> <li>▪ Intensive Management</li> <li>▪ Enhanced Forestry Productivity</li> <li>▪ Improved site quality</li> <li>▪ Improved moisture regime</li> <li>▪ Improved microclimatic conditions</li> <li>▪ Increased grass production</li> <li>▪ Developed community infrastructures</li> <li>▪ Reduced biotic pressure</li> <li>▪ Enhance capacity development of the poor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Poor planning and selection of beneficiaries</li> <li>▪ Untimely implementation and flow of funds</li> <li>▪ Inadequate technical guidance and support</li> <li>▪ Less monitoring</li> <li>▪ Poor linkages with the market</li> <li>▪ Not able to cover the area as well as its intended target of production</li> </ul>

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people

- Socio-economic upliftment of poor and marginalized communities
- 

Some of the weaknesses of the program, which were observed in the fields, included poor planning and selection of beneficiaries, untimely implementation and flow of funds, inadequate technical guidance and support, and linkages with market. Despite the modern techniques and inputs were provided at regular intervals, monitoring seemed quite weak.

## **LESSONS LEARNT**

MLP is an innovative scheme for rehabilitating the degraded forests. It has maintained harmony with conservation and socio-economic upliftment of rural people. Shifting from watch and ward approach to multi-story management, this scheme has shown how livelihoods of local communities could be diversified through rehabilitation of the degraded forests. It has recognized poor and landless people as a key partner or stakeholder in forestry development activities since their livelihood revolves around the forests. MLP has succeeded to diversify livelihood opportunities by involving poor and landless in forestry development activities and through developments of the village infrastructures and enhancing opportunities for local employment. MLP has used participatory techniques in reaching the rural poor, which seems quite effective to address the underlying causes of poverty in rural domains. Adopting result demonstration methods for promoting use of high tech plantations to disseminate different agroforestry models seem appropriate. Likewise, giving priority to capacity development rather than to technical packages or incentives is one of the key factors to contribute towards the success of MLP that should be considered in designing similar innovations. There is need to empower poor and landless people both socially and economically through their active participation as has been practised in MLP.

MLP has demonstrated that use of modern techniques such as clonal seed planting, multi-layer management and intensive care and management can be useful in enhancing or maintaining forest conditions, health and vitality. For this, partnership and sharing responsibilities among beneficiaries and other relevant stakeholders are necessary. This would not only help to share the responsibilities but also ensure the sustainability of scheme/program.

3.

### **CAN AGRO-FORESTRY CONTRIBUTE TO LIVELIHOODS OF PEOPLE? THE NEPALESE EXPERIENCE**

Bijendra Basnyat and A K Bhattacharya

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#### *Abstract*

*Traditionally, Nepalese farmers have been growing trees, fuelwood and fruit trees on the bunds of terrace fields, marginal land and along the streams bank and raising animals. During the mid 70s different models of agroforestry such as Taungya system were developed and disseminated to reduce the pressure on the natural forests. However, agroforestry is still regarded as a means to reduce the dependency of people on natural forests and the resultant socio-economic benefits are often largely ignored. A study was undertaken in three western Terai districts of Nepal to find the incidence of agroforestry practices and their contributions to the livelihoods of the people. 150 farmers were interviewed in-depth and the practices they have been using to manage their farms were studied through participatory processes such as group discussions, transect walk, seasonality analysis etc. This study shows that majority of the farmers are still unaware of many benefits of agro-forestry and majority of them have been practising agro-forestry simply to meet their demand of forestry products. The study reveals the absence of scientific management of agroforestry. Farmers give priority to crop management as compared to the tree management. While the District Forest Office is technically responsible for monitoring woody components, agroforestry has never been a priority program. Farmers have complains for both the quality and quantity of the services available through the government sector. Cash flow analysis of agroforestry models reflects that agroforestry have high return compared with agriculture crops and hence can be promoted as one of the most viable options for improving the livelihoods. However, this study has identified some of the crucial issues which need to be addressed for practicing agroforestry as a vehicle to improve the people's livelihoods and for the scientific management and expansion of the agroforestry systems in the country.*

#### **INTRODUCTION**

In Nepal, agroforestry, the practice of integrating trees into farm systems to enhance agricultural production, is a traditional practice. However, it is regarded as a means to reduce the dependency of people on natural forests and its resultant socio-economic benefits are often largely ignored. And little efforts are made to assess the contribution of agro-forestry towards the livelihood as well as economic returns. The Study is an attempt to fill this gap by assessing the different agroforestry practices and their contribution to the livelihoods of people. With the brief review of the Nepalese agroforestry, the paper describes the existing situation of agroforestry practice in the western Terai of Nepal and assesses the different agroforestry options in relation to their contribution towards the improvements on the livelihoods of people.

Conducted in three western Terai districts of Nepal, namely Nawalparasi, Rupandehi and Kapilbastu, the study has used exploratory research design. The survey was conducted in two stages. At the first stage, it was attempted to find the incidence of agroforestry practices. In the second stage, detailed survey was carried out with farmers practising agroforestry to assess the extent of agroforestry practice and its contributions to the livelihoods of the people. 150 farmers were interviewed and in-depth investigation was carried out to assess the way they had been managing their farms through participatory processes such as focus group discussions, transect walk, seasonality analysis etc.

## **AGROFORESTRY IN NEPALESE CONTEXT**

### **HISTORY OF AGROFORESTRY**

Agroforestry is not a new practice for farmers. Traditionally, they have been growing trees, fuelwood and fruit trees on the bunds of terrace fields, marginal lands and along the stream banks and raising animals. They have been integrating trees with their agriculture crops to meet their diverse need of the forest products as well as insurance to their agriculture crops. Of the several types of agroforestry, the most famous agroforestry practice is growing trees on farmland and homestead kitchen gardening.

Different models of agroforestry were developed and disseminated during the mid 70s to reduce the pressure on the natural forest. In 1976, Taungya system was introduced in Bara district of Nepal to tackle the encroachment problems. Later on, this system was adapted by Sagarnath Forestry Development Project (SFDP) to reforest the area. Encouraged with the success of SFDP, other projects too started to introduce agroforestry as one of the major components in their programme. In the mid 1980s, Terai Community Forestry Project introduced the agroforestry with intercropping in afforestation or plantation, which included the free distributions of the seedlings. This speeded up the expansion of agroforestry in Nepal, particularly in the Terai.

### **AGROFORESTRY IN NEPAL'S FARMING SYSTEM**

Forest is the integral part of Nepalese farming system. Farmers depend heavily on forests for supply of fodder, fuelwood and construction materials. The pressure on natural resources or forest resources has increased by many folds due to rapid population growth, and lack of alternate livelihood opportunities over-exploitation of forest for fulfilling daily subsistence needs of forest products such as fuelwood, fodder, animal bedding and small timber. The improper land use system, heavy pressure on forest, improper cultivation practices are the main problems of these areas. Some specific problems, which the farmers are facing these days, are as follows:

- Dependency on natural forests for daily use needs like fuel wood, fodder and timber
- Declining productivity of the land as well as cultivation of traditional crops
- Diminishing wood and forest resources, which has led to an acute shortage of fuel wood and other essential wood products
- Large number of cattle population and poor productivity of the cattle
- Shortage of fodder sources for livestock
- Land degradation, both in terms of loss of fertility and aggravated erosion
- Lack of income and employment opportunities
- Fragmented land holdings

Above scenario suggests for the need to promote non-farm agroforestry to sustain rural livelihoods. Similarly, use of agricultural residues for cooking has substituted the demand of fuelwood and animal feed. Agroforestry as a multiple land use option for optimum biomass production per unit land can play an important role in fulfilling the demand of tree products and agricultural crops as well as in soil conservation.

Not only agroforestry supplements the tree products based demand of people but also it is one of the financially viable options of optimum land use. Kanel (1995)<sup>1</sup> has reported that the share of the trees to the total net present value is 51%.

Thus the scope of agroforestry is in increasing trend due to decrease in per capita land holding size and access to forests which are caused as a result of the rapid population growth, increasing poverty and declining of agricultural productivity.

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<sup>1</sup> Kanel K R, 1995. Farmer and Tree Linkages in Terai of Nepal. A Dissertation Presented for the Degree of Doctor of Philosophy. University of Minnesota, USA.



## **POLICIES AND LEGAL ENVIRONMENT**

The paper reviews policy, periodic plans and legal framework of the forestry sector in Nepal with reference to private forestry and agroforestry to understand the commitments of Government on the promotion of agroforestry. Nepalese policies and legislations have no special clauses or provisions related to the promotion of agroforestry, and it is included within the private forestry. Private forestry programme refers to trees on private agricultural or marginal land used to supplement animal fodder, fuelwood and other basic resources or simply to provide saleable produce. Since private forest refers to trees in small woodlots or trees integrated with agricultural crops as agroforestry, the policy and legislations related to private forestry can be applicable in context of agroforestry as well.

The Master Plan for the Forestry Sector, 1988<sup>2</sup> aims to meet the people's basic needs for fuelwood, fodder, timber, and other forest products and contribute to food production through encouraging people to establish tree farms on their uncultivated lands and by distributing of free or subsidized seedlings of desirable tree species. Similarly, the revised forest sector policy (2000)<sup>3</sup> suggests to expand agroforestry techniques by inter-cropping of fruit trees with medicinal and aromatic plants as well as by other multiple land use techniques adapted to various farming system through effective interaction between forestry and farming practices. Likewise, the Agriculture Perspective Plan (APP, 1995-2015)<sup>4</sup> urges the government to encourage farmers to commercialize farming operations on environmentally more robust lands in order to relieve pressure on limited natural resource base for achieving higher economic growth through improved productivity in agriculture. In addition, promotion of intercropping with medicinal herbs and other cash crops for providing economic benefits and generating off-farm employment to the rural poor has also been mentioned in the APP. The tenth five-year plan (2002-2007)<sup>5</sup> also emphasizes the greater role of the forest resources in reducing poverty through various forest development activities. In order to achieve above objectives, the plan gives a priority to agroforestry programme.

For encouraging farmers to practise agroforestry, the Forest Act (1993)<sup>6</sup> allows farmers to utilize, sell or distribute the forest products by fixing their price according to his/her will when they develop, conserve and manage the woodlots in their farm lands. For this, the District Forest Office is to provide necessary technical assistance.

## **UNDERSTANDING AGROFORESTRY PRACTICE**

### ***FARMERS PRACTISING AGROFORESTRY***

For the purpose of the study, 150 households (HHs) from three districts were selected randomly to find incidence of farmer's practising agroforestry. Most of farmers (80%) reported that they are either having trees on their farm land or practising the agroforestry. The study reveals that number of trees per HH is 9.8.

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<sup>2</sup> HMGN/ADB/FINNIDA, 1988. Master Plan for the Forestry Sector Nepal, Main Report, Ministry of Forest and Soil Conservation, Kathmandu, Nepal.

<sup>3</sup> HMGN, 2000. Revised Forestry Sector Policy 2000. Ministry of Forests and Soil Conservation, Kathmandu, Nepal.

<sup>4</sup> APROSC/JMA, 1995. Nepal Agriculture Perspective Plan. Agricultural Project Service Centre/John Mellor Associates, Kathmandu, Nepal.

<sup>5</sup> HMGN, 2002. The Tenth Plan (2002-2007). National Planning Commission. His Majesty's Government of Nepal. Kathmandu, Nepal.

<sup>6</sup> HMGN, 1995. Forest Act 1993 and Forest Regulation 1995 (Official Translation). Ministry of Forests and Soil Conservation, Kathmandu, Nepal.

The number of trees per ha is 13.5 (Table 1) which is almost similar to Kanel's study which reported 11 trees per ha of cultivated land in the Terai. Of 1179 trees enumerated from the HH survey, 64.6% accounted for the Sisso (*Dalbergia sisso*) followed by Aam (*Mangifera indica*) (18.6%) and other tree species as reported in Table 3.

The number of Sisso trees was quite high in the study area because Terai Community Forestry Project had promoted this species for tree planting by providing seedlings free of cost for on-farm planting.

The average number of seedlings planted per HH was around 199 (Evans, 1989)<sup>7</sup>.

**Table 1: Agroforestry in western Terai of Nepal**

S No	Response	Attributes
1	No. of farmers practising agroforestry	120 (80%)
2	Total operated land (ha)	86.76
	Operated land per HH (ha)	0.72
2	Total number of trees	1179 (100%)
	• Sisso	762 (64.6%)
	• Mango	219 (18.6%)
	• Others	128 (16.8%)
3	No of trees per HH	9.8
4	Number of trees per ha	13.5
5	Place of plantation	
	• Khet land (irrigated)	59 (49.8 %)
	• Khet land (Unirrigated)	31 (25.8 %)
	• Waste land	27 (22.5 %)
	• Homestead land	24 (20.0 %)
	• Others	8 (6.7 %)

Of the total planted trees, about 50% are planted on the borders of "khet" land (irrigated land). This is consistent with Evan's study, which reported 46% plantation in similar type of land.

### **REASONS FOR INITIATING AGROFORESTRY**

Table 2 presents farmers' perception for practising the agroforestry. Seventy two percent farmers reported that they practised agro-forestry to meet their demand of forestry products. This was followed by the support received from external agencies (50%) which refers to the free distribution of seedlings. This shows that majority of farmers are unaware of the resultant benefits of the agroforestry as the objective of agroforestry is to optimize production and economic returns per unit area, while respecting the principle of sustainable development.

**Table 2: Reasons for practising agroforestry**

S.No.	Response	Number	Percent
1	Meet the demand of forest products	86	71.7
2	External support/free seedlings	60	50.0
3	Secure higher income	42	35.0
4	Multiple use of the land	27	22.5
5	Increase the productivity of land	17	14.2
6	Conserve the land and water	11	9.2
	Total	120	100.0

*Note: Total does not tally due to multiple responses*

<sup>7</sup> Evans Patrick T, 1989. Farm Forestry Survey 1989. Terai Community Forestry Development Project. Hetauda, Nepal.

## AGROFORESTRY MODELS

As discussed earlier, agroforestry is a land use system that involves deliberate retention, introduction or mixture of trees or other woody perennials in crops/animal production to benefit from the resultant ecological and economic intersections (Nair, 1984)<sup>8</sup>. Based on the field observations and interactions with the farmers, the patterns of tree planting on farmland or agroforestry include following categories (LFP 2003)<sup>9</sup> -

- Trees and agricultural crops;
- Trees and grass;
- Trees and Non-Timber Forest Products (NTFP);
- Trees planted around pond or fish pond;
- Trees on bund;
- Trees and crops in rows (Alley cropping);
- Scattered trees on farm land;
- Row or line plantation; and
- Block plantation.

The above categories can be broadly classified into three groups, trees planted in blocks, inter-cropping/agroforestry and trees on farmland.

**Trees planted in blocks:** Trees are planted in the block with poor soil conditions or even in patches of the farmland. The species planted were *Dalbergia sissoo*, *Mangifera indica*. Orchards of mango trees in the Terai farmlands are intercropped with agricultural crops. The crops grown under mango orchards are not reported. However, these orchards are also surrounded by one or two rows of *D. sissoo* and *Dendrocalamus strictus*. When the fruit yield declines, trees are felled for timber and fuelwood. The land is then cultivated for agricultural crops presumably for some time, and then reverted back to the orchard.

**Intercropping / agroforestry:** For intercropping between trees and crops farmers are practising different models as discussed below. The common agroforestry models found in the district are agri-silviculture (crops + tree); silvo-pastoral (trees + pasture); Agri-horticulture (Crops + fruit trees); Agri-silvi-pastoral (crop+fruit trees+ pasture); and homestead agroforestry (multiple combination of various components). The common species planted is *Dalbergia sissoo* and *Mangifera indica*. *D.sissoo* covers about 90% of the total trees on farm (LFP, 2003)<sup>9</sup>.

- Crops in between tree rows - Tree species (*Dalbergia sissoo*, *Mangifera indica*) are planted in rows and crops are grown in between them. The rows width varies from 10 to 20 meter which also serves as the farmer's field boundary in most of the case. The agriculture crops include paddy, wheat, lentil, pea etc.
- Paired tree rows - Trees are planted in the paired rows with the spacing between 1.5m x 1.5 m to 3m x 3m. The width of the space varies from 10 to 20 meters and the empty spaces between the rows are used for cropping. This system enables farmers to use mechanical /bullocks ploughing as well as helps them to grow crops for longer duration. The most common species planted are *Dalbergia sissoo* followed by *Mangifera indica*.

**Silvofishery** - This is a system where trees are used in conjunction with fish farming. This system is currently gaining momentum in the Terai parts of the country where *Dalbergia sissoo* and other trees are being planted on the risers of the pond along with some banana, pineapple and papaya. In some cases, ducks and pigs are also included.

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<sup>8</sup> Nair PKR, 1993. An Introduction to Agroforestry. In cooperation with International Centre for Research in Agriculture. Delhi, India

<sup>9</sup> LFP, 2003. Draft Programmes of Participatory Strategic District Forest Sector Plan. Livelihoods and Forestry Programme-Terai Component..

- Trees and NTFPs - Under this system the trees are used in conjunction with the NTFPs

Trees on farm land: The trees are grown without specific spacing and scattered along the farm. The crops are grown in the blank spaces. In this system, tree population is kept low to avoid shading of the crops. The common species planted on farm land are again *Dalbergia sissoo* and *Mangifera indica*. The list of species planted on farm land observed in this survey is given below in Table 3.

**Table 3: Species reported under different agro-forestry systems**

Species	Local	Major Use
<i>Albizia species</i>	Siris	Fodder, fuel
<i>Artocarpus lackoocha</i>	Badahar	Fodder, fruit
<i>Dalbergia sissoo</i>	Sissoo	Timber, fuel, fodder
<i>Eucalyptus camaldulensis</i>	Masala	Timber, fuel, oil
<i>Ficus semicordata</i>	Khanu	Fodder
<i>Leucaena leucocephala</i>	Ipil Ipil	Fuel, fodder
<i>Mangifera indica</i>	Amp	Fuel, timber, fruit
<i>Populus species</i>	Lahare peepal	Timber, fodder, fuel
<i>Sesbania grandiflora</i>	Dhaincha	Fodder, green manure

### **Management practices**

Agroforestry system involves the close interaction of trees with crops, livestock or both. Hence, tree and agriculture crop management is essential for effective and efficient management of agroforestry. Similarly, different agroforestry models or systems need to be managed differently and management will depend upon the objectives of the agroforestry. The management of agroforestry begins with the selection of species, managing spacing between trees, protection, pruning and thinning etc. However, farmers give priority to crop management as compared to the tree management. This could be mainly because of long gestation period of forest crops, increasingly attack of disease in *Dalbergia sissoo* and less management support or assistance. Table 4 reflects that farmers are either unaware or have ignored the tree management aspects of agroforestry though they are giving due considerations in crop management. More than half of the farmers (58.3%) reported that the management of trees mainly included protection and use of forest products. One third (32.5%) of farmers reported that they were carrying out lopping and pruning operations for fuelwood, fodder and animal bedding materials as well as to reduce the shading effects on the crop. Very few farmers have informed to have applied fertilizer, irrigation etc. in the agroforestry. This reflects the lack of technical knowledge on agroforestry management. The application of insecticides and pesticides was high (32.5%) which was due to widespread of disease in *Dalbergia* trees.

**Table 4 - Management Practices**

S No	Response	Number	Percent
A. Crop management			
1	Selection of crops	102	85.0
2	Weeding	108	90.0
3	Application of fertilizers, manures etc	112	93.3
4	Application of pesticides/insecticides	68	56.7
5	Intercropping	79	65.8

*Note: Total does not tally due to multiple response*

B. Tree management			
1	None/ Left as it is (Use)	70	58.3
2	Soil working/weeding	18	15.0
3	Thinning	26	21.7
4	Pollarding	18	15.0
5	Pruning and lopping	39	32.5
6	Application of fertilizers, manures	17	14.2
7	Application of pesticides/insecticides	39	32.5
8	Protection from grazing, fire etc.	25	20.8
	Total	120	100.0

### RETURN FROM AGROFORESTRY SYSTEM

It was extremely difficult to collect financial details of agroforestry as farmers could not provide necessary details. This in turn led to another important discussion, whether farmers recognize or realize financial benefits from the system. They hardly cared about species planted or on the financial returns from the trees. When asked about the return from the agroforestry, most common answers were as follows-

- How can I remember the value of the amount of fuelwood, fruits or fodder that I have collected and what I spent on them?
- What benefits did I get from this farm? It hardly provides food to feed my whole family?
- What economics! I will be happy if I could just return my costs?
- I'm just not able to recollect the exact amounts on yearly basis, but yes, I can certainly tell you what efforts I had to make at the time of planting.

Hence, cash flow analysis showing the flow of cash expenditures and receipts resulting from the introduction and maintenance of an agroforestry system was used to assess the return from the agroforestry system. Table 5 compares the return of agroforestry model for one ha of land. This analysis does not include the value of the standing trees because, it only attempts to calculate the annual benefits derived by the farmers under different agroforestry model. The highest ratio of benefits (2.84) has been found for the silvo-fishery practice because farmers are getting multiple benefits from it such as pigs raising, duck farming, banana cultivation, fishery and along with fodder and fuelwood and that too in a short duration of time, i.e. within a year.

**Table 5 - Cost and Benefits of different agroforestry models**

S.No.	Models / practice	Cost (Rs)	Return (Rs)	Benefit cost ratio
1	Trees with cereal crops	13,689	26,715	1.95
2	Trees with horticulture crops	14,315	35,512	2.48
3	Fruit trees with cereal crops	13,456	29,319	2.18
4	Fruit trees with vegetables	15,619	42,689	2.73
5	Trees scattered on farm land	11,110	20,989	1.89
6	Silvo-fishery	19,236	54,653	2.84

*Note: Benefits were calculated without valuing the standing tree*

This model can be promoted as one of the most viable options for improving the livelihoods as majority of the farmers have either their own or public ponds in their vicinity. Similarly the combination of fruit trees with vegetable cultivation also yielded high benefits to farmers since they can get regular income. Though most of the farmers have planted trees on their farm land, benefit cost ratio was low compared with the other models. This was mainly because trees were planted for their subsistence use and farmers often

ignored the return from woody components. However, the return was high compared to the agriculture crops alone as shown in Table 6.

**Table 6 - Comparative advantage of agroforestry compared with agriculture crop**

Particulars	Agriculture		Agroforestry	
	Expense	Income	Expense	Income
Cost of cultivations	12,215		11,726	10,202
Return from crops		21,021		15,555
Management of tree			3,021	
Tree products				4,721
Value of standing tree				37,450
Total expense (Rs)	12,215	21,021	14,747	67,929
Return from agroforestry	1.72		4.61	

Note: Value to standing tree is estimated at market price of current year

### **PROBLEMS FACED**

When respondent farmers were asked about the problems that they had been facing in management of the agroforestry farms, majority of them (72.7%) mentioned lack of technical knowledge as their main problem followed by the management assistance from the concerned agencies (Table 7). Though District Forest Office is responsible for monitoring woody components, agroforestry has never been a priority program of the DFO. Farmers have complaints for both quality and quantity of the services available through the DFO. The other problems faced by farmers in managing and developing the agroforestry includes dead and dying of *Sissoo* trees, training and extension support, lack of management assistance, marketing problems of the products, knowledge about policies, acts and regulations etc.

**Table 7: Problems faced by agroforestry farmers**

S No	Response	Number	Percent
1	Lack of technical knowledge	86	71.7
2	Dead and dying of <i>sissoo</i> trees	71	59.2
3	Training and extension support	68	56.7
4	Lack of management assistance	59	49.2
5	Marketing problems of the products	39	32.5
6	Dying of trees in plantation	31	25.8
7	Knowledge about policies, acts and regulations	23	19.2
8	Taxation on forest products	17	14.2
9	Lack of irrigation, particularly for vegetable crops	17	14.2
10	Limited opportunities for forest enterprises	16	13.3
11	Lack of quality and appropriate species	12	10.0
12	Legal complications and formalities	9	7.5

### **IMPACTS OF AGROFORESTRY**

The agroforestry is economically and financially viable option of optimum use of land. The comparative analysis of agriculture and agroforestry in one ha of land has been presented in Table 6. The table reflects that return of agriculture is 1.72 where as that of agroforestry is 4.61 which is almost double. Hence, agroforestry may not only reduce pressure on natural forests but also supports farmers to raise additional income through the management of same unit of land.

**Table 8: Impacts of agroforestry**

Impacts	Increase	Similar	Decrease	Total (N = 120)
Crop production	17.5	26.7	55.8	100.0
Fruit production	45.8	38.3	15.8	100.0
Sufficiency in forest products	76.7	20.8	2.5	100.0
Time spent on collection of forest products	5.8	23.3	70.8	100.0
Number of livestock	24.2	53.3	22.5	100.0
Productivity of livestock	60.8	22.5	16.7	100.0
Income	74.2	20.0	5.8	100.0
Soil conditions/fertility	18.3	64.2	17.5	100.0
Soil Erosion	14.2	46.7	39.2	100.0

The impact and implication of agroforestry on livelihoods is assessed in terms of production of crops, fruits, self sufficiency on fodder and fuelwood, reduction of time in collection of forest products, generation of income and other benefits from agroforestry, no of livestock and its productivity. Table 8 summarizes impacts of agroforestry. 55.8% farmers felt that crop production had decreased after agroforestry as a result of shading effect or competition for nutrients where as 45.8 farmers considered that increase in fruit production was due to improved soil fertility, use of improved seeds or seedlings along with upgraded knowledge and skills of agroforestry practices. Majority of the farmers (76.5%) credited agroforestry for helping them to achieve self sufficiency on fuelwood/fodder due to different silviculture operations carried out in the woodlots. According to the farmers (70.8%), agroforestry has significantly contributed to reduction in the time in collection of forest products. Although 53 % respondents informed that number of livestock has remained nearly the same, about 61% confirmed increase in productivity of their livestock due to availability of highly nutritious fodder and palatable species at farm itself. Majority of the farmers (74.2%) reported that their income had increased from agroforestry as their income source had been diversified. Farmers have mixed perceptions on impacts of agroforestry on soil conservation and soil fertility as they were not able to measure any tangible benefits from it despite a few reported increase in production of crops as a result of agroforestry.

### LESSONS LEARNT

As stated earlier, Nepal's forestry sector policies and periodic plans have identified agroforestry as one of the best options to enhance livelihood opportunities and reduce the dependency on natural forests. However, adaptation and application of agroforestry has not taken place as expected. The study shows that farmers were not able to perceive actual benefits of agroforestry. These are mainly due to weak research and development in agroforestry, lack of awareness among farmers, traditional beliefs and poor market linkages and coordination. Except free distribution of seedlings, there seems very little promotional activities on agroforestry techniques. Extension services are practically absent at the moment.

The farmers have planted tree species because they got free seedlings or to meet demand of forest products though it has complementary relationships on natural resource base as well as on productivity of land.

Farmers are not able to harness the benefits of agroforestry due to lack of technical skills and management assistance required as well. Though, District Forest Offices are responsible for monitoring woody components, agroforestry has never been their priority program. Farmers have complaints with regard to both the quantity and quality of the services provided by them.

The study also reveals the absence of scientific management of agroforestry. The management of agroforestry includes mainly protection and use. The lopping and pruning operations are carried out for fuelwood, fodder and animal bedding materials. Very few farmers apply fertilizer, irrigation and herbicides in the agroforestry. Whenever, they prepare fields for seasonal cultivation, management of woody components gets due care.

Agroforestry is not simply mixing of a few trees and crops. For promoting viable agroforestry system, understanding tree-crop interaction and its relationships is crucial. But this has not received priority from both the farmers and the development practitioners. Scarce resources need to be allocated in the right way.

Agroforestry is still at a very rudimentary stage in the country. An appropriate and properly managed species mix will bring about the sustainable land use system. Lessons learnt from the Terai community forestry have also indicated for appropriate documentation of agroforestry system.

## **ISSUES AND ACTIONS**

The study has identified the following crucial issues which need to be addressed for practising agroforestry as a vehicle to improve the people's livelihoods as well as for the scientific management and expansion of the agroforestry system in the country.

- **Induced vs. need based:** In the past, expansion of the agroforestry system did little to understand farmers' needs and priorities. Species were identified and introduced in localities without detailed understanding of local situations. For sustainability of the system and enabling farmers to diversify their income, agroforestry system should cater to farmers' needs and their priorities. As a prelude to promoting agroforestry, it is necessary to investigate opportunities for management of resources, which fit in with the local situations and culture.
- **Promotion vs. management assistance:** The purpose of the agroforestry should be to assist farmers to manage their lands to meet management objectives through educational and technical support rather than forcing or encouraging them for agroforestry through incentives or any other benefits such as tax exemption. The resource centers might be established to share information as well as for disseminating different extension materials. Credit and insurance facilities must be available to farmers and linkages should be established with bank, forest based industries and other money lending institutions.
- **Incentive vs. capacity development:** Past efforts concentrated on push strategy of agroforestry and provided incentives such as free seedlings, subsidies etc. and did little to develop human skills and capabilities required for the management. As sought by many farmers, capacity development should prevail over incentive system to push the agroforestry system. Incentive system is not sustainable.
- **Technical package vs. technical support:** Considering the different site conditions and needs of the farmers, it will not be possible to develop a model or provide same technical packages applicable to all the farmers. Hence, educational and technical support must be provided to farmers interested in agroforestry for multiple use and benefits as to their management objectives. Potential service provider should be identified for the development of agroforestry for having comparative advantage and complementary in delivering the services.
- **Adoptive vs. adaptive approach:** In the past, agroforestry models were developed and disseminated without detailed understanding of the local situations and conditions. Hence the focus should be on identification and documentation of effective, efficient and potential agroforestry practices which not only fit in with the needs of the farmers but also are compatible with their farming system. Demonstration plots for different management objectives (Farmers' Field School) should be established so that results of different management objectives can be seen and replicated in other areas as well.



- Land use vs. landscape: The purpose of the agroforestry should be to increase the number of trees in the landscape to meet the demands of the forest products and not changing the land use patterns.
- Subsistence vs. market oriented approach: Earlier main purpose of agroforestry development was to meet household demand of forest products. As a result, market assistance and market linkage development were amongst the most neglected components. However, management of agroforestry is likely to be unsustainable if due attention on marketing aspects is not given. Thus, marketing assistance is required to provide practical marketing assistance to farmers by providing information related to market trends and conditions, current prices, marketing methods, logging and grading of timber and establishing institutional linkages with the forest based industries.
- Unilateral vs. coordinated efforts: Agroforestry does not mean cultivation of crops and trees together but it is concerned with interactions between trees and crops. Therefore neither forestry nor agriculture department can alone contribute to the development or promotion of the agroforestry. Hence close collaboration and coordination among district line agencies such as District Agriculture Development Office, District Forest Office, District Livestock Development Office, District Soil Conservation Office and District Small Enterprise Development Office is necessary.

4.

## TECHNICAL AND FINANCIAL APPRAISAL OF AGROFORESTRY SYSTEM – A STUDY FROM VILLAGES AROUND BHOPAL, MADHYA PRADESH (INDIA)

A K Bhattacharya and Bijendra Basnyat

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### **Abstract**

*Farmers in India have practised agroforestry in many forms for years, but the various systems have not been scientifically documented. The detailed technical and financial appraisal of different agroforestry models is essential to evolve a proper strategy for its promotion and in identifying the capacity development needs of farmers. The paper documents different agroforestry models being practised around the villages of Bhopal, the capital of Madhya Pradesh (MP), and estimates on financial returns of different models. The agroforestry systems in the study area can be classified as Agri-silvicultural and agri-hortisilviculture. The farmers are familiar with only a limited number of trees, which can be incorporated in the agricultural fields. Farmers give high priority in agriculture crop management as compared with tree management. Tree components are often ignored in agroforestry system. The study reveals that agroforestry in this region is still in its infancy. A farmer knows how to plant a tree but fails to identify the right mix of crops and trees. Awareness about management options is inadequate. This has emphasized on the need to promote agroforestry in the region to maintain and enhance per unit productivity of land by multiple-use management. Hence, agroforestry support programme should be designed to assist agroforestry farmers to manage their land to meet their management objectives through educational and technical support while providing environmental, economic and social benefits.*

### **BACKGROUND**

In India, agroforestry has been recognized as an important farming system since time immemorial. In recent years, scope of agroforestry has increased significantly as an ecologically based natural resources management system which diversifies and sustains production for increased social, economic and environmental benefits (Nair, 1984)<sup>1</sup>. Apart from this, decrease in per capita land holding, rapid population growth, increasing trend of poverty, conversion of forestland to agriculture uses has created lot of opportunities to promote agroforestry. Though agroforestry has been recognized as an effective means to improve the livelihoods and energy demands, its contribution has not been documented scientifically. Past studies reflect on inadequate information related to management aspects of different agroforestry models, specially on technical and financial aspects. The situation of MP is not exceptional to this (Bhattacharya, 2003)<sup>2</sup>.

Farmers in MP have been practising many innovative systems to meet their daily demands of forest products as well as increase their productivity of land. However, these systems have not been scientifically documented (Bhattacharya *et al*, 2003)<sup>3</sup>. Very few studies had been carried out to document agroforestry practices being practised in MP, specially the indigenous ones. Technical and financial appraisal is one of the most ignored aspects in these studies. The detailed appraisal of technical and financial aspects of the various agroforestry models is essential to evolve a proper strategy for the promotion of the agroforestry and identifying the capacity building needs of farmers. The paper documents different agroforestry models being practised around the villages of Bhopal and estimate on financial returns of different agroforestry models.

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<sup>1</sup> Nair PKR, 1984. Soil Productivity aspects of Agroforestry, ICRAF, Nairobi

<sup>2</sup> Bhattacharya AK, 2003. Financial and Economic Analysis of the Agroforestry Models and the practices and the technological Interventions in the Agroforestry models. Project Report, DPIP, MP. Unpublished.

<sup>3</sup> Bhattacharya AK, Basnyat B, Chaudhary B & Pandit M, 2003. Agroforestry benefits are not fully realized. *Appropriate Technology*, 30 (1), 70-71.

### **Study Approach and Methodology**

Considering the nature of study, the exploratory research design was followed. After reviewing the concepts and past efforts on agroforestry development in India and in MP in specific, knowledge institutions working for the cause of promotion of forestry or agroforestry in the MP were consulted to know about different agroforestry systems being practised, implemented or promoted by them as well as to understand the problems and constraints of agroforestry development. The review and consultations call for operationalizing the definition of agroforestry since it is a traditional practice. Trees are spontaneously grown and no management interventions is being carried out. Hence with a view to narrow down the scope of study, as well as for better documentation of agroforestry practice, the study adopted the agroforestry definition as proposed by Nair (1984)<sup>1</sup>

*“Agroforestry is a land use system that involves deliberate retention, introduction or mixture of trees or other woody perennials in crops / animal production to benefit from the resultant ecological and economic intersections”.* Even if a farmer has deliberately planted or retained a single tree, he/she has been considered as the agroforestry farmer.

The study adopted two approaches in identifying the agroforestry farmers, which include the knowledge institutions consultations and rapid field survey. Knowledge institutions were consulted to identify the pocket areas or location, where agroforestry has been promoted and identify individual farmers or groups who have been practising agroforestry or has been either approached or are getting support. The list obtained from those institutions were verified with the concerned farmers and detailed survey was carried out. Rapid survey was conducted in 15 villages around Bhopal following the direction of road network. Transect walk was done with Sarpanch and Forest Beat Guard to understand about village farming system and identify the potential farmers for detailed survey. The farmers were then consulted for the detailed discussions with the help of checklists and schedules. After completion of field survey, focus group discussion was carried out to supplement the findings of study as well as to identify potential areas of interventions for managing the agroforestry. This approach not only helps to triangulate the findings of study, but also helps to make farmers aware about the situation of agroforestry development in the village. Dual approach was used in analyzing the data and information collected during the study. This implies use of both quantitative and qualitative methods of analysis. Simple statistical parameters such as frequency and percentages were used, as applicable. The financial analysis was carried out by adopting cash flow analysis, and discounted cost / benefit analysis (*Mathur et al, 2003*)<sup>4</sup>.

## **RESULTS AND DISCUSSION**

### ***Agroforestry practice***

Trees with annual crops or agri-silviculture are perhaps the most easily recognized and most widely employed agroforestry practice in the studied villages. Agri-silviculture was found to be more popular with the farmers followed by agri-horti-silviculture. It was observed that limited tree species are grown with staple food crops. *Eucalyptus*, *Phoenix* and *Acacia nilotica* are the most commonly found species in combinations with wheat, soyabeans, gram and maize. The major function of the woody component was demarcation of boundaries and commercial wood production. Fences not only provide fencing for livestock, protection and privacy but also serve as windbreaks that produce wood and foliage products. Thorny species such as *Acacia* and *Prosopis* spp. were the most common ones on boundary. Commercial trees like *Eucalyptus* and *Mango* were always found in the form of boundary plantations protecting the various horticultural

<sup>4</sup> Mathur PK, Kumar H, & Lehmkuhl JF, 2003. Terai Grasslands - Diversity, Management and Conservation Perspective. ENVIS bulletin on *Grassland Ecosystems and Agroforestry* : 1(1) 1-28.

species. The different agroforestry models and tree-crop combinations found in the study areas include following combinations:

- **Eucalyptus + Wheat + Soyabean**

One of the most popular and common tree-crop combinations is Eucalyptus and wheat. Eucalyptus trees have been found in the form of boundary plantations and are mainly planted for commercial purposes.

- **Mango + Wheat + Soyabean**

Mango, being an evergreen, perennial tree, is preferred significantly. Mango trees are found in either separate patches on croplands or in the form of rows between crop areas. Wheat and soyabean are cultivated in different seasons annually while fruiting in mango trees starts around the fifth year.

- **Gram + Wheat + Orange + Mango**

Horticultural trees too are gaining popularity among farmers as fruiting starts early and returns are good. They are grown generally with wheat and gram.

- **Wheat + Khejari**

Khejri, a small to medium sized thorny tree, is grown with wheat. Farmers are fully convinced that this tree species improves fertility beneath its canopy and has no competition with arable crop for soil moisture and nutrients.

- **Soyabean + Jamun + Aonla + Neem**

Although this combination was not a popular one, it was found to be existing in a small area.

- **Eucalyptus + Wheat + Teak**

This combination was found at some places and was one of the few successful ones.

Other tree species most commonly found and integrated with agriculture crops included *Emblica officinalis* (Aonla), *Tectoria grandis* (Teak), *Azadiracta indica* (Neem), *Madhuca indica* (Mahua), *Diospyros melanoxylon* (Tendu), *Tamarindus indica*, *Terminalia arjuna* (Koha / Arjun), *Zizyphus mauritiana* (Beri), *Pongamia pinnata* (Karanj) and *Acacia nilotica* (Babul) etc.

### **Technical Appraisal**

This section documents technical or management interventions carried out by farmers. The farmers are more concerned and providing high inputs on crop management compared to tree management. On intensive enquiry about these issues the most common answers of the farmers were as follows- *"We have planted trees not to supplement the farm income but to fence our boundary. We are less concerned about it because we did not know when we would get returns from those trees."* This statement itself reflects on level of management interventions practised by farmers. Trees wherever existing on croplands, planted or natural, are mainly grown to demarcate the croplands and act as live fences. Food crops invariably have priority, followed, if possible, by other seasonable crops that can generate cash easily.

### **Crop Management**

The farmers are cultivating grams, wheat and Soyabean along with woody component. They are cultivating these crops on the basis of their traditional knowledge and skills. None of the farmers in the study areas have been cultivating improved varieties of wheat or Soyabean. Most of the farmers use bio-fertilizers. Very few farmers reported of applying chemical fertilizers. Application of fertilizers and irrigation is almost negligible for both of crops. Weeding is generally done for Soyabean. No intensive care is given for

either of the crops as these are planted. Once the crop is ready to harvest, the farmers harvest it. The crops are either stored for subsistence use or sold to the local market.

**Table 1: Management interventions practised by farmers**

<b>Interventions</b>	<b>Agro-Silvo-horticulture</b>	<b>Agri-silviculture</b>
Site preparation	Manually and ploughing up to 10 cm suitable for cultivation of crops	Manually and ploughing up to 10 cm suitable for cultivation of crops
Planting materials	Seedlings available at local nurseries	Seedlings available at local nurseries
Manuring	Use of organic fertilizer and chemical fertilizer during plantation only	Use of organic fertilizer and chemical fertilizer during plantation only
Pit size	30 - 45 cu. cm	30 - 45 cu. cm
Pit preparation	Mechanical means	Mechanical means
Lay out of plots	Row	Row / Block
Soil working	Up to the third year of plantation	Up to the third year of plantation
Irrigation / Watering	Rain fed	Rain fed
Soil and moisture conservation	None	None
Weeding	As required based on weed growth and intensive care is given until establishment of seedlings	As required based on weed growth and intensive care is given until establishment of seedlings
Silviculture operations	None	Thinning and pruning rarely followed
Grazing	Not allowed	Not allowed
Insect pest / diseases	Use of chemicals as and when required	Use of chemicals as and when required
Fire	Fire control lines	Fire control lines
Harvesting	Annual for crops and selection system for trees	Annual for crops and selection system for trees

### **Tree Management**

Tree management practices are quite traditional with very little technical inputs. Though, tree management starts from the selection of species to its final harvest, farmers are ignorant of the scientific management practices. When asked about the tree management, *most of the farmers put back the questions to the researchers and asked what exactly it meant. For him the tree management is just the planting and collecting the product out of it.* The study reflects that farmers have less technical knowledge and skills in managing the tree component. Table 1 presents the different management interventions carried out by farmers. There exists no difference on management interventions though they have practised different agroforestry models. The differences were observed on harvesting of products. Farmers get fruits and fodder annually where as timber are harvested once the rotation age is completed or gets severely attacked by insects.

### Selection of species

Most of the farmers had selected the species on the basis of their traditional knowledge and beliefs. The choices of species were governed by the purpose of planting trees, for example commercial trees like Eucalyptus and Mango were planted on boundary to protect the various horticultural species whereas thorny species such as *Acacia* and *Prosopis* were planted for fencing. Specific tree characteristics received high priority compared to its multiple purpose utility.

### Spacement and tree density

This is governed by different sets of factors such as objectives of management, agriculture crops to be grown and vehicular or machinery movement such as tractor, cart to be taken during the land preparation and species itself. Based on the specific requirements, farmers keep different spacement and tree density. The common patterns adopted in the study are as follows:

- ***Eucalyptus* spp.** The plantations are done mostly on the boundaries. It is most preferred for growing on farmlands due to its high production of wood and sparse shade. Eucalyptus, usually, occupies 40% of the cropland leaving rest of the area for agricultural crops. The spacing varies from 10 to 20 ft.
- ***Mangifera indica*.** Mango trees have always been found in separate patches along with agricultural crops and have not been found to exist in a spatially mixed form. Wherever Mango trees were found, they were in large numbers occupying almost an equal area. Spacing is usually kept as 30 x 30 ft. Mango is mainly cultivated for its fruits and firewood.
- ***Prosopis cineraria*.** Khejari, as it is commonly called in the region, is a small to medium sized tree which is grown on the boundaries only as it is considered to be a very effective live fence. Leaves are collected, dried and stored to feed livestock. Trees are not normally thinned, as they are usually not grown for wood purposes.
- ***Citrus* spp.** The most popular species for horticultural purposes is citrus species such as Oranges and Lemon. Planting is mainly in the form of intercropping with rows of trees between agricultural crops.
- ***Syzygium cumini*.** Jamun, a common name, is an evergreen fast growing tree. The spacing is usually wide, around 30 x 30 ft. Trees are usually not trained and cultivated mainly for fruits.

### Preparation of Land

Woody perennials usually demand more thorough land preparation than seasonal crops. Farmyard manure, chemical fertilizers are usefully incorporated in the soil before planting. Planting pits are dug with varying depths and widths. Farmers are not aware of pit size or nutrient requirement of different tree species. They prepare the land on the basis of their local traditional skills and knowledge and most of them have not approached concerned departments or offices for the management of species.

### Early plant protection

For the early plant protection, most of the farmers carried out timely weeding, application of chemical herbicides and pesticides, and control of the grazing. Some of the farmers have also been conducting soil working depending upon the weed growth. Almost all the farmers have controlled or prohibited grazing to protect the plant. The source of the chemical herbicides and pesticides are the local agrovets present around the vicinity of their villages.

### Thinning / Pruning

Thinning and pruning procedures are probably the least understood practices. They did not know what exactly both these terms meant. Transect walk reflected that farmers had been practising thinning and pruning operations in their fields. But for them, removal of the crowded trees or cutting of lower branches is just to increase the sun penetration on the field rather than from tree improvement aspects. Though farmers are to some extent aware of possible tree crop interactions and their effects, they hardly practise tree management. Most of the farmers are only collecting the dead wood or dried branches of the trees. This clearly reflects that farmers have their own traditional knowledge in tree management but do not understand technical terms of forest management.

### Pests and Diseases

Though farmers apply regularly insecticides or pesticides as a preventive measure to their agriculture crops, it is hardly applied in case of forestry crops. They are applied only when the tree is severely infected by diseases. Most common methods of the pest and disease control are to just remove the infected trees and use for the fuelwood. Farmers hardly approach any institutions if their tree crops get diseased. Most of the farmers either render support or prefer to go to the local agro-vet centers rather than to different institutions working for the cause of agroforestry promotion. For them visiting these institutions would not be effective from all the aspects such as cost, time and suggestions or inputs provided.

### Logging and Harvesting

Logging and harvesting operation is one of the most neglected aspects of tree management. As the purpose of planting of tree was either to fence the agriculture land or to provide shade to horticulture crops, farmers are least concerned for its harvesting. They are not practising any scientific harvesting and logging operations. Trees are only harvested when they are dead or severely infected by diseases. Trees are generally felled when the land is fallowed.

### Financial appraisal

Technical appraisal of the agroforestry systems revealed the absence of any technical or scientific management of agroforestry. Under this situation, it was extremely difficult to collect economic details and estimate the cost and benefits of agroforestry. Hence the study adopted cash flow analysis methods to calculate the financial appraisal of different agroforestry models. Benefit cost ratio (BCR) based on farmers' recall methods was used to calculate on the yield over last five years by different crops and woody component. BCR of different agroforestry models has been summarized in Table 2. The BCR is maximum in fruit trees with soyabean followed by fruit tree and gram. The return from agri-silviculture model is low because farmers are not getting benefits from tree economically though it might have contributed ecologically by preventing erosion or increasing the productivity of soil.

**Table 2: BCR of Different Agroforestry models after five years of plantation**

<i>Rupees per acre</i>					
S.No.	Model	Cost	Return	Benefit	BCR
1	Orange and Soyabean	9540	26000	16460	2.7
2	Eucalyptus and Soyabean	8640	24000	15360	2.7
3	Lemon and Soyabean	9540	24000	14460	2.5
4	Orange and Gram	11165	26000	14835	2.3
5	Eucalyptus and Gram	10265	24000	13735	2.3
6	Orange and Wheat	10765	24000	13235	2.2
7	Eucalyptus and Wheat	9865	22000	12135	2.2
8	Guava and Soyabean	8940	20000	11060	2.2



9	Lemon and Gram	11165	24000	12835	2.1
10	Mango and Soyabean	12210	26000	13790	2.1
11	Guava and Gram	10565	20000	9435	1.9
12	Mango and Gram	13835	26000	12165	1.8
13	Guava and Wheat	10165	18000	7835	1.7
14	Mango and Wheat	13435	24000	10565	0.5
15	Lemon and Wheat	10765	22000	11235	0.4

## ISSUES AND PROBLEMS

A farmer who plants trees or other woody perennial plants instead of seasonal crops has a different set of commitments. Trees, however, are not a panacea for all ills. To achieve the full potential, a farmer must be able to carry out all those operations that control how an agroforestry system functions in a timely and skillful way. But it was found that farmers were not really aware of any new technological or management systems. This can be one of the reasons why agroforestry is still struggling. Some of the specific issues or problems which agroforestry should address are as follows:

### ***Technical knowledge and skills***

Tree management practices are quite traditional with very minimal technical inputs. Farmers have given high priority in crop management compared to tree management. Most of the farmers implement different management inventions till trees are established. The farmers are familiar with a limited number of trees, which can be incorporated in the agricultural fields. Hence, present study reflects that farmers have less technical knowledge and skills in managing the tree component.

### ***Technical support***

When asked about the key institutions providing the support to farmer or in the village for the promotion of agroforestry, most of the farmers were not able to even list the name of those knowledge institutions consulted earlier. For them, the private nursery or seed suppliers from where they either purchased seed or approached them for any technical interventions is the key institution for the promotion of agroforestry. They hardly recall even the name of Forest Department. Thus, there is a complete absence of extension activities for agroforestry.

### ***Marketing system***

Of the agriculture and forestry products, agriculture crops are sold in village markets or at Bhopal. Very few farmers have sold forest products specially the timber to the local people. Though there was highest return from the combination of soyabean with orange, farmers are not able to get the direct benefits from the marketing of the products. There exists no special marketing channel for the promotion of the marketing aspects of agroforestry.

### ***Operated land size***

Agroforestry, a means of minimizing risk, is actually associated with a lot of risks. Farmers associate risks with agroforestry and try to avoid the consequences of making a wrong decision. Farm size is an important issue because farmers with access to small areas of land want to protect their families' subsistence needs and plant food and other preferred crops. Thus agroforestry options were found to be more readily accepted as the farm size increased. Thus the aim of the agroforestry would be to increase more trees on landscape rather than changing the farming system.

### ***Risk diversification***

Agroforestry is not covered by the extension services, and is never considered as a potential intervention. Moreover farmers are more interested in the tangible economic benefits from agroforestry and care little for the long term ecological benefits derived from incorporating trees on farmlands. Younger farmers are more inclined to plant crops, while tree planting is favored by the older generation

### ***Research and development***

Very little has been done in terms of agroforestry research because of various complexities like methodological, ecological and socio-economic aspects associated with agroforestry research. Of these, tree crop interaction and its possible effects are one of the most neglected one. Agroforestry is not simply mixing a few trees and crops together and hoping for the best. Different tree-crops and their interaction with crops have to be understood, and this hasn't received any research inputs. There is a critical need to allocate scarce resources in the right way.

### ***Potential areas for intervention***

The review of above situation clearly reflects the need to promote agroforestry to maintain and enhance per unit productivity of land by multiple-use management and effective utilization. Thus the agroforestry support programme should be designed to assist farmers to manage their land to meet their management objectives, such as timber production, fuelwood and forage production, recreation, livestock grazing, soil and water conservation, fruit and small wood etc through educational and technical support while providing environmental, economic and social benefits. The aim of the agroforestry should be to incorporate more trees into the farmland rather than changing the farming system. Some of the potential areas, where the agroforestry programme should focus on, are as follows:

### ***Extension and publicity***

Extension and publicity programme is essential to increase awareness about agroforestry. The development and implementation of participatory approaches towards public awareness and sensitization is an important activity for the promotion of agroforestry. Extension is carried to increase awareness about planting trees in existing agriculture system as well as on community land. Some of the possible ways are as under:

- Develop and disseminate information related to agroforestry in local languages through use of different extension media.
- Organize exposure visits and study tours to understand agroforestry and tree crop interaction and its management carried out by peer groups.
- Provide assistance (material and financial) for establishing information resource center at each Panchayat for dissemination of different extension materials.

### ***Training and capacity development***

Agroforestry farmers have limited skill and technical knowledge in managing their forests or for initiating multiple use forestry activities. This requires strengthening of their skills in managing farms for sustainable utilization rather than protection. Thus capacity building should be taken up as a continuous process through identifying the priority areas that are likely to have the greatest overall impact and as identified or needed by the farmers themselves. Some of the possible ways are as follows:

- Enhance agroforestry farmers' capacities through effective information network, exposure visits, study tours, trainings, workshops at village and district levels to provide them a platform for exchange of ideas, experience and knowledge.
- Provide skill-based trainings on silvicultural operations, multi storey management, plantation techniques, disease and pest control, NTFPs management, tree crop management, criteria for selection of species and crops, diagnosis and design of agroforestry projects etc.
- Provide follow up and post training support for effective implementation of learned skills in the field as well as to disseminate information and technical advice.

### ***On-farm Demonstration plots for different agroforestry models***

Agroforestry is still at a very rudimentary stage. An appropriate and properly managed species mix will result into sustainable land use system that can produce as well as conserve. Hence existing agroforestry practice needs to be documented and among these best and efficient ones need to be identified and replicated in other similar domains. Some of the possible methods to achieve above are explained below:

- Establish different *on-farm agroforestry demonstration plots* of different agroforestry systems to show the tree crop interactions and its resultant benefits.
- Encourage and help farmers to establish on-farm agroforestry demonstration plots and plantations.
- Disseminate and share information / experiences of different agroforestry systems to concerned stakeholders.
- Document different management systems followed in each demonstration plot and calculate its financial rate of return to assess the financial feasibility of the activity.
- Develop detailed guidelines for practising different agroforestry systems based on results of different demonstration plots and farmers' field school practice.

### ***Management Assistance***

The management of agroforestry includes mainly protection and use. Very few farmers have reported to apply fertilizer, irrigation and herbicides. There is lack of technical knowledge for management of agroforestry. Hence, management assistance is necessary to meet their personal management objectives while providing environmental, economic and social benefits. The main thrust of the programme should be to provide technical assistance and support farmers interested in agroforestry for multiple resource benefits rather than providing technical packages.

- Identify potential service provider for agroforestry and agree on roles and responsibilities based on comparative advantage and complementary in delivering the services.
- Provide information on organizational support for tree planting, credit facilities available from different banking institutions, and potential service provider for management of agroforestry.
- Support farmers to meet their management objectives by suggesting methods on proper management of species and appropriate selection of species based on local conditions and situation.
- Provide technical advice and on-farm visits to assist farmers in management of land according to their management objectives.
- Explore the local market places, demands of forest products and market price for different products and provide market information.
- Promote and strengthen the *Lok Vanaki (Private forestry) concept* in agroforestry management as well.

5.

## **BAMBOO IN AGROFORESTRY – A STUDY FROM MADHYA PRADESH, INDIA**

P B Gangopadhyay and A K Bhattacharya

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### ***Abstract***

*The paper discusses about the present status of the productivity of Bamboo resource on forest and non-forestlands, utilization pattern by user groups, demand supply gap and potential of Bamboo as an agroforestry species in the undivided Madhya Pradesh (MP). The paper includes the findings of the study carried out in erstwhile MP before the creation of Chhattisgarh.*

### **INTRODUCTION**

Bamboo is a critical element of the economy. Bamboo and its related industries already provide income, food and housing to over 2.2 billion people worldwide. There is a 3-5 year return on investment for a new Bamboo plantation versus 8-10 years for Rattan. Governments such as India, China and Burma with 19,800,000 ha of Bamboo reserves collectively, have begun to focus attention on the economic factors of Bamboo production.

Bamboo is a renewable resource for agroforestry products. Bamboo is a high-yield renewable natural resource; ply Bamboo is now being used for wall paneling, floor tiles; Bamboo pulp, for paper making, briquettes for fuel, raw material for housing construction, and rebar for reinforced concrete beams.

### **BAMBOO RESOURCE IN MP**

#### ***ON FOREST LAND***

MP is the largest State of India having 14% of the total geographical area of the country. Out of 44.3 million ha of total geographical area, the State has 15.45 million ha area under forests. Thus about 35% of the geographical area of the State is under forests. According to the available estimates, the area under Bamboo forests is about 1.5 million ha. Normally, Bamboo grows either as understory or with other compatible species in the forests. Area designated as Bamboo forests usually has about 200 clumps (clump is group of Bamboos) per hectare. The first and second year Bamboo culms (culm is an individual Bamboo) are not harvested. Culms, which are three years old and more are silviculturally available for harvest.

On an average, a natural sound Bamboo clump is capable of yielding about six Bamboos, each of about 5 metres in length on a four-year cycle i.e. once in four years. Thus if one hectare of Bamboo forests has 200 clumps, 1.5 million ha Bamboo forests of the State have a potential of yielding 4500 lakh Bamboos every year.

However, in the recent past, due to tremendous biotic pressure, the Bamboo forests are getting degraded at a very rapid pace. The actual production of Bamboo in the State is, therefore, hardly 900 lakhs i.e. about one fifth of the potential. These forests need an urgent attention; otherwise the Bamboo that is regarded as poor man's timber will soon go beyond the reach of a common man. Because of the variety of uses of Bamboo, it has aptly been described as poor man's timber. The Bamboo is not only a source for manufacturing paper and pulp but it is a friend of villagers, tribals and forest dwellers due to its multiple uses and fast rate of growth. In villages it is used largely in construction of

houses. It plays a significant role in the upliftment of rural economy, especially for 'Basods', who are totally dependent on Bamboo for their livelihood.

**Bamboo area and Degraded Bamboo Forests:** Table 1 gives an overview of the Bamboo area and the extent of degraded Bamboo forests in the forest divisions of the erstwhile MP (MP + Chhattishgarh).

**Table 1 - Division wise Bamboo area**

<b>Forest Division having bamboo area</b>	<b>Bamboo Area (in ha)</b>	<b>Degraded B. Area (in ha)</b>
Balaghat North	10837.413	5419
Balaghat South	142310.633	71155
Bastar Central	63576.226	31788
Bastar South	49412.000	24706
Bastar West	1047779.00	52389
Betul North	44111.600	2206
Betul South	9216.00	4608
Betul West	Data not available	
Bhanupratappur	84168.00	42084
Bhopal	No. Bamboo	(482)
Bilaspur	24355.542	12178
Bilaspur North	21614.109	10807
Burhanpur	33083.500	16542
Chhatarpur	8240.780	4120
Chhindwara East+West+South	37951.200	18976
Dewas	9624.930	4812
Durg	22494.350	11247
Guna	26902.220	13451
Harda	59402.331	29701
Hoshangabad	9991.90	4996
Jabalpur	964.874	483
Kanker	19392.00	9696
Kawardha	41687.910	20844
Khandwa	48696.216	24348
Khargone	32055.720	16028
Korba	9733.176	4867
Korea	64178.564	32090
Mandla East	Data not available	-
Mandla West	13446.500	6723
Narayanpur	47822.71	23911
Narsinghpur	7474.978	3738
Panna North	18708.340	9354
Panna South	7289.010	3645
Raipur East	6536.500	3268
Raipur North	46024.648	23012
Raisen + Obaidullaganj	37244.300	18622
Rajanadgaon	32025.020	16012
Sagar North + South	68813.616	34407
Sarguja North	48507.215	24254
Satna	44540.600	22270
Sehore	41945.752	20973
Seoni North	12427.500	6214
Seoni South	20838.896	10419
Shahdol North	87465.070	43733
Shahdol South	4118.84	2059
Sheopur	5882.900	2941

Sidhi East	34997.720	17499
Umaria	67519.110	33760
Vidisha	Data not available	(870)

### **ON NON FOREST LAND**

Since there is huge demand of Bamboo, and supply from government forests is dismally low, a pressure has been generated for development of Bamboo resource outside forests also. Villagers have raised Bamboos on the bunds of their agricultural land and also in their homestead. Demand for Bamboo is partially met with from this domestic and agroforestry source. Looking to the vast expanse of the State, it was not feasible to take up detailed study regarding assessment of non-forest Bamboo resource. However, during the study an attempt has been made to assess the quantum of Bamboo contributed by the non-forest source.

### **PRIMARY SURVEY**

Primary survey was carried out in the five selected districts, namely, Betul, Bilaspur, Mandla, Panna and Sehore, one from each stratum. The details of the selected villages are given in Table 2.

**Table 2 - Study Area**

S No	Division	Range	Village
1	Mandla	Ghori Nanipur	Guwara Dhanipur
2	Betul	Multai	Sonara
3	Panna	Multai Kalda	Khedamla Mahuadol
4	Bilaspur	Piparia Korba	Saleha Patrapali, Thakruketa, Cheetapali
		Balco	Bela, Dondrao
		Sehore	Sonkacchh
5	Sehore	Ashta	Bhimkhedi

Direct survey was carried out in the selected villages by contacting the villagers and collecting information from them in a redesigned questionnaire. The head of the family, number of family members, number of clumps on their private land, number of culms in each of these clumps, total number of culms, and average number of culms per clump have been recorded. The demographic data of the village, total families living in the village, number of families having Bamboo on their private land, total number of culms on their land have been computed. The district-wise and village-wise total number of families, number of families having Bamboos on their private lands, number of culms, total number of culms per family have been computed and shown in Table 3.

### **RESULTS**

In 13 sample villages of the five districts, 2340 families were surveyed. Out of these, 354 families (15.13%) are having Bamboo on their fields. The total number of culms on their field is 26,041 and the average number of culms per family is 73.56.

### PRODUCTION OF BAMBOO FROM PRIVATE LAND

The State has been divided into five strata. For each stratum number of rural families is shown in Table 3. The percentage of rural families having Bamboos on their private lands has been projected from the sample data. On the basis of the number of culms per family, computation has been done to find out the total number of Bamboo culms present in each stratum. Taking average utilizable length of Bamboos as five meters, the total growing stock has been calculated by dividing the product of number of culms and five meters by 2400 (1 NT = 2400 running meter). On a four year felling cycle, 25% of the growing stock will be available as annual yield. Hence the annual available production of Bamboo from private holdings has been calculated for each stratum and shown in Table 3.

**Table 3 - Projection of Bamboo resources on private lands**

<i>Stratum</i>	<i>Sample district</i>	<i>Total no. of rural families in the stratum</i>	<i>% of families having Bamboos on their lands</i>	<i>Rural families having Bamboos on their lands</i>	<i>Per family no. of culms</i>	<i>Weight of growing stock (in NT)</i>	<i>Annual yield @ 25% of growing stock (in NT)</i>
First	Betul	14,10,151	8.46	119,299	61.12	15,191	3,798
Second	Bilaspur	19,00,506	16.14	306,742	66.30	42,369	10,592
Third	Mandla	19,78,991	3.21	63,526	218.00	28,851	7,213
Fourth	Panna	11,76,399	46.73	549,731	81.88	93,775	23,444
Fifth	Sehore	51,46,414	10.60	545,520	96.63	109,820	27,455
<b>Total</b>		<b>116,12,461</b>	<b>15.13</b>	<b>1,756,965</b>	<b>73.56</b>	<b>2,69,255</b>	<b>67,314</b>

According to this projection, 67,314 NT of annual production of Bamboos is available from non-forest source, which is 30% of the production from forest source

### PRODUCTION POTENTIAL OF BAMBOO

From the analysis of the data it is clear that there is a yawning gap between the requirement of Bamboos and the available supply. It is also clear from the statistics of Bamboo supply and family income of *Basods*, *Nistaris* and *Pan Barejas* that if various levels of satisfaction could be achieved then the corresponding improvement in the economic level of villagers will also be higher.

On the basis of the area estimation, Bamboo plantations in the State cover an area of 1,08,306 ha considering the plantations, under Five Year Plans by the various Department, Forest Development Corporation, and Tree Cooperative Scheme. Besides, there are other areas under private plantations and those raised by various other departments which could not be accounted for in the present study. However, annual available yield of Bamboos from the plantation area of 1,08,306 ha will be 54,153 tons, on a four year felling cycle at the rate of 2 tons per ha as estimated in the study.

Estimation from non-forest Bamboo resource was also carried out and according to this, Bamboo resource from the farmers' field has been estimated as 67,314 tons per year, which is about 30% of the annual yield from Forest Department coupes. Thus the total available Bamboo yield on an annual basis can be summarized as under:

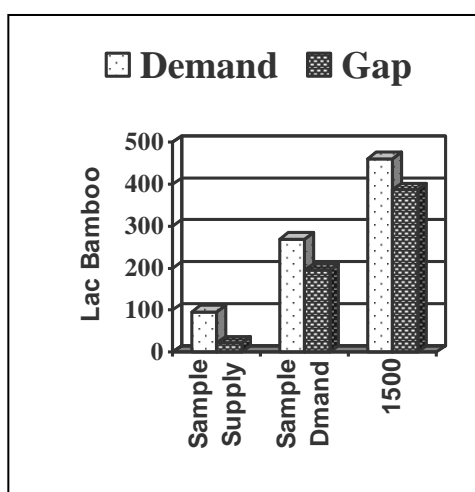
From government forests	2,25,384 NT
From plantations areas	54,153 NT
From non-forest land	67,314 NT
<b>Total</b>	<b>3,46,851 NT</b>

In financial terms the value of the annual yield is Rs 235.85 crore @ Rs. 6800 per NT as computed in the subsequent Para. The study also indicates that Bamboo resource

available on non-forest lands is also a significant part of the total production system. This necessitates a more focused attention to regenerate and manage scientifically the Bamboo plantations in homestead and agroforestry sector by adequate technical support of the Forest Department.

### **STATE LEVEL PROJECTION OF BAMBOO DEMAND SUPPLY FOR BASODS**

On the basis of sample district data projection has been done for the *Basod* families of the same stratum to which the sample district belongs. At the rate of sample supply, sample demand and 1500 Bamboos per family, the quantity of Bamboo required for the entire *Basod* families of the State have been calculated. The corresponding figures are 95.56 lac, 268.92 lac, and 461.25 lac Bamboos respectively. Against this, the actual average supply of last five years is 73.82 lac Bamboos. The demand supply gap in the three scenarios has been calculated for each stratum. This shows a shortfall of 21.74 lac Bamboos, at the rate of sample supply i.e. 248 Bamboos per family, 195.10 lac Bamboos, at the rate of sample demand i.e. 908 Bamboos per family and 387.43 lac Bamboos, at the rate of 1500 Bamboos per family. The shortfall is more acute in third stratum where *Basod* families are more and in the 5th stratum where Bamboo availability is less. The demand supply gap is shown in Figure1.



**Fig. 1 *Basod* Bamboo demand supply gap**

On the basis of poverty improvement scenario for the three types of supplies, the contribution of Bamboo to the income of *Basod* families, for the whole State will be as follows -

*Rs. 5.57 crore @ sample supply i.e. 248 Bamboos.*

*Rs. 40.21 crore @ sample demand i.e. 908 Bamboos.*

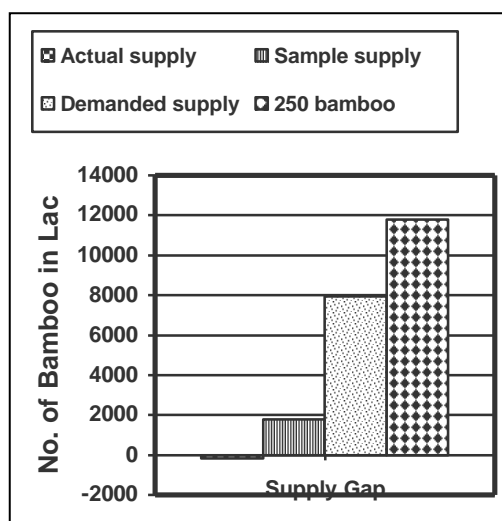
*Rs. 68.22 crore @ 1500 Bamboos per family.*

In the corresponding event, out of 30,750 *Basod* families 27,288, 15,832 and 7,062 families only will remain below poverty line respectively for three types of supplies. This quantifies the present and potential contribution of Bamboo for increasing economic status of *Basod* families.

### **NISTAR DEMAND AND INCOME PROJECTION**

The demand of Bamboo for Nistar use has been projected for the whole State on the basis of the results obtained in sample districts. The number of rural families around forests, entitled for Nistar i.e. within 5 Km of the forests, is 48.77 lac. Stratum wise calculation for Bamboo requirement will be as follows –





Sample supply - 42 Bamboos  
**Sample demand - 167 Bamboos**  
**1500** - 250  
**Bamboos.**

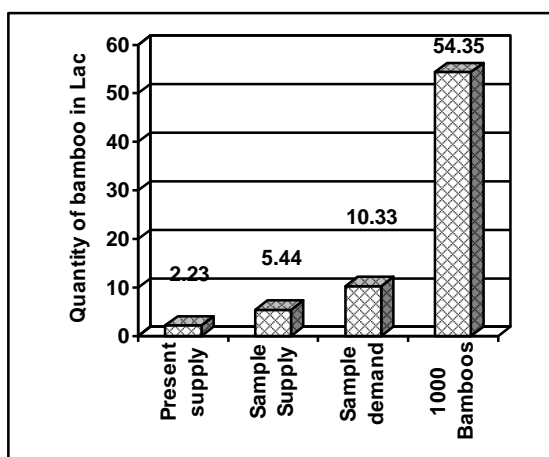
**Fig 2 - Nistar Bamboo demand supply gap**

In the above scenario the requirement of Bamboo will be 21.74 crore, 83.44 crore and 121.93 crore respectively. As against this, the average production of last 5 years is only 4.66 crore. After meeting the *Basod* demand, only 3.92 crore Bamboos remains available for Nistar. This stock when put against the huge demand, the gap is 17.81 crore, 79.51 crore and 118.01 crore Bamboos respectively. As against the projection of sample data, the actual annual supply of Bamboo in the last five years has been 2.31 crore. Thus only 11% of Nistar demand, as calculated from sample data could be met with the actual supply of Bamboo. The demand supply gap is shown in Figure 2.

Probable income supplement, if Bamboo could be provided as per three scenarios mentioned above, works out as Rs .192.84 crore, Rs. 271.34 crore, and Rs. 662.04 crore for supply of Bamboo at the rate of sample supply, actual demand and 250 Bamboos per family respectively. This explains the wide gap in demand supply of Nistar Bamboo and also highlights the quantified financial benefit that could reach villagers by concessional supply of Bamboo.

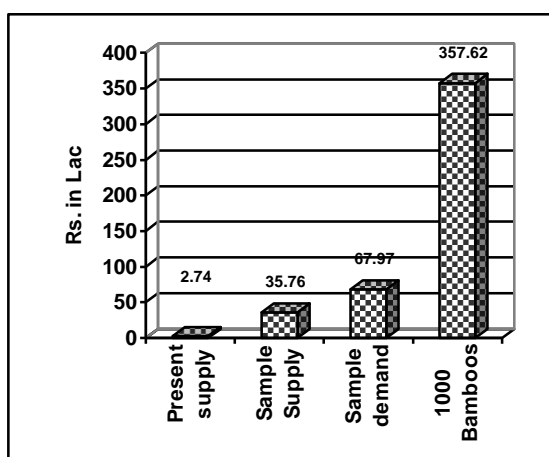
### **BAMBOO DEMAND PROJECTION FOR PAN BAREJAS**

There are 5435 Pan Bareja families in 16 districts of the State. At present they are getting a supply of 2,22,759 Bamboos. On the basis of sample district data @100 Bamboos per family, the total requirement is 5,43,500 Bamboos. On the basis of actual demand @190 Bamboos noted in the sample district, the total requirement is 10,32,650 Bamboos. According to the *Nistar* policy provision of 1000 Bamboos, total requirement works out to 54,35,000 Bamboos. The total demand projection is shown in Figure 3.



**Fig. 3 Demand projection of Bamboo for Pan Barejas**

The corresponding income supplement @Rs. 6.58 per Bamboo will be Rs. 35.76 lac, 67.97 lac and 357.62 lac respectively. Rs. 2.74 lac is however the actual income supplements in the present supply scenario. The income supplement in four scenarios above is shown in Figure 4.



**Fig. 4 Income supplement to Pan Barejas**

### **COMBINED DEMAND OF COMMERCIAL BAMBOO**

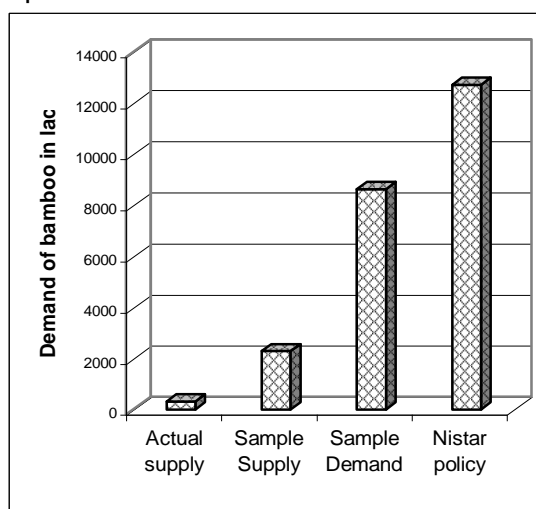
The requirement of Bamboo for the three important categories of consumers in the State, namely *Basod*, *Nistari* and *Panbareja* have been quantified in the study under four different scenario (1) at the rate of actual supply (2) at the rate of supply as per sample data, (3) at the rate of Bamboo demanded by the consumer, (4) at the rate of Bamboo promised by Nistar policy of the government subject to availability (Table 4).

**Table 4: Commercial Bamboo combined demand (No. in lac)**

<i>Consumer</i>	<i>Actual supply</i>	<i>Supply as per sample data</i>	<i>Supply as per consumer demand</i>	<i>As per nistar policy</i>
<i>Basod</i>	73.82	95.56	268.92	461.25
<i>Nistar</i>	231	2174	8344	12193
<i>Panbareja</i>	2.23	5.43	10.33	54.35

Total	307.05	2274.99	8623.25	12708.60
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This shows that at present 307 lac Bamboos is being supplied to the consumers of three different categories while the actual departmental production is 466.24 lac Bamboos. Thus almost 70% of commercial Bamboo production is supplied to the three categories of consumers under Nistar supply, thereby leaving only 30% for other consumers and open market disposal. If the data of actual supply to the sample families are projected for the total rural families around forests who are eligible for Nistar supply, the total requirement works out to be 2275 lac Bamboos which is seven times higher than the actual supply. Thus for every person benefited from Nistar supply, there are six others who are deprived. The deficiency is mainly in Nistar supply. The requirement of Bamboo to meet the actual demand of the *Basod* and also the target of Nistar policy is astronomically higher, as is clear from the demand projection in the last two scenarios. The graphical representation of the combined demand scenario is in Figure 5.



**Fig. 5 Combined demand of Bamboo in three different scenarios**

#### Industrial Bamboo Demand

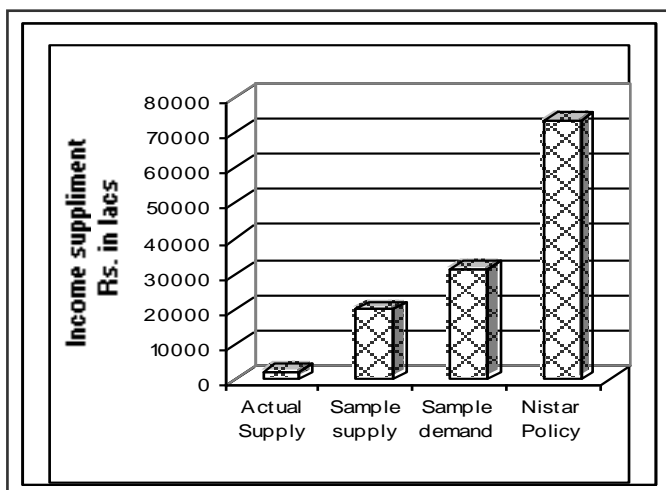
The State presently is producing industrial Bamboo to the extent 131970 NT per year. The demand of paper mills in M.P. for utilizing the current installed capacity of 2,63,550 tons is 6.85 lac tons of raw material. Even if the present production is committed entirely for the Paper Mills within the State still a gap of 5.53 lac tons of industrial Bamboo demand will remain unsatisfied. Production of Bamboo from non-forest areas needs to be activated to meet this gap in raw material supply.

#### COMBINED INCOME SUPPLEMENT

The study has quantified the contribution of Bamboo in the economy of *Basod*, *Nistari* and *Panbarejas*. The addition to their family income under four different scenarios can be summarized as in Table 5. This is diagrammatically explained in Figure 6.

**Table 5: Combined income supplement (in lac Rs.)**

Consumer	Actual supply	Supply as per sample data	Supply as per consumer demand	As per Nistar policy
<i>Basod</i>	108.00	557.00	4020.00	6822.00
Nistar	2014.00	19284.00	27137.00	66204.00
Panbareja	2.74	35.76	67.97	357.62
Total	2124.74	19876.76	31224.97	73383.62



**Fig 6 Combined income supplement in three different scenarios**

Thus in MP even at the present rate of Bamboo supply which is a small fraction of their requirement a huge amount of Rs. 21.24 crore is flowing to the beneficiaries as income supplement. If Bamboo could be provided to the consumers of three categories mentioned above at the same rate as have been provided to the consumers in the sample districts the income supplement could have gone up to Rs. 198.77 crore. This could have increased to a very high figure of Rs. 312.25 crore and Rs. 733.83 crore if it would have been possible to supply Bamboo to the consumers as per their actual demand and as per Nistar policy commitment respectively.

The Combined demand supply (DIS) and income supplement has been summarised in the following diagram -

		Actual Supply	Sample Supply	Demand Supply	Supply as per policy
<b>Basods</b>	Requirement in lac Bamboo	73.82	95.56	268.92	461.25
	D/S-gap in lac Bamboo		21.74	195.10	387.43
	Income Supplement (Rs. In Lac)	108.00	557.00	4021.00	6822.00
<b>+</b>					
<b>Nistar</b>	Requirement in lac Bamboo	231.47	2174	8344	12193
	D/S-gap in lac Bamboo	-161	1781	7951	11801
	Income Supplement in Crore	2014.00	19284.0	27137.0	66204.0
<b>+</b>					
<b>Panbareia</b>	Requirement in lac Bamboo	2.23	5.43	10.33	54.35
	D/S-gap in lac Bamboo		3.20	8.10	52.12
	Income Supplement in Crore.	2.74	35.76	67.79	357.62
<b>↓</b>					
<b>Combined</b>	Requirement in lac Bamboo	307.05	2274.99	8623.35	12708.6
	D/S-gap in lac Bamboo	-161	1805.94	8154.20	12240.5
	Income Supplement in Crore	2124.74	19876.7	31224.9	73383.8

This amply proves the tremendous contribution of Bamboo for poverty alleviation of rural forest dependent families and its potential to achieve a much higher limit in case the Bamboo resource augmentation becomes possible.

### Plantation Economics

One of the most important ways to increase Bamboo resource is to take up large-scale plantations. Bamboo with diverse utility in the field of domestic and industrial consumption gives better return than most favoured species e.g. Teak, Eucalyptus, etc. Many Forest Development Corporations and Forest Departments selected Teak for raising commercial plantations. It is realized that Bamboo has not got its due place in the country's afforestation and reforestation programmes. Even in social forestry plantation programme, Bamboo is not given the place, which it deserves. Bamboo is more economical than Teak, which is considered by and large the most valuable commercial

forest species. Comparative economic parameters of Teak and Bamboo plantations are shown in Table 6.

**Table 6 : Results of economic analysis**

<b>MODEL</b>	<b>IRR %</b>	<b>NPV at 12% in Rs/ha</b>	<b>B C RATIO at 12 %</b>
<b>TEAK</b>			
1. Model 1 (II site quality)	16.5	+2100	1.733
2. Model II (III site quality)	11.5	-23	0.980
3. Model III (IV site quality)	8.5	-1257	0.560
<b>BAMBOO</b>			
Model I (good site quality)	20.7	+3294	2.621
Model II (Medium site quality)	16.7	+1456	1.717
Model III (Poor site quality)	11.0	-193	0.905

(Source: Anon, 1981)<sup>1</sup>

Above analysis amply proves that Bamboo (*Dendrocalamus strictus*) plantation is more profitable and economically more viable than Teak plantations. Economic returns from Teak plantations are greatly influenced by the value of thinned material and specially from earlier thinning. The marketability of thinning material from first and second thinning are generally low in remote areas and areas which are agriculturally and industrially less developed. Bamboo on the other hand is always in demand in areas, which are less developed and remote. The other species of Bamboo viz., *Bambusa bambos*, *B. vulgaris*, *B. nutans*, *B. tulda*, etc. which are frequently grown by villagers, are believed to give more yield as compared to *Dendrocalamus strictus*. Therefore, if these species are planted in suitable localities, yield will be much higher than estimated for *Dendrocalamus strictus*.

State Government has already initiated a massive tree plantation programme under various schemes. It is necessary that Bamboo should be planted in admixture with other species. The following factors would fully justify its large share-

- Bamboo is easy to grow and manage. Villagers are well versed with plantation and management techniques.
- Bamboo starts yielding from 8 to 10 years of age. Repeated yield is obtained on short cycles of 3 to 4 years up to a period of 30 to 40 years, till it flowers.
- It has diverse utility both in domestic consumption and industrial use. Bamboo yields basic raw material for a number of cottage industries. It is principal raw material for paper and pulp manufacture in India. With the increasing demand for paper, it is imperative that Bamboo plantation is taken up on a large scale.
- Bamboo species are not very exacting in nature and can be grown in a variety of agro-climatic conditions.
- Bamboo plantations are economically more paying than most commercial tree species.
- Bamboo easily grows as under crop with many tree species. It can be grown with Teak and other tree species on the same site and thus augment the resource generating potential of the forests.

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<sup>1</sup> Anon, 1981. Prosperity through Bamboo planting, Forest Survey Organisation, MP. Bhopal. April, 1981.

## SUGGESTIONS

To mitigate the acute shortage of Bamboo resource and also to improve the socio economic condition of the rural people particularly those dependent on Bamboo the following measures are suggested -

- Looking to the economics of raising Bamboo plantation, those high market price of Bamboo, the decreasing annual production of Bamboo from areas within forests, agroforestry system and community plantations can fetch encouraging price. The local people within the villages can utilize the commercial Bamboo at remunerative price, while the industrial Bamboo can be supplied to the paper mills who are looking for such supply sources these days, after expiry of the industrial lease agreement.
- It is also suggested to popularize *Bambusa vulgaris* and *Bambusa bambos* among farmers, as Bamboosa is known to establish fast, recruitment rate of new culm is relatively more and is easy to work. Although the species is common in eastern MP, it can be grown throughout the State. Productivity of these two Bamboos on field bunds and in village wastelands is believed to be more than *Dendrocalamus strictus*.
- Genetic improvement of existing Bamboo resources is an important step. Bamboos are highly cross pollinated and selection of superior seedling after gregarious flowering as a result of crossing followed by genetic recombination, should be easier. Early vigour and growth habit may be criteria for seedling selection. Superior clones based on phenotypic characters like number of culms / clump, height, thickness, girth of culms, length of internodes, fibre length, resistance to disease and pests can be selected from the adult wild populations and plantations (Balasubramanyam *et al*, 1992)<sup>2</sup>.
- It is necessary to encourage tree planting on non-forest land and attract private investment for wasteland afforestation. The increase in Bamboo production from farmers' field can in a very big way augment the supply situation. Removal of the hurdles from private plantation will go a long way in improving the supply situation along with socio economic development of rural people.
- Suitable tax exemption on income from Bamboo plantation should be considered to encourage private entrepreneurs for growing Bamboo.
- Bamboo based Cottage industry should be encouraged so that the advantage of value addition goes to the local craftsmen. This will improve their economic condition. Training in Bamboo handicraft should be imparted to rural artisan in general and *Basod* community in particular.
- Marketing support to derive the best benefit from Bamboo articles should be organized, may be in the cooperative sector, in the pattern of Kerala Bamboo Corporation Ltd. The corporation takes care of the marketing of Bamboo and cane articles, manufactured by their members. Sericulture Department requires large quantity of Bamboo for manufacturing "chandrika" and "chhabra" which are used for silk worm rearing. Supply of these commodities could be tagged with *Basod* societies (which could be formed) for their benefit.

With these efforts, Bamboo is likely to play a more important role in the socio-economic development of rural population in general and Bamboo dependent communities in particular.

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<sup>2</sup> Balasubrahmanyam VR & Kumar N, 1992. Problems and Prospects of Bamboo Cultivation in India. International Symposium of industrial use of Bamboo

6.

## **FARM FORESTRY AND AGROFORESTRY INITIATIVES OF ITC, BHADRACHALAM - A CASE STUDY**

S N Rao and A K Bhattacharya

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### **Abstract**

*ITC has launched plantation programs to achieve self-sufficiency on raw materials. These programs include the farm forestry, social forestry and research and development for tree improvement. The purpose of Research and Development for tree improvement is to demonstrate farmers on best alternative land use option. It has already developed 'Bhadrachalam' clones which are almost nine times more productive than normal seedlings. ITC has taken up the scheme of farm forestry for commercial and sustainable tree growing with a developed a package of scientific silvicultural practices. These technologies are transferred to the farmers to support them to raise and maintain highly scientific and successful plantations with a buy back arrangement at prevailing market price. Multi species plantations along with inter crops are promoted on private wastelands by providing long-term loans to resourceful households. ITC has envisaged social forestry programme to alleviate poverty in support of National Poverty Alleviation Programme during 2001-02. About 500 poor tribal farmers converted 1730 hectares of private wastelands into productive farmlands and planted 4.5 million saplings of different species. After the adoption of the schemes, the average net gains to farmers is about US\$ 520 per annum under rain fed condition and US\$ 833 per annum with irrigation on a 4 year rotation cycle. This is significantly higher than most other cash crops in our operational area and at much lower risks. Now these rural households having access to their own woody biomass, they can meet most of their fuel wood requirements in-house through lopping, cuttings and pruning.*

### **BACKGROUND**

It is ITC's endeavour to continuously explore opportunities for growth by synergising and blending its multiple core competencies to create new opportunities of growth. The employees of ITC are inspired by the vision of growing ITC into one of India's premier Institutions and are willing to go the extra mile to generate value for the economy, in the process creating growing value for the shareholders.

Paperboards and Specialty Papers Division a core sector environment and ecology conscious enterprise, one of the important divisions of ITC having a turnover of around Rs.600 crores becoming instrumental in the development of a backward scheduled tribal area around Bhadrachalam (temple town), district Khammam in the state of Andhra Pradesh, India.

To achieve self sufficiency in cellulosic raw materials (present need 4.00 lac tonnes per annum and it is likely to grow to 6.00 lac tpa and then 8.00 lac tpa) launched plantation programme (Farm Forestry). In the early stages encouraged 6185 farmers to cover 7441 hectares with Eucalyptus seed route plantations from 1138 villages in the districts of Khammam, West Godavari, Krishna, Guntur, Prakasam, Nalgonda and Warangal of Andhra Pradesh.

To make this programme more attractive by increasing the levels of productivity from 6 - 10 CuM (MAI) to 20 - 58 CuM (MAI) & to show to the conventional agri farmers a best



alternative land use option, initiated Research & Development for tree improvement and developed 'Bhadrachalam' clones.

**Farm Forestry:** For commercial & sustainable tree growing, developed a package of scientific silvicultural practices and transferring to the farmers (details given in Annexure-I) to raise & maintain highly scientific & successful plantations with a buy back arrangement at prevailing market price. So far encouraged 6372 farmers participation in plantation programme and covered an area of around 10,000 hectares.

In addition to achieve self sufficiency to improve the livelihoods of people below poverty line ITC had envisaged social forestry programme to alleviate poverty in support of National Poverty Alleviation Programme during 2001-02. This model simultaneously tackles problems of endemic poverty of tribal and meets part of the needs of woods for our business. Multi species plantations along with inter crops are promoted on private wastelands by providing long term loans to resourceful households.

## OUTCOME

Achievements in all three initiatives have been very encouraging.

- a) **Research and Development:** 86 fast growing and high yielding, disease resistant clones are being produced on a commercial scale. The productivity of 'Bhadrachalam' clones ranges between 20-58 m<sup>3</sup>/hectare/year, which is 3 to 9 times more productive than normal seedlings. 23 site-specific clones (includes 86) adapted to problematic alkaline and saline soils have also been developed so far.
- b) **Farm Forestry:** The commercial viability of these clones & subabul selected varieties is evident from the fact that since 1992, 6,372 farmers have become our partners and planted over 10,000 hectares.
- c) **Social Forestry:** Since its inception in 2001-02 covered 2,500 poor tribal farmers, converted 1730 hectares of private wastelands into productive farmlands and planted 4.5 million saplings of different species.
- d) **Environment:** Apart from other well-known consequences of such a large-scale greening effort, these plantations have the potential to sequester 0.5 million tonnes of carbon, thus mitigating GHGs.
- e) **Farm Incomes:** Average net gains to farmers is about Rs.25,000/hectare/year (US\$ 520) under rainfed condition and Rs.40,000/hectare/year (US\$ 833) with irrigation on a 4 year rotation cycle which is significantly higher than most other cash crops in our operational area, and at much lower risks.

## Plantation for pollution prevention

By promoting the planting of nearly 30.86 million plants, the project has increased the green cover in the country over 10,000 hectares. Apart from the innumerable benefits of such large-scale afforestation, it directly contributes to *in-situ* moisture conservation, groundwater recharge and significant reduction in topsoil losses due to wind and water erosion.

This plant population has the potential to sequester 0.5 million tonnes of carbon thus helping in the reduction of Green House Gas (GHG) and conservation of natural forest resources. This 0.5 million tonnes of carbon is approximately worth US\$ 1.5 million at the rate of US\$ 3 per metric tonne. Year-wise the volume of carbon sequestration is as follows:

Year	No. of farmers	No. of clonal saplings (lakhs)	Area (ha.)	Carbon Sequestration (MT)
1992	5	9613	4	200
1993	6	25857	15	750
1994	47	92817	39	1950
1995	187	299919	183	9150
1996	127	428075	220	11000
1997	181	948426	489	24450
1998	286	1643934	838	41900
1999	376	1825111	980	49000
2000	423	2211354	1178	58900
2001	647	2458681	1110	55500
ITC SF Project	967	917396	560	28000
2002	800	2936770	1322	66100
ITC SF Project	1543	1657000	1170	58500
Subabul	777	15406904	1914	95700
Total	6372	30861857	10022	501100

Over 6,000 rural households having access to their own woody biomass, they can meet most of their fuel wood requirements in-house through lopping, cuttings and pruning. To this extent therefore, existing public forests are protected from wanton destruction by rural households in search of fuel wood.

As a result of the leaf-litter from multi-species plantations and the promotion of leguminous inter-crops between rows, depleted soils are constantly getting enriched, making these farmlands more productive. In the near future, the increase in soil fertility will lead to a decline in fertilizer and pesticide consumption, thus reducing the pollution of groundwater sources through leaching of such chemicals.

The details like year wise spread of plantations, clones suitability to soils, clones performance on different soils, yields and standard performance levels of 'Bhadrachalam' clones are as follows:

#### Participant farmers and their levels

Year of Plantation	Size of Plantation					Total No of Farmers
	< 1 ha	1 - 5 Hareli	5 - 10 ha	10 - 50 ha	> 50 ha	
1992	2	3				5
1993	3	2	1			6
1994	30	16				46
1995	149	37	1			187
1996	61	54	10	1		126
1997	42	73	11	5		131
1998	110	120	15	10	1	256
1999	148	237	22	16		423

2000	156	214	35	15	2	422
2001	224	383	23	10		640

**Clones suitability to soils**

S No	Type of Soil	Adaptable Clones
1	Alluvial	1,3,6,7,10,27,105,115,122,130,266,274,284,286,288,292,316,
2	Black Alkaline	1,10,27,71,83,99,105,130,271,285,316,405,411,412,413,470,526
3	Black	1,3,7,10,27,71,72,83,99,105,122,266,271,272,285,290,316,405,411,412,413,417,439,526
4	Red	1,3,6,7,10,27,71,72,99,105,122,130,158,159,223,266,272,274,284,285,286,288,290,292,315,316,319,405,411,412,413,417,469,470,499,526
5	Red Sandy	3,6,7,71,105,122,266,288,316
6	Sandy	3,6,7,10,288,

**Clonal Performance on Different Soils**

S No	Type of Soil	MAI (Cmt)	
		Maximum	Minimum
1	Alluvial	35.41	12.08
2	Black Cotton	41.93	15.61
3	Black	47.81	15.04
4	Red	57.37	16.70
5	Red Sandy	40.54	10.23
6	Sandy	50.72	18.64

**Performance of Clones as per the soil and management practices followed**

S No	Type of Soil	No of Plantations		
		Poor	Normal	Excellent
1	Alluvial	11%	22%	67%
2	Black Cotton	11%	18%	71%
3	Black	9%	18%	73%
4	Red	10%	15%	75%
5	Red Sandy	11%	23%	67%
6	Sandy	9%	23%	69%

**Standard Performance Levels**

Age of the Plantation (Years)	MAI (Cmt/ha/yr)		
	Poor	Normal	Excellent
1	< 8	8 to 10	> 10
2	< 10	10 to 12	> 12
3	< 12	12 to 15	> 15
4	< 15	15 to 18	> 18
5	< 18	18 to 20	> 20
6	< 20	20 to 22	> 22
7	< 22	22 to 24	> 24

**Yields (MAI) as per holding levels of participant farmers**

S.No.	Size of Plantation	MAI (Cmt)	
		Minimum	Maximum
1	Less than 1 Hareli.	16.70	57.37
2	1 ha. to 5 ha.	18.64	49.38
3	5 ha. to 10 ha.	10.23	39.65
4	10 ha. to 50 Hareli.	12.08	33.71
5	Above 50 ha.	---	---

**VILLAGE CASE STUDY**

Name of the village: Kavuluru  
Mandal: G.Konduru  
District: Krishna  
State: Andhra Pradesh

Village Kavuluru is located 28 KMs away from Vijayawada city, 10 KMs from Ibrahimpatnam. (3 KMs interior on Vijayawada, Tiruvuru State Highway).

**Geographical Location**

Latitude : 17° 15' North  
Longitude : 80° 40' East

Total size of the village is around 2000 hectares of cultivable land having 4000 voters (1100 families) and categorized as follows:

Big farmers (above 8 hectares)	:	50
Medium farmers (between 4 - 8 hectares)	:	200
Small farmers (between 2 - 4 hectares)	:	150
Marginal farmers (land holding below 2 hectares)	:	200
Agriculture labourers (land holding below 2 hectares)	:	100
Landless farmers	:	100
Landless agriculture labourers	:	200

Major economic activity of the villagers is agriculture, dairying and getting casual employment through surrounding industries. Land use pattern is dominated by cotton, chilli & pulses (black gram and green gram) followed by paddy, sugarcane and maize. Around 100 members are working in banks, schools, industries and village administration as permanent employees. Average annual income among big farmers is Rs.80,000/- per family & Rs.40,000/- for small farmers. Women folk from landless families and agri labourer categories are employed in farm activities. The prevailing wage rates for male & female members are Rs.70/- and Rs.30/- respectively. The variation mainly is due to the industries existing around.

One of the typical farmers Shri G. Venkata Rao is of the opinion that ITC had taken an excellent initiative for developing high yielding clones for the sake of farmers to increase the productivity per unit area. Many farmers of the village are eagerly waiting to witness the higher yields and actual returns from clonal plantations.

11 farmers of the village have taken-up Eucalyptus 'Bhadrachalam' clonal plantations and the total area is 7.8 ha. These farmers have planted Eucalyptus during the years 2000 and 2001. The farmer wise details, as follows:

- a) Name of the Farmer: Shri G.Venkata Rao, S/o.Chowdary  
 Father's Name: Chowdary  
 Age: 35 years  
 Qualification: Intermediate (10+2)  
 Family: Joint Family  
 Total family members: 7 (wife, son, parents, brother and his wife)  
 Total Land Holding: 7.2 hectares  
 Status of Land: 1.2 hectares - ancestral  
 6.0 hectares - purchased  
 Area of Plantation: 1.2 hectares  
 Planting Date: 16.8.2000  
 Species Planted: Eucalyptus 'Bhadrachalam' Clones  
 Irrigation Facility: No assured irrigation, but back waters of Thermal power station is available.  
 Phases of Plantation: Planted in one phase  
 Other Crops under cultivation: Chilly - 1.6 ha.  
 Cotton - 0.8 ha.  
 Black gram & Green gram - 2.8 ha.  
 Paddy - 0.8 ha.  
 Labor Employed: Family members - 35 man days  
 Hired laborers - 60 man days (male)  
 80 person days (female)  
 Financial Resource: Bank loan  
 Intercrops: (1<sup>st</sup> year only) Black gram  
 Yield obtained: 20 bags/1.2 ha.  
 Income Gross - Rs.48,000/- (US\$ 1000)  
 Net - Rs.23,000/- (US\$ 479)  
 Motivation: Exposure visit to other farmer plantation.  
 % of income thru tree farming: Crop is growing. It may reach 50%.
- b) Name of the Farmer: Shri D.Chandrasekhara Rao  
 Father's Name: Venkata Subbaiah  
 Age: 48 years  
 Qualification: 10<sup>th</sup> Class  
 Family: Single Family  
 Total family members: 4 (wife & two children)  
 Total Land Holding: 3.6 hectares  
 Status of Land: 2.5 hectares - ancestral  
 1.1 hectares - purchased  
 Area of Plantation: 1 hectares  
 Planting Date: 20.9.2000  
 Species Planted: Eucalyptus 'Bhadrachalam' Clones  
 Irrigation Facility: No assured irrigation, but back waters of Thermal power station is available.  
 Phases of Plantation: Planted in one phase.  
 Other Crops under cultivation: Chilly - 1 ha.  
 Cotton - 0.8 ha.  
 Paddy - 0.8 ha.  
 Labor Employed: Family members - 35 man days  
 Hired labourers - 45 man days (male)  
 70 persondays (female)  
 Financial Resource: Bank loan  
 Intercrops: (1<sup>st</sup> year only) Blackgram  
 Yield obtained: 15 bags/1 ha.  
 Income Gross - Rs.35,000/- (US\$ 729)  
 Net - Rs.20,000/- (US\$ 416)

Motivation:	Faced labor problem with other crops & fluctuations in market price of agricultural commodities. Also exposure visit to other farmer plantation.
% of income thru tree farming:	Crop is growing. It may reach 25%.
c) Name of the Farmer:	Shri M Venkateswara Rao
Father's Name:	Subbaiah
Age:	55 years
Qualification:	Illiterate
Family:	Joint Family
Total family members:	6 (wife, son, daughter-in-law & two grand children)
Total Land Holding:	4.2 hectares
Status of Land:	0.8 ha. - ancestral 2.8 ha. - purchased 0.6 ha. - leased
Area of Plantation:	0.8 hectares
Planting Date:	20.9.2000
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Sugarcane - 2.4 ha. Paddy - 1 ha.
Labour Employed:	Family members - 25 man days Hired labourers - 50 man days (male) 65 person days (female)
Financial Resource:	Bank loan
Intercrops (1 <sup>st</sup> year only):	Black gram
Yield obtained:	14 bags/0.8 ha.
Income	Gross - Rs.28,000/- (US\$ 583) Net - Rs.18,000/- (US\$ 375)
Motivation:	Exposure visit to other farmer plantation.
% of income thru tree farming:	Crop is growing. It may reach 20%.
d) Name of the Farmer:	Shri Ch Venkata Rattaiah
Father's Name:	Venkaiah
Age:	49 years
Qualification:	8 <sup>th</sup> Class
Family:	Single Family
Total family members:	4 (wife & two daughters)
Total Land Holding:	7.2 hectares
Status of Land:	0.8 ha. - Ancestral 2.4 ha. - Purchased 4.0 ha. - leased
Area of Plantation:	0.8 hectares
Planting Date:	26.10.2000
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Chilli - 3.6 ha. Sugar cane - 0.8 ha.

Labour Employed:	Blackgram - 0.8 ha. Maize - 1.2 ha. Hired labourers - 55 man days (male) 85 person days (female)
Financial Resource:	Bank loan
Intercrops (1 <sup>st</sup> year only):	Cotton
Yield obtained:	20 quintals/0.8 ha.
Income	Gross - Rs.36,000/- (US\$ 750) Net - Rs.8,000/- (US\$ 166)
Motivation:	By seeing adjacent plantations
% of income thru tree farming:	Crop is growing. It may reach 20%.
e) Name of the Farmer:	Shri D.Nageswara Rao
Father's Name:	Venkateswara Rao
Age:	47 years
Qualification:	Intermediate (10 + 2)
Family:	Single Family
Total family members:	4 (wife & two children)
Total Land Holding:	1.6 hectares
Status of Land:	1.6 ha. - ancestral
Area of Plantation:	0.4 hectares
Planting Date:	20.9.2000
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Gave on Lease - 1.2 ha.
Labour Employed:	Hired labourers - 31 man days (male) 42 person days (female)
Financial Resource:	Savings
Intercrops (1 <sup>st</sup> year only):	Blackgram
Yield obtained:	5 bags/0.4 ha.
Income	Gross - Rs.10,000/- (US\$ 208) Net - Rs.5,000/- (US\$ 104)
Motivation:	By seeing adjacent plantations
% of income thru tree farming:	Crop is growing. It may reach 15%.
f) Name of the Farmer:	Smt.D.Suseela
Husband's Name:	Ranga Rao
Age:	35 years
Qualification:	5 <sup>th</sup> Class
Family:	Single Family
Total family members:	4 (wife & two children)
Total Land Holding:	3.2 hectares
Status of Land:	1.6 ha. - ancestral 1.6 ha. - leased
Area of Plantation:	0.4 hectares
Planting Date:	20.9.2000
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Chillis - 0.8 ha. Black gram - 0.8 ha.

Labour Employed:	Green gram - 0.8 ha. Jowar - 0.4 ha. Family Members - 10 man days Hired labourers - 21 man days (male) 42 person days (female)
Financial Resource:	Bank Loan
Intercrops (1 <sup>st</sup> year only):	Black gram
Yield obtained:	5 bags/0.4 ha.
Income	Gross - Rs.10,000/- (US\$ 208) Net - Rs.5,000/- (US\$ 104)
Motivation:	By adjacent farmers
% of income thru tree farming:	Crop is growing. It may reach 20%.
g) Name of the Farmer:	Shri J Venkateswara Rao (Scheduled Caste farmer)
Father's Name:	Panakalu
Age:	63 years
Qualification:	Illiterage
Family:	Joint Family
Total family members:	13 (wife, three sons, three daughter-in-laws and grand children)
Total Land Holding:	4.4 hectares
Status of Land:	1.2 ha. - Purchased 3.2 ha. - leased
Area of Plantation:	0.4 hectares
Planting Date:	20.9.2000
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Paddy - 0.8 ha. Cotton - 1.2 ha. Blackgram - 0.4 ha. Chilli - 1.6 ha.
Labour Employed:	Family Members - 25 man days Hired labourers - 20 man days (male) 20 person days (female)
Financial Resource:	Bank Loan
Intercrops (1 <sup>st</sup> year only):	Black gram
Yield obtained:	6 bags/0.4 ha.
Income	Gross - Rs.11,000/- (US\$ 229) Net - Rs.4,000/- (US\$ 83)
Motivation:	By adjacent farmers
% of income thru tree farming:	Crop is growing. It may reach 15%.
h) Name of the Farmer:	Shri G.Pichaiah
Father's Name:	Venkaiah
Age:	55 years
Qualification:	Illiterate
Family:	Joint Family
Total family members:	5 (wife, son, daughter-in-law, & one grand-daughter)
Total Land Holding:	4 hectares
Status of Land:	0.8 ha. - ancestral



Area of Plantation:	1.6 ha. - purchased 1.6 ha. - leased
Planting Date:	0.4 hectares 20.9.2000
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Chilly - 1.2 ha. Paddy - 0.8 ha. Cotton - 1.6 ha.
Labour Employed:	Hired labourers - 25 man days (male) 45 person days (female)
Financial Resource:	Bank Loan
Intercrops (1 <sup>st</sup> year only):	Blackgram
Yield obtained:	6 bags/0.4 ha.
Income	Gross - Rs.12,000/- (US\$ 250) Net - Rs.6,000/- (US\$ 125)
Motivation:	Exposure visit to other farmer plantation
% of income thru tree farming:	Crop is growing. It may reach 15%.
i) Name of the Farmer:	Shri P Satyanarayana
Father's Name:	Sivudu
Age:	45 years
Qualification:	I.T.I.
Family:	Joint Family
Total family members:	4 (wife & parents)
Total Land Holding:	9.2 hectares
Status of Land:	9.2 ha. - ancestral
Area of Plantation:	1.6 hectares
Planting Date:	19.7.2001
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Cotton - 3.2 ha. Black gram - 1.2 ha. Paddy - 0.8 ha. Chilly - 2.4 ha.
Labour Employed:	Hired labourers - 45 man days (male) 90 person days (female)
Financial Resource:	Savings
Intercrops (1 <sup>st</sup> year only):	Blackgram
Yield obtained:	15 bags/1.6 ha.
Income	Gross - Rs.37,500/- (US\$ 781) Net - Rs.22,500/- (US\$ 469)
Motivation:	Exposure visit to other farmer plantation
% of income thru tree farming:	Crop is growing. It may reach 15%.
j) Name of the Farmer:	Shri A Venkateswara Rao
Father's Name:	Tirupataiah
Age:	45 years
Qualification:	7 <sup>th</sup> Class
Family:	Single Family
Total family members:	4 (wife & two children)

Total Land Holding:	4 hectares
Status of Land:	1.6 ha. - ancestral 2.4 ha. - leased
Area of Plantation:	0.4 hectares
Planting Date:	19.7.2001
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Cotton - 1.2 ha. Chilli - 1.2 ha. Paddy - 1.2 ha.
Labour Employed:	Family members - 7 mandays Hired labourers - 13 mandays (male) 25 persondays (female)
Financial Resource:	Bank Loan
Intercrops (1 <sup>st</sup> year only):	Blackgram
Yield obtained:	3.5 bags/0.4 ha.
Income	Gross - Rs.6,300/- (US\$ 131) Net - Rs.2,500/- (US\$ 52)
Motivation:	Exposure visit to other farmer plantation
% of income thru tree farming:	Crop is growing. It may reach 20%.
k)	
Name of the Farmer:	Shri D Subba Rao
Father's Name:	Chandraiah
Age:	50 years
Qualification:	Illiterate
Family:	Single Family
Total family members:	3 (wife & daughter)
Total Land Holding:	4 hectares
Status of Land:	2.0 ha. - ancestral 2.0 ha. - purchased
Area of Plantation:	0.4 hectares
Planting Date:	19.7.2001
Species Planted:	Eucalyptus 'Bhadrachalam' Clones
Irrigation Facility:	No assured irrigation, but back waters of Thermal power station is available.
Phases of Plantation:	Planted in one phase.
Other Crops under cultivation:	Blackgram - 0.4 ha. Gave on lease - 3.2 ha.
Labour Employed:	Hired labourers - 20 mandays (male) 35 persondays (female)
Financial Resource:	Savings
Intercrops (1 <sup>st</sup> year only):	Blackgram
Yield obtained:	3.5 bags/0.4 ha.
Income	Gross - Rs.6,300/- (US\$ 131) Net - Rs.2,500/- (US\$ 52)
Motivation:	Exposure visit to other farmer plantation
% of income thru tree farming:	Crop is growing. It may reach 20%.

## CASE STUDIES ON EXTENT OF PLANTATION AREA

Less than 1 ha

1) Name of the farmer:	Shri MNV Prasad
Father's Name:	Chalapathi
Age:	46 years
Village:	Nimmalagudem
Mandal:	Buttaigudem
District:	West Godavari

With agriculture family background, Mr.MNV Prasad has a small family and has three daughters. First daughter, B.Com, second daughter B.Sc. and third daughter post graduate in Chemistry. He had planted Bhadrachalam clonal saplings in the following manner.

1995	2 acres
1996	2 acres
1997	2 acres
1998	3 acres
2001	7 acres.

### ***Seen cousin's plantation and motivated by ITC managers, for the following reasons***

Less labour intensive, no pest problems, doesn't need intensive management & regular irrigation, less problems from biotic interference and natural calamities like floods & drought. Above all, there is an assured market from ITC Limited Paperboards & Specialty Papers Division.

### **Economics**

Clones Planted:	3 & 7
Month of Planting:	August, 1996
Area:	0.85 ha.
No.of saplings Planted	2000
No.of saplings Survived	1870

	Nature of Activity	Amount Rs
1 <sup>st</sup> Year	Ploughing	800.00
	Planting stock @ Rs.8.50 including transportation	15895.00
	Pitting & Planting	1800.00
	Neem Powder	200.00
	BHC - 50 Kgs	900.00
	FYM 8 tractor loads	2000.00
	Weed Management (application of Glycil 4 ltrs)	1600.00
	Irrigation twice	<u>800.00</u>
	Total:	<u>23995.00</u>
	2 <sup>nd</sup> Year	Ploughing (4 times)
Fertilizer		2120.00
Irrigation		<u>400.00</u>
Total:		<u>4120.00</u>

3 <sup>rd</sup> Year	Ploughing (4 times)	1600.00
	Fertilizer	<u>2120.00</u>
	Total:	<u>3720.00</u>
4 <sup>th</sup> Year	Ploughing (4 times)	1600.00
	Fertilizer	<u>2120.00</u>
	Total:	<u>3720.00</u>
	Cutting & Transportation expenses:	
	Cutting, debarking, loading & transportation @ Rs.380/- per MT	49400.00
	Expenses - Grand Total:	84955.00
	Expenses per hectare	99947.00
<u>Income:</u>	Yield - 130 MT @ Rs.1450/- per MT	188500.00
	Net Returns	103545.00
	Net Returns per hectare	121817.65

2) Name of the farmer:	Shri K Janakiramaiah
Age:	42 years
Qualification:	Intermediate (10+2)
Village:	Dippakayalapadu
Mandal:	Koyyalagudem
District:	West Godavari

With agriculture background, Mr.K.Janakiramaiah has a small family with wife Smt.Achyutavalli, one son Yasasvi studying 9<sup>th</sup> class and one daughter Sudhishna studying 7<sup>th</sup> class, four members in total. Planted 'Bhadrachalam' clonal saplings in the following manner:

1994	5 acres
1995	5 acres
1996	4 acres
1999	5 acres
2000	36 acres
2001	3 acres.

### **Motivated by ITC managers for the following reasons**

- ◆ Less labour intensive,
- ◆ Minor fluctuations in market.
- ◆ Can cut & sell the plantation produce on need basis.
- ◆ Number of irrigations are less.
- ◆ Doesn't need intensive management unlike tobacco and sugarcane.

### **Economics**

Clones Planted:	3 & 7
Month of Planting:	January, 1995
Area:	0.64 ha.
No.of saplings Planted	1348

No.of saplings Survived	1266	
	<b>Nature of Activity</b>	<b>Amount Rs</b>
1 <sup>st</sup> Year	Ploughing	700.00
	Planting stock @ Rs.6.50 including transportation	8230.00
	Pitting & Planting	1500.00
	Ploughing	1500.00
	Irrigation	<u>2500.00</u>
	Total:	<u>14430.00</u>
2 <sup>nd</sup> Year	Ploughing (5 times)	1500.00
	Fertilizer	900.00
	Irrigation	<u>2500.00</u>
	Total:	<u>4900.00</u>
3 <sup>rd</sup> Year	Inter-crop - Sunnhemp	200.00
	Ploughing (5 times)	1500.00
	Irrigation	<u>2500.00</u>
	Total:	<u>4200.00</u>
4 <sup>th</sup> Year	Fertilizer	700.00
	Ploughing	1500.00
	Irrigation	<u>2500.00</u>
	Total:	<u>4700.00</u>

#### **Cutting & Transportation expenses**

Cutting, loading @ Rs.110/- per MT	13090.00
Transportation charges	23800.00
Miscellaneous expenses	<u>5950.00</u>
Total:	<u>42840.00</u>

Expenditure - Grand Total: 71070.00

Expenditure per hectare 111046.00

#### **Income**

Yield - 119 MT @ Rs.1450/- per MT	172550.00
Net Income	101480.00
Net Income per hectare	158562.00

#### **1 to 5 hectares**

Name of the farmer:	Shri Guglothu Eerya Naik
Father's Name:	Parthya
Age:	35 years
Village:	Tekulabanzar
Mandal:	Chandrugonda
District:	Khammam

With agriculture background, Mr.Guglothu Eerya Naik has a joint family with wife Lakshmi, one daughter studying 9<sup>th</sup> class, two sons studying 7<sup>th</sup> class and 5<sup>th</sup> class, brother, brother's wife and brother's children. He was motivated by ITC managers to take-up Bhadrachalam Eucalyptus clonal plantation because of the following reasons:

- ◆ Less expenditure compared to commercial crops
- ◆ Less involvement, enabling him to concentrate on other activities.
- ◆ Less problems from biotic interference and natural calamities like floods & drought.
- ◆ Assured market.

He had planted 'Bhadrachalam' clonal saplings in the following manner:

Clones Planted:	3, 7 & 27
Month of Planting:	August, 2001
Area:	2.40 ha.
No.of saplings Planted:	6000
No.of saplings Survived:	5400

### Economics

	Nature of Activity	Amount Rs
1 <sup>st</sup> Year	Ploughing	1800.00
	Planting stock @ Rs.4/-	24000.00
	Saplings transportation to field	1500.00
	Pitting & Planting	6000.00
	Anti termite (Chloropyriphos)	1800.00
	Fertilizer	1260.00
	Ploughing (2 times)	<u>3000.00</u>
	Total:	<u>39360.00</u>
2 <sup>nd</sup> Year	Ploughing (3 times)	4800.00
	Fertilizer	2200.00
	Total:	<u>7000.00</u>
3 <sup>rd</sup> Year	Ploughing (3 times)	4800.00
	Fertilizer	2200.00
	Total:	<u>7000.00</u>
4 <sup>th</sup> Year	Ploughing (3 times)	5000.00
	Fertilizer	2500.00
	Total:	<u>7500.00</u>
5 <sup>th</sup> Year	Ploughing (3 times)	5000.00
	Fertilizer	3000.00
	Total:	<u>8000.00</u>

### Cutting & Transportation expenses

Cutting, loading & transportation @ Rs.370/- per MT	111000.00
Expenditure - Grand Total:	179860.00
Expenditure per hectare	74942.00

### Income

Yield - 300 MT @ Rs.1400/- per MT (@ 125 tonnes per hectare)	420000.00
Net Income	240140.00
Net Income per hectare	100058.00

### 5 to 10 hectares

Name of the farmer:	Shri G Veerabhadra Rao
Father's Name:	Satyanandam
Age:	33 years
Village:	Kapavaram
District:	Khammam

With agriculture background, Mr.G.Veerabhadra Rao has a small family with wife Smt.Vijayabharathi and son Abhiram. He had planted Bhadrachalam clonal saplings in the following manner:

2001	5 acres
2002	10 acres

Mr.Veerabhadra Rao is an employee of ITC Limited, Paperboards & Specialty Papers Division and was motivated by plantation managers to take-up clonal plantation after showing him the farmers' plantations in the nearby village.

Month of Planting:	Dec. 2001 & July 2002
Area:	5.80 ha.
No.of saplings Planted	13050
Espacement:	3 x 1.5 M.

### Economics:

	<u>Nature of Activity</u>	<u>Amount Rs.</u>
1 <sup>st</sup> Year	Mechanical Uprootal (proclainer) including loading into lorry & transportation charges	48000.00
	Site preparation i.e. balance uprootal, filling of gaps etc.	22000.00
	Fencing charges (with iron barbed wire)	38000.00
	Ploughing	13000.00
	Alignment charges	500.00
	Pitting & Planting	20000.00
	Anti-termite treatment	3200.00
	Fertilizer	5820.00
	Planting Stock cost including transport	58725.00
	Irrigation	3500.00
	Water pipes, electricity charges	10000.00
	Ploughing (3 times)	21000.00
	Soil Working	2000.00
	Watch & Ward Rs.1200/- p.m.	14400.00
	Total:	<u>260145.00</u>
2 <sup>nd</sup> Year	Ploughing (3 times)	21000.00
	Fertilizer	27300.00
	Irrigation	6000.00
	Watch & Ward	14400.00
	Total:	<u>68700.00</u>

3 <sup>rd</sup> Year	Ploughing (3 times)	21000.00
	Fertilizer	27300.00
	Irrigation	6000.00
	Watch & Ward	<u>14400.00</u>
	Total:	<u>68700.00</u>
4 <sup>th</sup> Year	Ploughing (3 times)	21000.00
	Fertilizer	27300.00
	Irrigation	6000.00
	Watch & Ward	<u>14400.00</u>
	Total:	<u>68700.00</u>
5 <sup>th</sup> Year	Ploughing (3 times)	21000.00
	Fertilizer	27300.00
	Irrigation	6000.00
	Watch & Ward	<u>14400.00</u>
	Total:	<u>68700.00</u>
6 <sup>th</sup> Year	Cutting & Transportation expenses	
	Cutting, loading & transportation @ Rs.250/- per MT	362500.00
	Expenses - Grand Total:	897445.00
	Expenses per hectare	154732.00
<b>Income</b>		
	Yield - 1450 MT @ Rs.1400/- per MT	2030000.00
	Net Income	1132555.00
	Net Income per hectare	195268.00

### 10 to 50 hectares

Name of the farmer:	Dr.P.V.Ramana
Father's Name:	P.Sundara Rao
Age:	45 years
Qualification:	M.B.B.S.
Village:	Sundernagar
District:	Khammam

Dr.P.V.Ramana, MBBS from a well educated family, worked as Medical Officer in M/s.Singareni Collieries. Since 1983, he is occupied with development of his 40 hectares of land. He has taken-up the clonal plantation in his land in the following manner:

1999	28 hectares
2000	12 hectares

Motivated to take-up the clonal plantations because of the following reasons:

- ◆ Convinced with the productivity of clonal plantations.
- ◆ Fluctuations in market price of cashew, at the same time assured market with buy back guarantee for clonal plantation produce.
- ◆ Pest menace in cashew brought down yields.



**Economics**

Month of Planting: July 1999 & July 2000  
 Area: 40 ha.  
 No. of saplings Planted 64000

Expenditure:

	<u>Nature of Activity</u>	<u>Amount Rs.</u>
1 <sup>st</sup> Year	<b>Mechanical</b>	
	Mechanical Uprootal of cashew stumps (100/ha.) including loading into lorry & transport	120000.00
	Site preparation i.e. uprooting balance root System, picking of bark etc., stacking & burning	28000.00
	Filling of excavated soil	<u>16000.00</u>
		<u>164000.00</u>
	<b>Manual</b>	
	Manual uprootal of cashew stumps (100/ha.) Including filling of excavated soil	140000.00
	Loading & transport	<u>28000.00</u>
	Total:	<u>168000.00</u>
	Ploughing	40000.00
	Staking - 2.5 x 2.5 M.	6400.00
	Cost of stakes	16000.00
	Mechanical Pitting	102400.00
	Planting	22400.00
	Internal transport & basal dressing	18000.00
	Cost of anti-termite treatment (aldrin & thimmet)	20000.00
	Fertilizer	16000.00
	Planting stock @ Rs.4.50 including transport	288000.00
	Anti termite treatment 6 times (with application)	80000.00
	17:17:17 NPK fertilizer @ 50 gm with appln.	28800.00
	Harrowing in first year - 3 times	80000.00
	Weeding - twice	32000.00
	Soil working	32000.00
	Shoot cutting - 3 times	6000.00
	Watch & Ward	<u>18000.00</u>
	Total:	<u>970000.00</u>
2 <sup>nd</sup> Year	Harrowing criss cross - 3 times	80000.00
	Fertilizer	66000.00
	Shoot cutting	6000.00
	Watch & Ward	18000.00
	Total:	<u>170000.00</u>
3 <sup>rd</sup> Year	Harrowing criss cross - 3 times	80000.00
	Fertilizer	100000.00
	Shoot cutting	6000.00
	Watch & Ward	18000.00
	Total:	<u>204000.00</u>

Yield for 40 ha. @ 75 MT/ha. = 3000 MT.

### **Cutting & Transportation expenses**

Cutting, loading, transportation and misc. expenses @ Rs.400/- per MT	1200000.00
Expenditure - Grand Total:	2544000.00
Expenditure per hectare	63600.00
<b>Income</b>	
3000 MT @ Rs.1400/- per MT	4200000.00
Net Income	1656000.00
Net Income per hectare	41400.00

### **SILVICULTURAL PACKAGES FOR BETTER MANAGEMENT OF PLANTATIONS**

A number of criteria need to be made exigent for better management practice, which are mentioned below.

**Selection of Entrepreneur:** Farmers, absentee landlords, businessmen. The participant should look at diversification to achieve sustainability through agriculture activity. He should be resourceful, economically sound, to cope up with the high expenses and long gestation of the crop. Estimated cost benefits are mentioned in Table 1.

**Site:** It is mandatory to study Soil Profile. pH should be less than 8.5, and Electrical conductivity should be less than 2 milli mhos/cm. Water logging and highly eroded sites are to be avoided. 6 ft. deep neutral soils are preferred.

**Site preparation:** Very good site preparation by mechanical means is required to facilitate good aeration in the soil, which allows maximum percolation of rain-water.

**Planting stock:** Genetically superior, fairly disease resistant and well hardened quality clonal planting stock ensures optimum survival and growth rate which results in better productivity. Minimum age of the planting stock should be 6 months from the date of setting.

**Planting:** Spacing should be 3 x 2 meters and pit size - 30 x 30 x 30 cm. The appropriate planting time is the beginning of the monsoon season. Pit should be filled with soil, leaving a space of 7.5 cm in red soils and 5 cm in black soils. Pot watering should be continued for 7 to 10 days. Phorate @ 2 gm per pit should be applied at the time of planting to protect the sapling from root grub. 15 days after planting the saplings should be treated with anti termite chemical (Chloropyriphos) @ 2 to 3 ml per liter water.

## Operations

**Weed management** - Timely and proper weed management avoids competition from weeds and allow the saplings to pickup fast growth. Timely weeding operations would improve soil aeration.

**Water conservation** measures enhance the growth almost two times. Such measures, taken up in APFDC plantations boosted up the yields to almost double. It is an actual example happening around Hyderabad.

**Fertilizer Application** - Timely application of fertilizer has been helping the plants to put on more growth. Application of fertilizer during first year for the Eucalyptus 'Bhadrachalam' clonal plantation is as follows:

**Well decomposed FYM** (Farm Yard Manure) should be applied as basal dose. FYM should be spread properly throughout the field and incorporated thoroughly in the soil well before planting. One month after planting NPK in the form of complex @ 20 - 25 gm per plant should be applied by pocketing method (minimum 6" away from the plant and at 4" depth). Proper moisture should be ensured whenever fertilizer is applied. Subsequently every year NPK should be applied in two split doses during the rainy season with a gap of 1 to 1 1/2 months.

**Irrigation** - Timely and on need basis provision of irrigation to the growing plants will enhance the growth by two times to normal growth.

**Ploughing** - Soil working by means of ploughing in between the rows of technology based plantations is very essential which facilitates proper aeration and conservation of moisture. These conditions are essential for the luxuriant growth of the saplings. Deep ploughing is to be done in either direction followed by harrowing. Ploughing twice a year is beneficial.

**Protection of Plantations** - Protection is the foremost thing. Protection from mechanical damages - wrong ploughing practices, biotic interference - cattle, white ants, fire & human beings and chemicals - improper application of phyto-toxic chemicals.

**Monitoring of Plantations** - Samples of 25 trees are measured in the standing population to assess the survival and growth rates. This practice ensures proper accountability of the participating individual or agency.

**TABLE 1**

### COST BENEFITS PER HECTARE OF BHADRACHALAM CLONAL PLANTATION

*Spacing - 3 x 2 M*

S No	OPERATION	UNIT	RATE	QTY	YEARS							TOTAL Rs.
					1	2	3	4	5	6	7	
1	Ploughing	HA	2400	1	2400	2520	2646	2778	2917	3063	3216	19541
2	Alignment / Staking	LS	150		150							150
3	Digging of Pits & Planting	PLANT	1.5	1666	2499							2499
4	Weeding / Cleaning / Soil Working	HA	833	2	1666	1749						3415
5	Cost of Fertilizers / Green Manure	HA	2250	1	2250	2363	2481	2605	2735	2872	3015	18320
6	Cost of Antitermite Treatment	HA	800	2	1600							1600

7	Provision for Fencing/Maintenance	LS	2000		2000	200	200	200	200	200	200	3200
	SUB TOTAL				12565	6832	5327	5583	5852	6135	6431	48725
8	Contingencies			5%	628	342	266	279	293	307	322	2436
	Sub-Total				13193	7173	5593	5862	6145	6441	6753	51161
9	Cost of Plants		8	1750	14000							14000
	Sub-Total				27193	7173	5593	5862	6145	6441	6753	65161
10	Insurance premium			1.25%	340	430	499	573	650	730	815	4036
	Total Cost (per Ha)				27533	7603	6092	6435	6794	7172	7568	69197
11	Gross Returns	Tons	1400	175	(average yield)							
	Net Returns											175803

Note: Land lease amount, interest on investment not taken into consideration.

7.

## AGROFORESTRY MODEL DESIGNING FOR SPECIFIC AREAS WITH SPECIAL REFERENCE TO MOUNTANEOUS REGION OF NEPAL

Bijendra Basnyat and A K Bhattacharya

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### **Abstract**

*The model has been proposed for the 10 ha of land in the mountain region of Nepal. The paper provides the setting of the model development, which highlights gives the overview of the mountain region and scope for the implementation of the agroforestry model. The need for the agroforestry model for the farmers on the basis of his land holding and other characteristics the approaches followed in model formulation and its objectives have been critically examined. The paper further elaborates the site specific agroforestry design, its technical and management attributes and economic analysis.*

### **BACKGROUND**

The mountain region comprises land between 4,877 and 8848 m above the sea level in the Himalayan range, between 1500 and 3000 m above sea level in the Mahabharat Mountain, of the total land area, 147, 481 sq. km, 35 percent are in the mountains. Approximately 7.8 percent of the population lives in this area; Areas with less steep slopes and narrow valleys are used for cultivation in the mountains. The upper limits of cultivation are 4200 m elevations. These high regions can support only the crops like buckwheat, barley or potatoes a year or once every two years. High Himalayan areas are mostly rocky with snowfields and glaciers. Agriculture activities are limited to a minimal tilling of land. Raising of sheep, goats and yaks is common. Meadowlands in the area are used for grazing livestock. Rotational grazing is characteristics of the high altitude areas.

The per capita land of people in mountain area is also decreasing day by day. People are cultivating more land, and converting forest in agriculture land to ensure their food security. Due to the sloppy terrain, and improper cultivation practices the quality and productivity of land are also decreasing very rapidly. Forest areas are also under pressure due to the heavy dependency of people on forest for fodder, fuel wood, and timber. Number of cattle holding per household is also high and people use to leave their cattle in forest for grazing. The main livelihood source in high altitude is livestock rather than cultivation of crop. Decreasing availability and gradual deterioration of quality of fodder are the major problem associated with these people. Soil erosion is the another problem in these areas. To over come with these type of problems Agroforestry is the best option.

Agroforestry as a dynamic, ecologically based, natural resources management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels. Agroforestry is a land use system that involves deliberate retention, introduction or mixture of trees or other woody perennials in crops/animal production to benefit from the resultant ecological and economic intersections (Nair, 1984). Actually Agroforestry is new name for a set of old practices. The major objective of agroforestry is to optimise production and economic returns per unit area, while respecting the principle of sustainable development. The main components of agroforestry systems are trees and shrubs, pasture and livestock, together with the environmental factors of climate, soils and landforms. There are a lot of models available, designed and developed by various institutions for the high altitudes regions based on

land condition, climatic condition, elevation, and soil type etc. Agroforestry models are designed on the problem based like fodder, fuel wood, timber based or grasses based, and erosion control based, rehabilitation and reclamation models. Taking the above factors into accounts the agroforestry model was developed for the farmer for his socio-economic upliftment and livelihood enhancement of the farmer of the mountain region.

## DESIGNING AGROFORESTRY MODEL

### CHARACTERISTICS OF FARMER

#### Location

This model has been designed for 10 ha of land in the mountain region of Nepal. This model was developed for Mr. Ram Prasad, who is one of the progressive farmer in the village but due to various problems, he was not able to secure the food security of the family due to following regions. Box 1 below summarizes the overview of the model.

	<b>Name of Farmer</b>	<b>Ram Prasad</b>
	<b>Location</b>	Lalu VDC, Kalikot District, Far Western Development region, Nepal
	Area	10 ha
	Physiographic region	Mountain
	Farming system	Subsistence
	Model Designed for	Mr. Ram Prasad and family
	Designed by	Regional Agriculture Research Center

### LAND DISTRIBUTION OF THE FARMER

**Table 1: Land distribution**

Land types	Area (ha)	%
Agriculture fields (plain)	3	30
Upland hills (Bari)	4	40
Forest land	3	20
Total	10	100

The different type of land holding of farmer is presented in table 1 below. The household and home garden area constitutes for the 1 ha. The agriculture fields is about 2 hours walk and covers the area of 3 ha from his home in the foothills of the valley. The upland area 4 ha and his private forest (2 ha) is about one hrs walk from his house in the uphill side. Total land area for the farmers is 10 ha of land.

### FARMING SYSTEM

Livestock based farming dominates in the farming system. The basic unit of farming is the individual farm, the land he cultivates the livestock it holds and others available area that may include privately owned forests, pastures and other lands. The main cropping patterns are

Maize – Potato – Wheat  
 Crop – fallow – barley  
 Potato - Fallow

He is practicing the maize- potato-wheat in the low land areas and crop fallow barley and potato- barley in the high land areas. The forest is mainly used for the fodder and fuelwood purposes. The use of farmyard manure is quite common though chemical fertilizer is available at village itself. The cattle are mostly unproductive and are kept for the religio-cultural value. The farming system is oriented towards the subsistence level and productivity is declining day by day.

## EXISTING AGROFORESTRY PRACTICES

The existing agroforestry practices the farmer is following are:

- Meeting the demand of the basic food requirement from the homestead farms.
- Few trees are planted in the bond and border of the agriculture field. The species mostly includes are *Alnus nepalensis*, *Juglance regia*, *Prunus persica* *Morus serrata* etc. These species are planted for the fodder and fuel wood purposes

The analysis of the existing agroforestry systems reveals that

- There is no agroforestry system practiced over the entire villages. People are following traditional agroforestry system to bet their livelihoods.
- The species planted are of less economic importance as well as low yielding capacity.
- The soil erosion is one of the major problems in the highland areas. People are not practicing any system and methods for the control of it.
- The forest is kept for the fuelwood and fodder purposes. No other activities are carried out for the improvement of the forest as well as generating income from it.

### Need for agroforestry intervention

The major problems in the higher altitude have been generated by the high populations, which have exceeded the carrying capacity of the land in most parts of the region. The improper land use system, heavy pressure on forest, improper cultivation practices is the main problems of these areas. Some specific problems which the farmers are facing is:

- Dependency on national forest area for daily use needs like fuel wood, fodder and timber
- Poor productivity of the land as well as use of traditional crops in the regions
- Diminishing wood and forest resources, which has led to an acute shortage of fuel wood and other essential wood products. (80% of fuel used for cooking is normally from wood).
- Large number of cattle population and poor productivity of the cattle
- Shortage of fodder sources for livestock limits livestock integration.
- Land degradation, both in terms of loss of fertility and aggravated erosion
- Lack of income and employment opportunities
- Fragmented land holdings

Thus, there is the lot of scope for the implementation of agroforestry in the farmer's field.

### OBJECTIVES OF THE MODEL

The main objective of the agroforestry model is to optimize the production and economic returns per unit area while respecting the principle of sustainable development. Specifically this model intends to

- To meet the demand of the fodder, fuelwood and timber from their own land through the practice of agroforestry models hence reduce the pressure in the forests
- Increase the productivity of the land as well as cattle for the socioeconomic upliftment.
- Ensure the food security of the family

- To reduce the environmental hazards as erosions, landslides etc. by practicing the different agroforestry models

### **Approaches in designing model**

In order to attain the above objectives, certain agroforestry models have been evolved and standardized combining optimal land use system with the 'agriculture – livestock production system' to give maximum economic returns, simultaneously or sequentially, however, in a manner so as to make them technologically feasible, ecologically sustainable economically viable and socially acceptable. Conforming to the cultural ethos of the people existing agroforestry models must be given due considerations

### **Technical Considerations for Designing of Agroforestry Systems**

- Use of nitrogen-fixing trees or shrubs
- Use of fast growing and deep rooted trees or shrubs for nutrient uptake (nutrient pump)
- Plant trees or shrubs along the contours
- Hedge-row intercropping and synchronize the timing of tree pruning / lopping
- Practice crop rotation for the intercrops
- Plant cover crop or green manure crops in fallow areas

### **APPROACH**

The 3 D approach was followed for designing the agroforestry model. The approach includes

<b>Diagnosis</b>	Diagnosis of the existing agroforestry practices, problems assessment, scope for future interventions
<b>Design</b>	Design of the agroforestry models and its expected return
<b>Delivery</b>	Delivery mechanism of the suggested model and impact assessment

The agroforestry models is designed in such a way that each model is

- Technically feasible
- Ecologically sustainable
- Economically viable
- Socially acceptable

The models was designed by giving due consideration to the following factors.

- **Culture specificity:** The value of the agroforestry model perceived by villagers depends upon his cultural beliefs, values, faiths into delivery system and their past experiences with the existing practices, certain values associated are functional value, futuristic value, social value and status value.
- **Need specificity:** The needs of various groups of people differ according to their demographic and socio-economic conditions. The needs of the landowners, cattle owners and daily wage earners have different emphasis.
- **Site specificity:** Different type of the site had different requirements of the crops and models. Thus, it must be proposed according with the site specification and site conditions giving due consideration of the ecological and Site condition.
- **Technology specificity:** Make the agroforestry activities, an economically viable and environmentally sound proposition, increasing cropping intensity both in space and time dimensions and adoption of multiple cropping, are being resorted



to. The tree crop interactions, design innovation and site capacity, phenological characteristics and management interventions are given due consideration while designing model.

### SUGGESTED AGROFORESTRY MODEL

The agroforestry model suggested is as follows. This model has been suggested on the basis of land holding of the farmers and suitability with the local conditions giving due considerations of the need and requirements of the farmers. The specific designs for each type of models and details plans and cost layout are summarized in later sections. For the control of erosions hazards and landslides, no new models has been suggested as it is assumed that practicing these models will lead to the conservation of soil and moisture as well as erosion control.

Area	Model	Species
Forest	<b>Silvi-horticulture</b>	<i>Alnus nepalensis</i> + apple/citrus/pineapple Quercus + Pineapple
	<b>Agri-silviculture</b>	<i>Celtis australis/Grevia optiva Schima wallichii /Anlus+</i> Ginger/ Termeric/cardamom <i>Michelia champaca/Quercus + Ginger/ Termeric</i>
	<b>Pure silviculture</b>	Schima wallichii+ <i>Alnus nepalensis</i> Schima + <i>Acacia mangium / A. meansii</i>
Low land	<b>Agri-silviculture</b>	<i>Celtis australis/Grevia optiva Schima wallichii /Anlus+</i> Maize, Millet, Wheat <i>Michelia champaca/Quercus + Millet/ maize/cabbage</i>
Upland	<b>Agri-silviculture</b>	<i>Celtis australis/Grevia optiva Schima wallichii /Anlus+</i> Maize, Millet, Wheat <i>Michelia champaca/Quercus + Millet/ maize/cabbage</i>
	<b>Agri-Silvi-pasture:</b>	<i>Schima wallichii + Setaria aphacelata</i> (Nandi grass) <i>Alnus / Michelia champaca + Setaria/ guinea</i> <i>/Thysanolaena agrostis</i> (Broom grass)+ Maize, Millet, Wheat <i>Schima wallichii + Setaria/ guinea /Thysanolaena</i> <i>agrostis</i> (Broom grass) ++ Millet/ maize/cabbage

### Suitable Species for Agroforestry

<i>Anthocephalus chinensis</i>	<i>Poplar</i>	<i>Erythriana poeppigiana</i>
<i>Duabanga grandiflora</i>	<i>Anlus nepalsis</i>	<i>Mimosa scabrella</i>
<i>Aquilaria agallocha</i>	<i>Gmelina arborea</i>	<i>Sesbania sesban</i>
<i>Spondias axillaris</i>	<i>Spondias axillaris</i>	<i>Trema orientalis</i>
<i>Cedrela serrata</i>	<i>Melia composita</i>	<i>Gleditsia triacanthus</i>
<i>Terminalia myriocarpa</i>	<i>Quercus serrata</i>	<i>Albibizia lebbeck</i>

## Grass Species

<i>Paspalum notatum</i>	<i>Lespedeza striata</i>	<i>Cynodon dactylon</i>
<i>Axonopus affinis</i>	<i>Trifolium repens</i>	<i>Paspalum dilatatum</i>

## Species for Agroforestry in High Altitude with specific uses

SPECIES	USES
<i>Alnus nepalensis</i>	Timber, Fuel wood, Soil conservation
<i>Juglans regia</i>	Timber, Carving, fruit
<i>Morus serrata</i>	Fodder, Sports article, Furniture, Toys
<i>Populus nigra</i>	Timber, match wood, Pulp, Fuel wood, Ornamental
<i>Prunus persica</i>	Fruits, Timber, Fuel
<i>Quercus incana</i>	Agriculture implements, Fuel, Fodder, Tussar silk
<i>Robinia pseudoacacia</i>	Fuel wood, Fodder, Soil Conservation
<i>Salix alba</i>	Bats, Match, Tools, Fuel wood, Fodder

The model was designed on the basis of the parameters discussed above.

## FOREST AREA

The models for the forest area have been suggested on the basis of following assumptions.

- Farmers are willing to manage the forest under the agroforestry system.
- There are no marketing problems of products, the farmer produces.
- All the materials and technology are available in the village itself.

Based on the following assumptions, three models has been suggested in for the management of the forest land.

## Model overview

The model for plantation is summarized in table 1 below. The total forest area is divided into three plots where three different models are followed for the better yield as well as for enhancing the productivity of the crops.

**Table 1 - Overview of the model**

	Silvi-horticulture	Agri-silviculture	Pure silviculture
<b>Location</b>	Forest	Forest	Forest
<b>Year of Plantation</b>	1995	1995	1995
<b>Area</b>	0.75 Hareli	0.75 ha	1.5 ha
<b>Combination</b>	<i>Alnus nepalensis</i> + apple/citrus/pineapple Quercus + Pineapple	<i>Celtis australis/Grevia optiva</i> <i>Schima wallichii</i> /Anlus+ Ginger/ Termeric/cardamom <i>Michelia champaca</i> /Quercus + Ginger/ Termeric	<i>Schima wallichii</i> + <i>Alnus nepalensis</i> <i>Schima</i> + <i>Acasia mangium</i> / <i>A. meansii</i>
<b>Purpose</b>	Income and soil conservation	Income and soil fertility maintenance	Income, erosion control, soil

			conservation
<b>Rotation</b>	5 years of tress and no rotation for agriculture crops	5 years of tress and no rotation for agriculture crops	5 years
<b>Felling system</b>	Selection felling for trees	Selection felling for trees	Selection felling for trees

## MANAGEMENT TECHNIQUES

The plantation techniques for each type of the models are summarized in table 2. The trees already exist in the forests so; no methods for planting trees are suggested here. The planting techniques for the crops are dealt in this section.

**Table 2 - Management techniques**

<b>Name of Plantation</b>	<b>Silvi-horticulture</b>	<b>Agri-silviculture</b>	<b>Pure silviculture</b>
<b>Site preparation</b>	Manually and plauging upto 10 cm suitable for cultivation of crops	Manually and plauging upto 10 cm suitable for cultivation of crops	None
<b>Planting materials</b>	Seedlings		
<b>No of seedlings/stumps</b>	500		
<b>Spacement</b>	2m * 2m		
<b>Manureing</b>	No use of organic fertilizer Use of chemical fertilizer during plantation only	No use of organic fertilizer Use of chemical fertilizer during plantation onlu	None
<b>Pit size</b>	45 cu. Cm	45 cu. Cm	
<b>Pit preparation</b>	Mechanical means	Mechanical means	
<b>Lay out of plots</b>	Row	Row	
<b>Soil working</b>	Upto the third year of plantation, deep mechanical ploughing	Upto the third year of plantation, deep mechanical ploughing	
<b>Watering</b>	Rainfed	Rainfed	Rainfed
<b>Soil and moisture conservation</b>	None	None	None
<b>Weeding</b>	As required based on weed growth	As required based on weed growth	None
<b>Silviculture operations</b>	None	None	None
<b>Harvesting</b>	Annual for crops and selection system for trees	Annual for crops and selection system for trees	Selection system for trees
<b>Protection</b>			
<b>Grazing</b>	Not allowed	Not allowed	Not allowed
<b>Insect pest/diseases</b>	Use of chemicals as and when required	Use of chemicals as and when required	Use of chemicals as and when required
<b>Fire</b>	Fire control lines e.g.	Fire control lines	Fire control lines

## COST OF PRODUCTION

The cost of production and estimated return from each type of model is summarized in table 3 below. Site preparation includes the for initial preparation of the crops. The figures below are estimated figure calculated on the basis of production potentiality of site and estimated return. Input cost includes the price of seeds, chemical fertilizers, pesticides and insecticides cost. Labor cost is taken as the wage labor required for the different operations and tending activities. Net return from this model will be Rs 11,400 per annum where the domestic consumption is not taken into accounts while calculating revenue part.

**Table 3 - Estimated cost and return in Rs.**

	<b>Silvi-horticulture</b>	<b>Agri-silviculture</b>	<b>Pure silviculture</b>	<b>Total cost</b>
<b>Costs</b>				
<b>Site preparation cost</b>	1500	1000		3000
<b>Inputs cost</b>	500	700	200	1400
<b>Labor cost</b>	4500	4000	1500	11000
<b>Marketing and transportation cost</b>	500	800	2000	3300
<b>Other cost</b>	400	500	800	1700
<b>Total cost</b>	<b>7400</b>	<b>7000</b>	<b>4500</b>	<b>20400</b>
Crops	4800	4500	0	9300
Trees	5000	6000	10000	19000
Total	9800	10500	10000	28300
<b>Return</b>	<b>2400</b>	<b>3500</b>	<b>5500</b>	<b>11400</b>

Note: Estimated figure

## UPLAND AND LOW LAND AREA

Different models has been suggested for the upland and low land area. The model and species composition will remain same for all the area except the plantation techniques for the tree. In the low land area, the trees are planted in blocks where as in upland area, the trees are planted in rows or in scattered way. Few fruit trees species as apple, citrus will be planted also.

Following models are suggested for the agriculture fields.

<b>Low land</b>	<b>Agri-silviculture</b>	<i>Celtis australis</i> / <i>Grevia optiva</i> <i>Schima wallichii</i> / Anlus + Maize, Millet, Wheat <i>Michelia champaca</i> / Quercus + Millet / maize / cabbage
<b>Upland</b>	<b>Agri-silviculture</b>	<i>Celtis australis</i> / <i>Grevia optiva</i> <i>Schima wallichii</i> / Anlus + Maize, Millet, Wheat <i>Michelia champaca</i> / Quercus + Millet / maize / cabbage

	<b>Agri-Silvi-pasture:</b>	<i>Schima wallichii</i> + <i>Setaria aphacelata</i> (Nandi grass) <i>Alnus</i> / <i>Michelia champaca</i> + <i>Setaria/ guinea</i> <i>/Thysanolaena agrostis</i> (Broom grass)+ Maize, Millet, Wheat <i>Schima wallichii</i> + <i>Setaria/ guinea</i> / <i>Thysanolaena</i> <i>agrostis</i> (Broom grass) ++ Millet/ maize/cabbage
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The plantation techniques, management interventions and expected return are summarized in following sections. This models has been suggested on the basis of following assumptions.

- Farmers is willing to practice this models and is economically feasible.
- The use of the tree species will help to reduce the soil erosions as well as grass species are used as soil binding as well as fodder for animal.
- There are no marketing problems of products, the farmer produces.
- All the materials and technology are available in the village itself

## OVERVIEW OF MODEL

The model for plantation is summarized in table below. The total forest area is divided into three plots where three different models are followed for the better yield as well as for enhancing the productivity of the crops.

**Table 4 - Overview of the model**

	<b>Agri-silviculture</b>	<b>Agri-silviculture</b>	<b>Agri-Silvi-pasture:</b>
<b>Location</b>	Low land	Up land	Up land
<b>Year of Plantation</b>	1995	1995	1995
<b>Area</b>	3 ha ( 0.5 ha tree and 2.5 crop land)	3 ha ( 0.5 ha tree and 2.5 crop land)	
<b>Combination</b>	<i>Celtis australis/Grevia optiva Schima wallichii</i> /Anlus+ Maize, Millet, Wheat <i>Michelia champaca/Quercus</i> + Millet/ maize/cabbage	0 <i>Celtis australis/Grevia optiva Schima wallichii</i> /Anlus+ Maize, Millet, Wheat <i>Michelia champaca/Quercus</i> + Millet/ maize/cabbage	<i>Schima wallichii</i> + <i>Setaria aphacelata</i> (Nandi grass) <i>Alnus</i> / <i>Michelia champaca</i> + <i>Setaria/ guinea</i> <i>/Thysanolaena agrostis</i> (Broom grass)+ Maize, Millet, Wheat <i>Schima wallichii</i> + <i>Setaria/ guinea</i> <i>/Thysanolaena agrostis</i> (Broom grass) ++ Millet/ maize/cabbage
<b>Purpose</b>	Income and wind break, shelter belt,	Income and soil erosion control	Income, erosion control, soil conservation
<b>Rotation</b>	10 years of tress and no rotation for agriculture crops	10 years of tress and no rotation for agriculture crops	10 years of tress and no rotation for agriculture crops

<b>Felling system</b>	Selection felling for trees	Selection felling for trees	Selection felling for trees
<b>Mode of regeneration</b>	Coppicing and plantation	Coppicing and plantation	Coppicing and plantation

## MANAGEMENT TECHNIQUES

Following management interventions (Table 5) are suggested in the agriculture filed. In both the upland and low land area, there was no irrigation facility hence the irrigation is not mentioned here.

**Table 5 - Management techniques**

<b>Name of Plantation</b>	<b>Agri-silviculture</b>	<b>Agri-silviculture</b>	<b>Agri-Silvi-pasture:</b>
<b>Site preparation</b>	Manually and plaguing upto 10 cm suitable for cultivation of crops	Manually and plaguing upto 10 cm suitable for cultivation of crops	None
<b>Planting materials</b>	Seedlings/stumps	Seedlings/stumps	
<b>No of seedlings/stumps</b>	4000	2000	
<b>Espacement</b>	3m * 3m	1.5m * 1.5m	
<b>Plantation model</b>	Block	Row	
<b>Manureing</b>	Use of organic fertilizer during planting in pits Use of chemical fertilizer during plantation only		
<b>Pit size</b>	45 cu. Cm		
<b>Pit preparation</b>	Mechanical means		
<b>Lay out of plots</b>	Row	Row and scattered	Row and scattered
<b>Soil working</b>	Upto the third year of plantation, deep mechanical ploughing		
<b>Watering</b>	Rainfed		
<b>Soil and moisture conservation</b>	None		
<b>Weeding</b>	As required based on weed growth		
<b>Silviculture operations</b>	Thinning and pruning in 2 <sup>nd</sup> and 5 <sup>th</sup> year	None	None
<b>Harvesting</b>	Annual for crops and clear felling system for trees	Annual for crops and selection system for trees	
<b>Protection</b>			
<b>Insect pest/diseases</b>	Use of chemicals as and when required	Use of chemicals as and when required	Use of chemicals as and when required
<b>Fire</b>	Fire control lines e.g.	Fire control lines	Fire control lines

## Cost of production

The cost of production for the different models is summarized in table below. The return from the trees includes the fuelwood and fodder species obtained from the singling and thinning operations. The cost did not take accounts of the indirect benefits obtained from the practicing of models e.g. soil and moisture conservations. Table 6 presents the cost

and return from the models. The total return from the agroforestry will be Rs 10,600 per year.

**Table 6 - Estimated cost and return from practicing agroforestry in agriculture fields**

	Agri-silviculture	Agri-silviculture	Agri-Silvi-pasture:	Total cost
<b>Costs</b>				
<b>Site preparation cost</b>	2500	2500	3000	8000
<b>Inputs cost</b>	1500	2500	2500	6500
<b>Labor cost</b>	4000	5000	5000	14000
<b>Marketing and transportation cost</b>	1000	1500	1500	4000
<b>Other cost</b>	400	400	600	1400
	9400	11900	12600	33900
<b>Return</b>				
<b>Crops (including fruits)</b>	8000	12000	9000	29000
<b>Trees</b>	4000	3000	4500	11500
<b>Animals</b>			4000	
<b>Total</b>	12000	15000	17500	44500
<b>Return</b>	2600	3100	4900	10600

### Homestead

No models have been suggested for the homestead farming. The farmer is practicing the multistorey crop composition and it is sufficient to meet his daily food requirements as well as household requirement of fuel wood, fodder along with the soil and water conservation. Thus, no models is suggested for the home stead farming

### Support mechanism

The farmer will be provided with following support for the initiation of the agroforestry in the village as the model farmers.

- Market linkages will be established to sell the products more easily and at competitive prices. This will help to enhance the income of the farmer.
- Coordination with different organizations working for agriculture, forestry, livestock, soil conservation etc. will be made such that farmer can get the required services at earliest as possible and at his door steps
- Materials inputs will be provided at subsidized prices at the door steps such that it create the incentives for other farmers to start agroforestry practices.
- Free technical inputs and extension facilities will be provided to the farmer by the research organizations such that farmer can always go for the better technology an cost effectiveness.
- Credit arrangements will be made if farmer desire for it at very subsidized rate from the agricultural and rural development banks.

**PART-II**  
**ECOTOURISM**



8.

## **ECOTOURISM AS A TOOL FOR THE SUSTAINABLE NATURE TOURISM MANAGEMENT AND COMMUNITY DEVELOPMENT - A HOLISTIC STRATEGIC APPROACH**

A K Bhattacharya

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### **Abstract**

*The world over the last one decade has witnessed ecotourism as a source for conserving biodiversity, achieving socio – economic development and maintaining cultural harmony. Ecotourism has emerged as an effective tool for the sustainable nature tourism management and community development. One of its major advantages is that it has the potential to be ecologically and culturally sensitive but to achieve these objectives, a proper planning needs to be laid, followed by ecotourism initiatives and involvement of all stakeholders and management controls to monitor the activities. An integrated holistic approach is essential to address the issues related to the ecotourism development and evolve short term and long term strategies. The paper describes the principles and linkages of ecotourism and analyses critically the issues and roles of various stakeholders for the sustainability of ecotourism. The paper also examines ecotourism as a market segment suggests the future strategy for ecotourism development.*

### **BACKDROP**

The term ecotourism was coined by Hector Ceballos Lascurain in 1983. The term was used to describe the nature-based travel with emphasis on education, management and development of sustainable tourism product and activity.

World Tourism Organization has defined ecotourism as " *tourism that involves traveling to relatively undisturbed natural areas with specified object of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural aspects (both of past and present) found in these areas*".

The Ecotourism Society (TES) has defined Ecotourism as "responsible travel to natural areas that conserves the environment and sustains the well-being of the local people". Its main aims are ecological and socio-cultural integrity, responsibility and sustainability (Cater, 1994)<sup>1</sup>. Ecotourism has developed from the traditional nature tourism and sustainable development concepts.

Over the last one decade ecotourism developed as both an industry and a form of sustainable development that conserves natural areas and sustains the well being of local people. Ecotourism, as a concept, aspires in all cases to achieve sustainable development objectives. But ecotourism products have become numerous enough to be considered as a market segment, which has both sustainable and unsustainable characteristics. However, ecotourism has been widely used and often misused as a market label in a variety of circumstances, nevertheless, a holistic approach and the strong orientation of the ecotourism towards the evolution of principles, guidelines, and certification based on sustainability standards gives it a market niche that is strongly associated with sustainability.

With a holistic approach ecotourism can emerge as an effective tool for the three major challenges, viz biodiversity conservation, promotion of community development and management of sustainable nature tourism.

<sup>1</sup> Cater E, 1994. In : Ecotourism: A sustainable Option? Wiley & Sons, Brisbane. pp 3 - 17.

### **Principles and characteristics of Ecotourism**

The analysis of all the definitions and the concepts of ecotourism lead to the identification of following integral components of ecotourism

- ❑ ecological sustainable management (long term conservation of resources)
- ❑ conservation education and interpretation of natural environment
- ❑ local community participation and benefits

### ***Ecotourism should be***

- small scaled, locally controlled, land sensitive and ecologically oriented.
- based on environmental ethics with a concept of small is beautiful, doing more with less and treated with fostering resource integrity.
- sustainable environmentally, socially, culturally and economically.
- capable to enrich experience and should be educational.
- able to promote the participation of the local communities.
- be bio-centric rather than homocentric in philosophy. In fact ecotourism should accept nature largely on its terms and not trying to significantly transform nature for personal convenience.

### ***Community based ecotourism***

Humankind is facing an unparalleled challenge when it comes to reserving the planet's biodiversity. Solutions that are most likely to be successful are those that will work at the community level in a decentralized manner. So for the successful efforts in ecotourism promotion, the community or people's participation is vital. Community based ecotourism implies that a community is taking care of their natural resources in order to gain income through operating a tourism enterprise and using that income to better their lives. It is also a better option for the people from the developing countries as an alternate means of livelihood, as it can both protect the resource base if properly managed and can act as an economic source.

### **Why ecotourism**

- Contributes to conservation of biodiversity
- Sustains the well being of local people
- Includes an interpretation / learning experience
- Involves responsible action on the part of tourists and tourism operators
- Is delivered to small groups by small-scale businesses
- Requires lowest possible consumption of non-renewable resources
- Stresses local ownership and business opportunities, particularly for rural people
- Avoids negative impacts that can damage or destroy the integrity or character of the natural or cultural environments being visited
- Educates the traveler on the importance of conservation
- Directs revenues to the conservation of natural areas and the management of protected areas
- Brings economic benefits to local communities and directs revenues to local people living adjacent to protected areas
- Emphasizes the need for planning and sustainable growth of the tourism industry and seeks to ensure that tourism development does not exceed the social and environmental "carrying capacity"
- Retains a high percentage of revenues in the host country by stressing the use of locally-owned facilities and services
- Increasingly relies on infrastructure that has been developed sensitively in harmony with the environment - minimizing use of fossil fuels, conserving local plant and wildlife and blending with natural environment

### **Why community based ecotourism**

- Communities are an integral part of ecotourism ecosystem. They can help sustain ecosystem
- Communities are to be affected first by any influences of ecotourism destination areas
- For sustainable ecotourism involvement of communities in planning and local management is essential
- Since ecotourism brings many changes at the community level therefore community should have greater voice in development and conservation of their natural resources

### **Ecotourism planning principles for natural areas (WTO 1998)<sup>2</sup>**

- Apply strict conservation measures to the natural areas to protect the flora, fauna and ecosystems and any existing archaeological and historic sites.
- Establish carrying capacity standards so that there is not over – development of the tourist facilities or over use of the environment by the visitors.
- Develop small scale tourist facilities in environmentally suitable locations, with locally based design, use of local building materials, energy saving devices and proper disposal of waste materials. A visitor center with exhibits about the site and local conservation techniques should be developed.
- Prepare and distribute ecotourism codes of conduct for the tourists and tour operators, and monitor applications of these codes.
- Provide well – trained tour guides who will give accurate information to tourists, educate tourists about biological diversity, conservation techniques and observe good conservation measures during tours.
- Integrate local communities into tourism development by providing them jobs and income from tourism, arrange village tours where appropriate and educate tourists about the local cultures including their economic activities and how to show respect for their cultural traditions.

### **Guidelines for Sustainable Nature Tourism (WTO)**

Nature tourism is of growing importance to countries and regions interested in sustainable tourism. It is one segment of the industry, which is difficult to define because it covers a wide range of activities. Nature tourists can be people casually walking through an undisturbed forest, or scuba divers admiring coral formations, or bird watchers adding birds to their lists. But, it is a segment of the market that will respond to environmental issues. The following guidelines can be used by the local planners to encourage community, environmental, and tourism constituencies to work together towards a common goal.

- The success of nature tourism depends on the conservation of nature. Many parks are threatened, and it is critical for everyone involved with nature tourism to realize that intact natural resources are the foundation.
- Nature tourism sites need revenue for protection and maintenance, much of which can be generated directly from entry fees and sale of products. Many protected areas charge nominal or no entrance fees and provide few if any auxiliary services. Nature tourists also desire gift shops, food services and lodging facilities and expect to pay for them.
- Tourists are a valuable audience for environmental education. In many Parks, opportunities are missed to provide environmental education. Whether "hard-core" nature tourists or "new" visitors with little background in natural history, all tourists can enhance their appreciation of the area through information brochures, exhibits and guides.

<sup>2</sup> WTO, 1998. Guide for local authorities on developing sustainable tourism. Published by World Tourism Organization

- Nature tourism will contribute to rural development when local residents are brought into the planning process. For nature tourism to be a tool for conservation and rural development, a concerted effort must be made to incorporate local populations into development of the tourism industry. In some cases, tourism to protected areas is not benefiting the surrounding population because they are not involved.
- Opportunities are emerging for new relationships between conservationists and tour operators. Traditionally, these groups have not worked together; often they have been in direct opposition. However, as more tourists come to Parks and Reserves, tour operators have the opportunity to become more actively involved with the conservation of these areas through education for their clientele and donations to Park management.

### **Scaling up Community Benefits through Ecotourism**

Community-based ecotourism (CBE) is a growing phenomenon throughout the world. The CBE concept implies that the community has substantial control and involvement in the ecotourism project, and that the majority of benefits should remain in the community.

However all efforts should be made to maximize benefits to local communities, but it is not realistic to expect that all communities will be able to own and manage their own businesses. Researchers have found that problems result from the communal enterprise approach such as the slowness of democratic decision making and inconsistent quality of services.

The community enterprise model is slowly being adapted by the communities themselves to give more responsibilities to specialized and trained members of the community. Case studies indicate that joint ventures between a community or family and an outside business partner are frequently preferable because of the need for the community to connect its small-scale venture to the outside world (Epler Wood 1998<sup>3</sup>, Stronza 2000<sup>4</sup>). Making such ventures equitable to all parties, and creating an environment of trust between partners is a challenge, but contracts between parties has been shown as the best way to proceed. Outside advice for communities, to ensure that their terms are equitable, is also highly recommended.

Understanding the decision-making process of a community is highly important. Many local communities do not have a top-down decision-making structure but may instead decide by consensus. This can be very slow and painstaking. It must also be understood that if the community is not involved in the initial decisions for the project, such as the needs and priorities of the project, the scope and the objectives, they will likely have less of a feeling of a stake in its success.

(Adopted from Fergus Tyler Maclaren 2002)<sup>5</sup>

### **NGO Ecotourism Interface**

The NGO sector has a role to play in assisting local communities with viable sustainable development projects. The problem is that inadequate expertise and understanding of the ecotourism product has led to inappropriate assistance patterns.

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<sup>3</sup> Epler Wood M, 1998. Making the Global Challenge of Community Participation in Ecotourism: Case Studies & Lessons from Ecuador, The Nature Conservancy, Washington D.C., USA.

<sup>4</sup> Stronza A, 2000. Because it is ours: Community-based ecotourism in the Peruvian Amazon, a dissertation presented to University of Florida, Gainesville, FL, USA

<sup>5</sup> Fergus Tyler Maclaren, 2002. A Strategic Approach for Community-Based Ecotourism Development. [www.recoftc.org/03region/materials/conference\\_reports/CBT\\_international.html](http://www.recoftc.org/03region/materials/conference_reports/CBT_international.html).

### **Some of the primary problems are as follows**

- Lack of cooperation with the private sector that is already offering ecotourism in the destination country;
- Poor communication between NGOs and the private sector.
- NGOs using their tax-free status to offer products that are in direct competition with the private sector;
- Business and tourism planning coming after communities are targeted by NGOs for ecotourism development; and
- Top-down, bureaucratic management of projects where the intent is to foster community management.

The most important new trends in development include better pre-assessment of community needs and community readiness, a full analysis of land tenure and other legal issues relating to long-term access to the political process, training that is more targeted at community needs, research on the market for community ecotourism paired with efforts to develop appropriate linkages to the global marketplace, and developing improved systems to protect communities from competing land-uses.

One of the key issues in ecotourism today, is how much this portion of the global marketplace can actually represent a different kind of responsible commerce. A growing number of articles assume that ecotourism will use the same model as much of the rest of the global marketplace, and that it will, by default, disempower local people for the purposes of selling off their land and culture to the highest bidder.

Ecotourism can be a form of enterprise in which local people actively participate in the formulation of social “contracts” that go well beyond standard business formulae. Given that the large majority of ecotourism businesses are locally owned (Sanders and Halpenny 2001)<sup>6</sup>, and socially conscious owners are frequently involved (Christ 1998<sup>7</sup>, Stronza 2000<sup>4</sup>), communities can achieve more than the status quo. The involvement of the NGOs and development assistance community also does frequently help to reverse top-down business patterns. Participatory decision making processes can make a difference, and increasingly these processes are being used, even in regions where communities have been sidelined in the past (Sproule 1998<sup>8</sup>, Drumm 1998<sup>9</sup>).

No new economic development system can completely transform the social and political context of people or region. Finding genuinely equitable formulae for responsible commerce between cultures, and between those in the North and the South, the East and the West can without question be challenging. But honest efforts to find increasingly equitable approaches to the development of ecotourism should continue.

### **Future Strategy**

In order to make ecotourism a more effective tool for sustainable community development, the following issues should be addressed:

1. More market research is necessary to understand and evaluate the international market for community ecotourism (Epler Wood, 1998)<sup>3</sup>.

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<sup>6</sup> Sanders E & Halpenny E, 2001. The Business of Ecolodges, A Survey of Ecolodge Economics and Finance, The International Ecotourism Society, Burlington, VT, USA

<sup>7</sup> Christ C, 1998. Taking Ecotourism to the Next Level, A Look at Private Sector Involvement with Local Communities, Ecotourism, A Guide for Planners & Manager, Volume 2, The International Ecotourism Society, Burlington, VT, USA

<sup>8</sup> Sproule K, 1998. Guidelines for Community-based Ecotourism Programs, Lessons from Indonesia, Ecotourism, A Guide for Planners & Managers, Volume 2, The International Ecotourism Society, Burlington, VT USA

2. Community ecotourism enterprises need separate designation within tourism laws and regulations allowing them to legally manage tourism without the same regulations and tax structures that apply to standard tourism businesses (Drumm, 1998)<sup>9</sup>.
3. Partnerships between communities, governments, NGOs and the private tourism sector have to be improved. The strengths of each partner must be used in a more effective way and greater coordination between the partners is needed. The private sector should link the projects to the market and explain the customer expectations. NGOs should provide training and act as intermediary for communities in business negotiations. The government should provide appropriate regulation and guidelines.
4. Partners should also become more responsible in relation to assistance in emergency situations, like natural disasters. Preferably these responsibilities even have to be documented.
5. Individual governments should establish national ecotourism strategies. Specific ecotourism development zones should be created. No unsustainable activities like overexploitation of natural resources should be allowed in these zones. Further, a national register of all community tourism projects should be developed to improve awareness and promotion.
6. The issues of participation and distribution of benefits must be evaluated before starting a project and should be reviewed every year. All agreements between the different parties should be approved by the elected community authority and written down in a simple, yet legally binding, document. Participation from the community should be maximized to guarantee the highest benefits. It should include elders, lower social classes and women.
7. Local guides should be acknowledged and recognized for their special knowledge of local ecosystems and cultures. A special category needs to be created for native guides when licensing tour guides at the national level (Epler Wood, 1998)<sup>3</sup>.
8. More community associations should be established to deal with ecotourism projects from the larger regional perspective.
9. Indigenous / local communities should be made aware of the uniqueness of their traditional culture, for example by teaching local culture and history already at the local school level.
10. International policies on guidelines for community ecotourism should be written in cooperation with indigenous / local communities so that it is possible to implement the policies at a local level. Governments should be held accountable for the already established international agreements relating to ecotourism and indigenous cultures.
11. Development organizations should provide soft loans, assistance with fundraising and other forms of long-term credit needed by communities to help them establish their own tourism programs.

(Adopted from Fergus Tyler Maclaren 2002)<sup>5</sup>

### **Operational framework for ecotourism**

As ecotourism is a community development tool, development must be sensitive to the requirement of many stakeholder groups, including tourism provider, public provider and residents. In order to implement ecotourism a partnership can be developed between various groups. The potential partners include the following:

- 1) Organizations within the established tourism industry, particularly tour operators
- 2) The government tourism bureau and natural resource agencies
- 3) Non-governmental organizations, especially those involved with environmental issues, small business management and traditional community development
- 4) Universities and other research organizations
- 5) International organizations, public and private funding institutions, national cultural committees



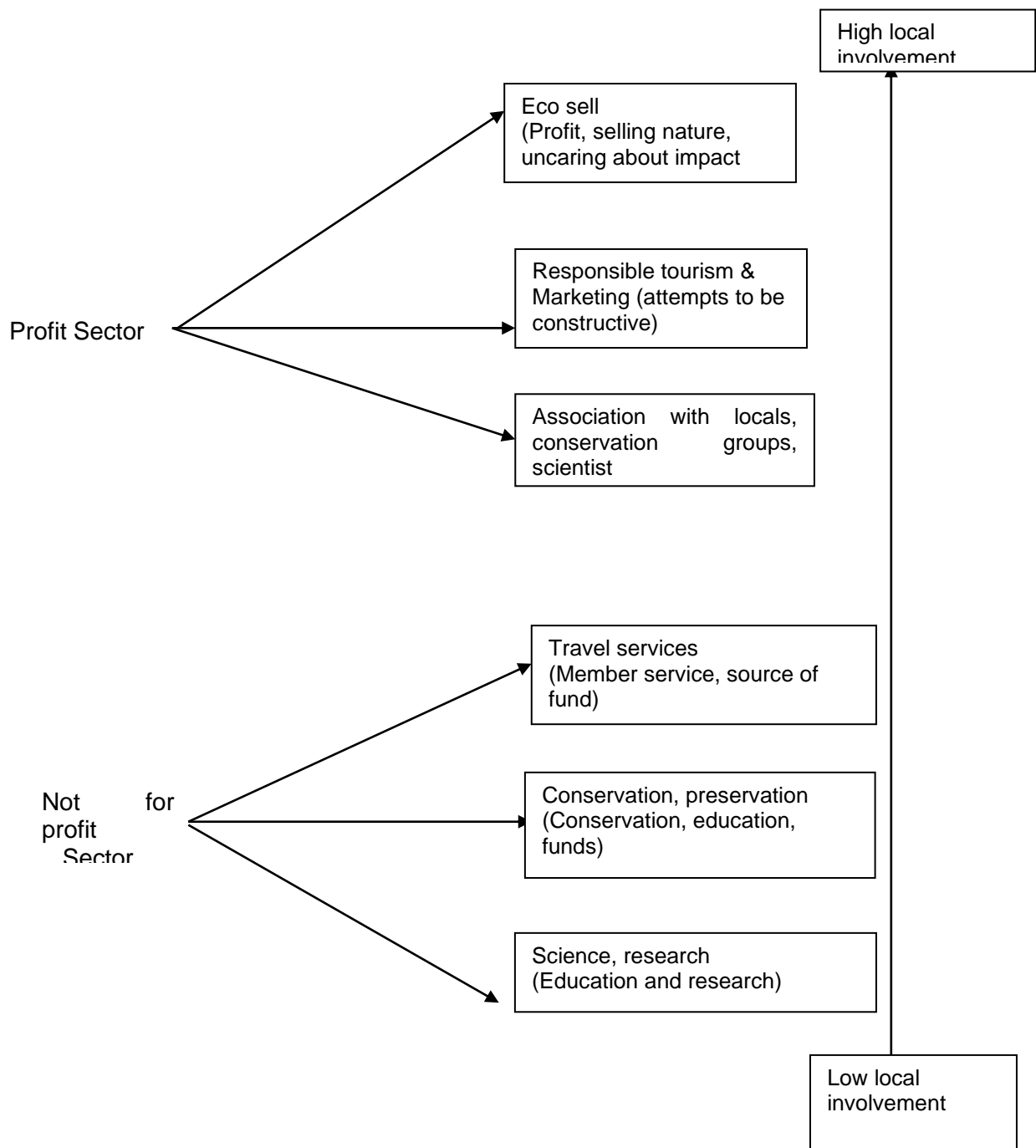
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<sup>9</sup> Drumm A, 1998. *New Approaches to Community-based Ecotourism Management, Learning from Ecuador, Ecotourism, A Guide for Planners & Managers, Volume 2, The International Ecotourism Society, Burlington, VT USA*

In order to achieve maximum benefits from the co-operative efforts of the stakeholders group, following efforts are desirable:

- 1) Build on the foundation of the local people
- 2) Give responsibility to local people
- 3) Consider returning ownership of at least some protected areas to indigenous people
- 4) Hire local people
- 5) Link government development programmes with protected areas
- 6) Give priority to small scale local development
- 7) Involve local people in the preparation of management plans
- 8) Have the courage to enforce restrictions
- 9) Support diversity as a value
- 10) Build conservation into the evolving new national cultures

The profile of service providers is illustrated best through the figure given below:



The above diagram depicts the profile of the government sector and the private sector and the degree of involvement of the local communities with these activities.

### Public - Private Partnership

Government can ask the tourist industry to assume a larger share of the burden of financing destination promotion. However, asking the industry to make greater voluntary contribution will not succeed without some form of government intervention. Because, destination promotion is a public good, individual beneficiaries have the incentives not to contribute to free ride on the contribution of others.

Government should play a leadership role in providing the necessary financing, management skills, and knowledge so that the private sector can operate smoothly and efficiently. The government can do this through following actions:

- 1) Facilitating efficient private sector activity by minimizing market interference and relying on competition as a means of control.
- 2) Ensure a sound macro-economic environment.
- 3) Guarantee law and order, and the just settlement of disputes.
- 4) Ensure the appropriate provision of infrastructure.
- 5) Ensure the development of human resources.
- 6) Protect the public interest without obstructing private sector activity with too many regulations.
- 7) Promote private sector activity by not competing in the business arena with private enterprise.
- 8) Acknowledge the role of small business entrepreneurs and facilitate their activities.

### **Role of Non Government Organizations**

NGOs can play an active role in the development of ecotourism. NGOs can sponsor ecotourism trips for a number of reasons like:

- Providing member service
- Donor trips
- Source of funding
- Education and research

NGOs can indulge in capacity building approach to ensure that ecotourism benefits communities and merges with traditional practices and conservation through the training of local people by organizing workshops.

NGOs can also develop a centre to provide information on ecotourism destinations, tour operators and lodgings, and relevant publications and information.

### **Role of Tour operators / Travel agents**

Travel agents and tour operators are key stakeholders in the relationship that exists between the destinations and the tourists. Both have tremendous influence on tourist relative to the choices made and type of experience gained from travel.

The role of tour operators includes following functions

- 1) Preparing the client for trips
- 2) Conflict resolution
- 3) Camps and camp cleanliness
- 4) Legal consideration
- 5) Environmental education
- 6) Tour planning

Apart from these, a tour operator performs several other functions. One of the things the tour operator can do is to promote various forms of tourism, like adventure tourism in that area by providing equipments and other specialized services for the public.

### **Role of Community**

The involvement of community in ecotourism is must. The communities can appoint their representatives, which will act as a management committee similar to tourism management board. The community can be involved in the following ways -

1. Provisions to allow the community for exclusive use of biophysical resources of the protected area for the subsistence purpose
2. Provisions for technical and professional training opportunities relating to positions in tourism and in conservation agencies
3. Priority status in the hiring programmes undertaken by tourism interests and conservation agencies
4. Priority status in the licensing of business to be operated in the park or protected area
5. Compilation of traditional knowledge and heritage values of the aboriginal societies, for use both by the communities themselves in strengthening their societal traditions, and by the conservation agency in managing the protected area and in giving to its visitors a heightened appreciation of the traditional societies.
6. Using the services of the local communities in the management of ecolodges and resorts.

These are some of the functions, which can be performed by the various stakeholders and can be used as a guide to operational framework.

## **CONCLUSIONS**

Integrated tourism, to be successful, must promote sustainable development by establishing a durable productive base that allows local inhabitants and service providers to enjoy rising standards of living. Ecotourism can be used as an effective tool, which ensures ecological, environmental, economical and cultural friendly tourism. Inappropriate tourism development can result in local people losing access to water, land and community areas, and to the creation of tourist enclaves and to social pollution.

The positive contribution of tourism is significant, but there are a number of challenges to be met if the potential for sustainable local development and poverty reduction, through the localization of benefits, is to be realised. These challenges include issues of ownership, economic leakage (from the local economy and through imports), local employment, benefit distribution, social and environmental impacts and dependency. These problems can only be effectively addressed at the destination level with the active participation of the local communities, tour operators and government agencies.

Ecotourism businesses remain small, local and fairly well rooted in the context of the places being visited. Ecotourism is the product of a variety of small businesses, NGOs, and communities most of which are making little profit, and come from highly diverse backgrounds that have no relationship at all to big business.

The growth rate of the ecotourism market niche has been inappropriately touted. Despite myths to the contrary, ecotourism remains a small industry operating in remote areas. Some of the worst examples of false labeling of ecotourism seem to result from efforts to exploit its perceived market allure.

Despite these difficult problems, there is reason to believe that ecotourism can continue to improve sustainability standards for enterprise in areas that traditionally have had few development options, that it can help governments diversify their tourism economies, and it can assist communities by finding new formulae for gaining social contracts that respect their culture, intellectual property, and legal rights.

With a holistic strategic approach ecotourism should continue to contribute to make the overall tourism industry more sustainable, by increasing economic and social benefits for host communities, actively contributing to the conservation of natural resources and the cultural integrity of host communities, and by increasing awareness of all travelers towards the conservation of natural and cultural heritage,



9.

## **ECOTOURISM - LIVELIHOOD SECURITY - BIODIVERSITY CONSERVATION INTEGRATION : A HOLISTIC APPROACH**

A K Bhattacharya and Yogesh Dubey

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### ***Abstract***

*In order to understand the ecotourism - livelihoods - conservation interface it is essential to examine and analyse various issues pertaining to these linkages with an holistic approach. The paper critically analyses the technical, social and policy issues affecting this interface. The new approaches and options have been prioritised and suggestions for short term and long term strategies have been made.*

### **BACKGROUND**

India is among one of the twelve mega bio-diversity countries with vast resources in the form of natural landscapes and bio-diversity areas and heritage sites. These areas provide tremendous potential in terms of promoting Ecotourism. In most of the areas we are faced with at least two major issues in making Ecotourism a practicable tool for sustainable development. One issue is how to develop and manage the 'know-how' for Ecotourism without posing threat to the bio-diversity. The other issue is how to integrate Ecotourism with the biological and the sociological environments. To develop Ecotourism as a tool for such areas it is important that it be developed and managed in a manner whereby all threats to global bio-diversity are minimised and options for sustainable livelihoods are being created. With human pressures all around, bio-diversity conservation is also a question of providing sustainable livelihoods where Ecotourism is a good opportunity for community involvement for outsourcing their livelihoods and a way for bio-diversity conservation. The present understanding amongst the forest policy makers, managers and tour operators about the complexities of Ecotourism is not exhaustive and hence it calls for better understanding and efforts to be made in this direction.

The three basic challenges generally faced in this area relate to bio-diversity conservation, promotion of community development and management of Ecotourism as a viable alternative. Given the status of threatened ecosystems in India, Ecotourism needs to be managed in such a way that the integral values and functions of bio-diversity conservation areas are maintained and enriched and also such activities yield reasonable pay offs at the local level.

### **Tourism to Ecotourism**

Ecotourism is a component of the field of sustainable tourism. Ecotourism aspires in all cases to achieve sustainable development results. However, it is important to stress that all tourism activities, be they geared to holidays, business, conferences, congresses or fairs, health, adventure or Ecotourism, should aim to be sustainable. This means that the planning and development of tourism infrastructure, its subsequent operation, and its marketing should focus on environmental, social, cultural and economic sustainability criteria.

The following basic components are common and integral in all the available definitions of Ecotourism

- Nature Based Tourism
- Ecological Sustainable Management

( Long Term Conservation of Resources)

- Conservation education and interpretation of natural Environment
- Local Community Participation and Benefits
- Tourists' satisfaction

The strong orientation of the Ecotourism field toward principles, guidelines, and certification based on sustainability standards gives it an unusual position in the tourism field. In the years since the concept was first defined, a general consensus has formed on the basic elements of Ecotourism.

Ecotourism

- Contributes to conservation of bio-diversity.
- Sustains the well being of local people.
- Includes an interpretation / learning experience.
- Involves responsible action on the part of tourists and the tourism industry.
- Is delivered primarily to small groups by small-scale businesses.
- Requires the lowest possible consumption of nonrenewable resources.
- Stresses local participation, ownership and business opportunities, particularly for rural people.

Ecotourism is of special interest for its relationship with conservation, sustainability, and biological diversity. As a development tool, Ecotourism can advance the three basic goals of the Convention on Biological Diversity

- conserve biological (and cultural) diversity, by strengthening protected area management systems (public or private) and increasing the value of sound ecosystems;
- promote the sustainable use of bio-diversity, by generating income, jobs and business opportunities in Ecotourism and related business networks, and
- share the benefits of Ecotourism developments equitably with local communities and indigenous people, by obtaining their informed consent and full participation in planning and management of Ecotourism businesses.

In the field, well-planned and managed Ecotourism has proven to be one of the most effective tools for long-term conservation of bio-diversity when the right circumstances (such as market feasibility, management capacity at local level, and clear and monitored links between Ecotourism development and conservation) are present.

### **Ecotourism Development to Development oriented Tourism**

"Integrated tourism, to be successful, must promote sustainable development by establishing a durable productive base that allows local inhabitants and service providers to enjoy rising standards of living". This was expressed by Mr. David Barkin in one of his papers in 1996<sup>1</sup> when the concept of Ecotourism was shaping up and word used for "sustainable tourism development" was "integrated tourism". There is no doubt that people consider "Ecotourism" as "sustainable Tourism". Ecotourism can be used as an effective tool, which ensures ecological, environmental, economical and cultural friendly tourism.

There is no doubt that Tourism has become an important sector for developing countries seeking to maximize foreign exchange earnings, increase employment and secure financial resources to conserve natural and cultural heritage. There is another very important factor in tourism industry, that is its marketing mechanism. Decisions made by tourists and the industry in the originating countries can assist or harm local communities, who are not being involved when tour is being planned, marketed, sold and bought.

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<sup>1</sup> Barkin David, 1996. [www.mtnforum.org / resources / library / harao 01a.htm](http://www.mtnforum.org/resources/library/harao_01a.htm)



Inappropriate tourism development can result in local people losing access to water, land and communal areas, and to the creation of tourist enclaves and to social pollution.

The positive contribution of tourism is significant, but there are a number of challenges to be met if the potential for sustainable local development and poverty elimination, through the localization of benefits, is to be realized. These challenges include issues of ownership, economic leakage (from the local economy and through imports), local employment, benefit distribution, social and environmental impacts and dependency. These problems can only be effectively addressed at the destination level with the active participation of the local communities, tour operators and government agencies.

Rapid and sustained tourism growth and the search for new destinations mean that more and more communities will be affected by the tourism industry. This provides opportunities for economic development, but there are also costs to be minimized. The demand side drives the industry; however, the sustainability of the sector at the destination is dependent upon some public control over the effects of the industry on the environment and socio-cultural structure of the area. It is the natural and cultural heritage of the area and the living culture of the local people that attract tourists. The negative impacts of tourism on the environment and local communities need to be managed and the adverse impacts mitigated in order to maintain the asset.

A tourism monoculture adversely affects the inherent quality of the destination and over-dependence on tourism increases the economic vulnerability of the area to decisions made elsewhere by consumers and investors. Tourism development frequently brings with it demands for goods and services which are not produced in the local economy. These goods and services are then showered outside the local area, often internationally, and only a small proportion of the expenditure remains in the local economy. This is a particular problem in mountain areas. These leakages reduce the development impact of tourism, whereas the development of linkages results in the creation of more jobs and opportunities to locals.

### **Community Based Ecotourism**

In its basic concept, community-based Ecotourism refers to Ecotourism enterprises that are owned and managed by the community. Furthermore, community-based Ecotourism implies that a community is taking care of their natural resources in order to gain income through operating a tourism enterprise and using that income to better their lives. It involves conservation, business enterprise and community development. In any community-based Ecotourism enterprise there will be direct and indirect participants and direct and indirect beneficiaries. It is important that the entire community has some level of involvement and some level of benefit. Direct participants in a community Ecotourism enterprise would be the managing committee and the actual workers involved with producing products or services for sale. In some instances those who are the primary users of a resource might be involved as participants in a project as well. Indirect participants would be the broader community who selected the management committee of a project and those who do not directly use the natural resources involved in an enterprise. Direct beneficiaries would be employees, craft producers, guides, committee members, etc., while indirect beneficiaries would be the wider community as recipients of community development projects funded by tourism revenues would.

### **Issues To Be Aware of When Developing Community-Based Ecotourism**

The "community-base" for community enterprises is rarely, if ever, all encompassing. Those community members with some initial disadvantages, such as poor housing, insufficient land or income, tend to be among those excluded from participation with Ecotourism enterprise development. And, depending on how the Ecotourism enterprise is

designed, they may be excluded from the benefits of Ecotourism development as well as the issue of participation. While there is an increasing recognition of the need to involve communities in general, there is much less agreement about exactly who should participate and to what extent. One common definition states that participation is "giving people more opportunities to participate effectively in development activities...empowering people to mobilize their own capacities, be social actors rather than passive subjects, manage the resources, make decisions and control the activities that affect their lives." How a community chooses to define participation will be important for determining what level of participation will satisfy the Ecotourism project goals. It's a very tricky subject. For even where attempts at all inclusive community involvement are well thought out, participation has sometimes been decided on the basis of political affiliation, landownership, kinship or gender.

### **Linking communities, conservation and development**

*It has been argued, in a review (WWF 1991)<sup>2</sup> of integrated conservation and development projects (ICDP) in Latin America, Africa and Asia, that for an ICDP to achieve its bio-diversity conservation goals, it is not enough for the development component to foster improved local living standards - a difficult enough task.*

The development process must not only be economically and biologically sustainable, but must also conserve the ecosystem of the protected area. To satisfy this exacting requirement, explicit linkages between project development components and conservation objectives are needed. "Ecotourism" is one concept that has been heralded as a means for establishing such linkages. Unfortunately, while there has been a great deal of discussion about the contributions of Ecotourism to local community well being, very little is visible on the ground. There have been numerous efforts to create "guidelines" for Ecotourism development, and the bulk of these assign local participation a privileged position. However, these guidelines have not focused on community-based enterprises nor addressed what, if any, mechanisms exist for nurturing community interest in establishing such enterprises. Rather, they tend to view local participation as something incorporated into the design and implementation of Ecotourism enterprises, which are launched from "outside" the community. Additionally, they tend to focus on the quantitative dimensions of participation (e.g. number of people involved, revenue generated) rather than qualitative aspects of local participation (positions in the Ecotourism enterprise). Whether a community-based tourism enterprise encourages community conservation of natural resources depends on at least four factors:

1. the scale of benefits received by local residents (and whether they outweigh the short term costs of foregoing resource use or changing resource management);
2. the extent to which the benefits are clearly perceived as dependent on the resource base, and therefore on sustainable management;
3. whether benefits reach all resource users; and
4. whether local institutions are strengthened, so as to increase their capacity for collective resource management.

If the above conditions are not met, massive financial earnings for a few people will not necessarily change communities' approach to resource utilisation. Changes in resource use will also depend on whether communities gain rights / ownership and control over resources and hence a sense of responsibility for their management. Developing mechanisms for local residents to benefit directly from the establishment of Ecotourism enterprises in and around their home areas can help offset any loss of revenue from traditional extractive activities, which may be curtailed, in some instances, by the establishment of the new enterprise. It can also motivate community participation in conservation activities if adequate rewards can be consciously realized. Developing

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<sup>2</sup> WWF Technical Paper, 1991. Community Participation in ICDPs.

National Community Based Ecotourism Strategies can help focus efforts on achieving such mechanisms. At the least, it's a very good way of beginning the process of forging the partnerships deemed so valuable to the process.

### **Issues and Options**

Ecotourism per se in India is identified with only Protected Areas. The very concept of Ecotourism should not only be applied to National Parks and Sanctuaries but should also be extended to areas falling outside the Protected Area network. This would include forested areas outside the PA Network. The need of the day to explore the possibilities of Ecotourism potential in other areas which contain natural character. By doing this we

would also be able to overcome the problems related to carrying capacity by evenly or rather distributing the tourism pressure effectively to other areas. The potential to develop the forest fringe areas into recreational sites should also be considered. These areas could be developed for special category of tourists whose prime interest is recreation.

### **Policy issues**

The national policy on tourism stipulates that tourism should become a unifying force nationally and internationally fostering better understanding through travel. The national policy on Ecotourism also emphasises the need of involvement of local communities for overall development of the area. It also aims at identifying the conflicts between resource use for tourism and the livelihood of local people and attempts to minimize them. The significance of tourism development and its compatibility with environment and socio-cultural characteristics has also been emphasised. Keeping the present framework of policy directives on Ecotourism achieving the goals does not look like a Herculean task. Under the present scenario it is important to do a complete need analysis as to what is required in which all areas considered to have potential of Ecotourism. How and what kind of mechanisms could be used for involvement of community? Ecotourism in the forest areas is generally being regulated by Forest departments of the respective States but the it is still not a recognized program of the forest department. Forest Departments of respective States should take up the Ecotourism as a major program and develop policy guidelines in concurrence with the existing national and State level policies. There is also a need to bring in little more element of liberalisation in terms of making policy little flexible to attract more investors in this area.

## **STRATEGIES FOR SUSTAINABLE ECOTOURISM**

Tourism is one of the most important industries of the world and contributes substantially to the economies of all the countries, with an annual turnover worth USD 350 billion and employs 11% of the total workforce of the world (PATA) (Pabla 1999)<sup>3</sup>. Even in India, which gets a very small proportion of world's foreign tourist, tourism is the third largest foreign exchange earning activity. However the share of nature based tourism is very small in the overall earning whereas many of the east African economies are thriving on the nature based tourism industry.

There are many reasons why National Parks and landscapes in India are not the destinations of tourist. One of the main reasons is that most of our nature conservation areas do not have Ecotourism development as one of their prime objectives of management as it is considered to interfere with the conservation objectives of these areas.

Therefore it is extremely important to evolve a strategy by which ecotourism could be established as an industry on sustained basis. The strategies could be broadly classified into two category namely short-term strategies and long term strategies.

- <sup>3</sup> Pabla HS, 1999. Forest Department, Government of Madhya Pradesh, Draft Policy, "A framework for the development of the recreation forests in Madhya Pradesh".

### **Short term strategy**

The first and the foremost to begin with would be to identify potential areas and prepare a detailed inventory of such areas in terms of their tourism potential. The local communities residing in such areas should be taken into confidence right from the beginning and their involvement should be clearly defined. The local communities should be amply motivated to as to sustain their interests in a particular area where Ecotourism is to be planned. Ecotourism planning should be directly linked with the livelihood issue and options that

would be generated in any area for the local people. Organizing workshops for local communities to explain them the rationale of Ecotourism and how it is going to better their lives could be part of immediate strategy. These workshops could also be coupled with launch of awareness program in such areas. Village level committees could be formed if the motivation levels are found to be satisfactorily high.

### **Long term Strategy**

Reexamination of the existing regulations and development of new policy should be done to make Ecotourism more business friendly without affecting the conservation of forest and wildlife. Research and monitoring should be promoted in such areas to find newer possibilities of enhancing and developing tools for effective Ecotourism. Research should also be promoted in these areas to develop best practice guides for regions, which have similar kind of, forest areas and biological diversity. Strategies should be developed so as to ensure the original ecological character of the area on long term basis. Tourism packages should be developed so that they are economically viable and are attractive enough to draw tourists to such areas. A lot needs to be done in terms of infrastructure development. Good interpretation centres should be developed with good audio visual aids so as to give a synoptic understanding of the area where a tourist is interested to visit. It would also be extremely important to build linkages between various agencies related to the tourism and centralized information centres being created from where information could be easily accessed. A more robust and strong marketing strategy needs to be developed so as to make all the potential areas of tourism visible to the national and international community.

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## COMMUNITY BASED ECOTOURISM – IDENTIFICATION OF ISSUES AND OPTIONS THROUGH STAKEHOLDERS ANALYSIS

A K Bhattacharya, Suchitra Banerjee and Vandana Saxena

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### **Abstract**

*Communities are an integral part of the ecotourism destination areas. Ecotourism can play a significant role in the livelihood security of the local communities. The paper explains the concept and perception of ecotourism and discusses various issues and options based on stakeholders' analysis. The perception of stakeholders about community based ecotourism and suggestions made have been captured and presented.*

### **BACKGROUND**

Community-based ecotourism refers to Ecotourism enterprises that are owned and managed by the community. Furthermore, community-based Ecotourism implies that a community is taking care of their natural resources in order to gain income through operating a tourism enterprise and using that income to better their lives. It involves conservation, business enterprise and community development. In any community-based Ecotourism enterprise there will be direct and indirect participants and direct and indirect beneficiaries. It is important that the entire community has some level of involvement and some level of benefit. Direct participants in a community Ecotourism enterprise would be the managing committee and the actual workers involved with producing products or services for sale. In some instances those who are the primary users of a resource might be involved as participants in a project as well. Indirect participants would be the broader community who selected the management committee of a project and those who do not directly use the natural resources involved in an enterprise. Direct beneficiaries would be employees, craft producers, guides, committee members, etc., while indirect beneficiaries would be the wider community as recipients of community development projects funded by tourism revenues would.

### **HYPOTHESIS**

The analysis is based on the following hypotheses

- Ecotourism is a rapidly growing industry – market forces will play an important role in the growth of ecotourism.
- Ecotourism is an effective tool for sustainable wildlife management.
- Community based ecotourism is the only long-term solution for ecotourism.
- There is tremendous potential of ecotourism at national, state and local levels.
- Ecotourism can play a significant role in the livelihood security of the local communities.
- Sensitive issues like carrying capacity and policy need immediate attention.

## **OBJECTIVES**

The specific objectives of the analysis were set to

- ✓ identify key emerging issues in community based ecotourism, specially the community benefits.
- ✓ generate options to address the key issues.

## **APPROACH**

- The whole analysis was accomplished through participatory approach at all levels involving all the stakeholders ensuring active participation of the stakeholders.
- The stakeholders included officials of different levels from Forest, Tourism, Energy and Rural Developments, tourist operators, NGOs, Professionals, Scientists and Academicians, Community members, Village level institutions including forest committees and gram sabha members
- The methodology included intensive and extensive discussions, focus group discussions, village and house survey through schedules, field visits by combined team of major stakeholders followed by brain storming sessions and presentations of results of the analysis and open house discussions in the workshop.

## **ECOTOURISM DEFINED**

About thirty available definitions were reviewed and examined. For the purpose of the analysis following few definitions were considered

*•Responsible travel to natural areas that conserve the environment and sustains the well being of local people.*

*•Ecotourism is a significant travel to natural areas to understand the cultural and natural history of the environment, taking care not to alter the integrity of the ecosystem.*

*•Ecotourism generates economic opportunities that make the conservation of natural resources financially beneficial to local communities*

## **BASIC COMPONENTS**

The analysis of the definitions and the concepts of ecotourism led to the identification of following integral components of ecotourism

- nature-based tourism
- ecological sustainable management (long term conservation of resources)
- conservation education & interpretation of natural environment
- local community participation & benefits
- tourists' satisfaction

## **WHY ECOTOURISM**

The review of available literature followed by analysis and discussion identified the following key reasons as to why the ecotourism is significant and be adopted as sustainable tourism

- Avoids negative impacts that can damage or destroy the integrity or character of the natural or cultural environments being visited
- Educates the travelers on the importance of conservation directs revenues to the conservation of natural areas and the management of protected areas.
- Brings economic benefits to local communities and directs revenues to local people living adjacent to protected areas.
- Emphasizes the need for planning and sustainable growth of the tourism industry and seeks to ensure that tourism development does not exceed the social and environmental “carrying capacity”.
- Retains a high percentage of revenues in the host country by stressing the use of locally owned facilities and services.
- Increasingly relies on infrastructure that has been developed sensitively in harmony with the environment-minimizing use of fossil fuels, conserving local plant and wildlife and blending with natural environment.

## **WHY COMMUNITY BASED ECOTOURISM**

The key factors to consider ‘community based ecotourism’ as essential for sustainable tourism were identified as follows

- Communities are an integral part of ecotourism ecosystem. They can help sustain ecosystem.
- Communities are to be affected first by any influences of ecotourism destination areas.
- For sustainable ecotourism involvement of communities in planning and local management is essential.
- Since ecotourism brings many changes at the community level therefore community should have greater voice in development and conservation of their natural resources.

## **ECOTOURISM LINKED KEY WORDS**

All the key words, which the stakeholders considered had some relevance for the community based ecotourism, were captured. The key words have been arranged in alphabetical order.



Accountability Adventure tourism Basic needs Benefit sharing Bringing people close to nature Bringing tourists to tribal Capacity building Carrying capacity Conservation (bio-diversity) Conservers' society Cooperatives Cost benefit analysis Cost effectiveness Culture and traditions Eco-development Eco-friendly Ecological complexes – Ecozones Employment Empowerment	Environment education Funding to initiate Gene pool Good will of local communities Governance (at all levels) Health tourism Income opportunities Indigenous technical knowledge Infrastructure development Linkages- co-ordination of various departments Local industries Losses Maintenance of system Manpower Marketing environment	Marketing indigenous products Monitoring Natural heritage Networking (products) Orientation Peoples' participation Privatization Publicity Recreation Rehabilitation Religious tourism Replication model Representation Research Revenue Stakeholders Sustainability Sustainable development Tribal development Wildlife friendly Women's participation
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Further these key words were categorized into five groups viz, Social, Economic, Ecological, Policy and Institution depending upon the perception of the stakeholders for further analysis. The social dimension constituted the maximum percentage.

(%)

	SOCIAL	ECONOMIC	ECOLOGICAL	POLICY	INSTITUTIONAL
Over all	30	18	19	10	23
Multiple choice	42	25	27	13	38

## PROBLEMS AND SOLUTIONS

The details of the problems associated with the community based ecotourism and their solutions were identified as follows

S No	PROBLEMS	SOLUTION
1.	Infrastructure-bad roads	✓ Regular maintenance
2.	Funds	✓ Create autonomous body (cooperative society) ✓ Government (state or central)
3.	Marketing of et	✓ Strengthening existing network
4.	Drinking water	✓ Efficient rain water harvesting ✓ Rational use of water ✓ Augmentation of drinking water schemes
5.	Improper solid waste management	✓ Treatment plant ✓ Recycling of waste
6.	Lack of trained man power for ecotourism	✓ Training in specialized institutions like IIFM
7.	Increase pollution – air, water	✓ Restriction on vehicle movement ✓ Catchments area treatment ✓ Wetland management

		<ul style="list-style-type: none"> <li>✓ Using better operated vehicles in core areas</li> <li>✓ Harnessing/ promoting non-conventional energy source</li> <li>✓ Using cable cart</li> <li>✓ Introducing bullock cart</li> </ul>
8.	Exceeding carrying capacity	<ul style="list-style-type: none"> <li>✓ Horse riding</li> <li>✓ Regulating number of tourists</li> <li>✓ Dispersing tourists by developing other spots</li> </ul>
9.	Lack of health facility	<ul style="list-style-type: none"> <li>✓ Creating health resorts to divert tourists</li> <li>✓ Emergency health services, rescue team</li> </ul>
10.	Lack of proper security –law and order	<ul style="list-style-type: none"> <li>✓ Introducing tourist police</li> <li>✓ Regular police patrolling including odd hours</li> <li>✓ Involving local people in law and order</li> </ul>
11.	Exploitation of tourists	<ul style="list-style-type: none"> <li>✓ Displaying rates of all commodities and services at all tourist spots</li> </ul>
12.	Exploitation of local inhabitants	<ul style="list-style-type: none"> <li>✓ Monitoring by police party/ local body having local representative</li> <li>✓ Local guides to be made more responsible</li> <li>✓ Awareness generation/ education</li> </ul>
13.	Threat to ecology	<ul style="list-style-type: none"> <li>✓ Regulatory control through properly laid out rules</li> <li>✓ Compulsory plantation by tourists</li> <li>✓ Banning shifting cultivation</li> </ul>
14.	Soil erosion	<ul style="list-style-type: none"> <li>✓ To provide free of cost planting material to local villagers</li> <li>✓ Effective soil conservation measures</li> <li>✓ Metal lining of roads</li> </ul>
15.	Forest fire initiated by tourists	<ul style="list-style-type: none"> <li>✓ Awareness generation</li> <li>✓ Putting hoarding</li> <li>✓ Educating tourists</li> <li>✓ Interpretation of nature / biodiversity by displaying boards</li> <li>✓ Putting up models and watchtowers</li> <li>✓ Creation of safari</li> </ul>
16.	High expectations of tourists (disappointed by not seeing wildlife)	<ul style="list-style-type: none"> <li>✓ Encouraging bird watching, butterfly</li> <li>✓ Habitat management (salt licks and waterholes) increasing forest cover</li> <li>✓ Establishing animal rescue centers</li> <li>✓ Creating mini zoo /aviary</li> </ul>
17.	Shortage of tourists	<ul style="list-style-type: none"> <li>✓ Organise special events / festivals</li> <li>✓ Inviting educational institutions</li> <li>✓ Offering package tours</li> <li>✓ Establishing tourist information centers near bus stand, railways station</li> <li>✓ Promote incentive tourism</li> <li>✓ Create conducive environment</li> </ul>

## PEOPLE – FROM PROBLEM TO SOLUTION

In the background of the recognition of the role of the communities in the natural resource management through various policy measures like Joint Forest management, Panchyati Raj Act etc, the perception of the stakeholders was captured about the change in the attitude of the people over the last one decade – people as problem in 1990 to people as solution in 2002.

PEOPLE (1990) - PROBLEM	PEOPLE (2002) - SOLUTION
Reluctance	Willingness
No legal framework	Framework existing
Lack of awareness	Awareness
Authoritative	Participative
Individual	Institutional
Restricted	Open
Resolution	Involvement
Lack of policy	Policy development
Low stake	High stake
Fun	Tool of management
Exploitation	Involvement

### GENERAL RECOMMENDATIONS

Following recommendations were made by the stakeholders for the different aspects and issues –

ASPECT	ISSUES	PLAN OF ACTION	WHO WILL TAKE ACTION
<b>Social</b>	Proper planning: safeguarding local culture and tradition of the area as per the interest of the community	Education and awareness	All stakeholders/ Concerned Institution/ Influential people in the village/ Local community like Panchayat, youth club, Social worker/ Govt. agencies/ NGO/ State department of Tourism / Forest Department
	Promotion of local talent	Encouraging local cultural activities	
	Linking local festivals and rituals	Publicity	
	Conflict	Conflict resolution through some committee at the village level	
	Safety (social security of tourist)	Trust building through the committee	
	Promotion of local peoples' knowledge related with the integrity of the ecosystem	Application of PRA techniques, dissemination of knowledge through village level workshops	
<b>Economic</b>	Local employment generation	Economic survey	Govt. agencies/ Village level institutions / NGO / Implementing Agency/ Local bodies with support and capacity building by department and Institutions/ Training by Tourism department
		Assessment of resource potential	
		Develop backward and forward linkages	
		Capacity building	
	Use of local people, local products and cuisine	Capacity building through training, awareness programmes	
	Infrastructure development	Developing basic facilities by govt. agencies / local bodies / funding agencies	
	Introduce local food / restaurant cuisine	Training	

<b>Ecological</b>	Promotion of indigenous species diversity	Enlisting & protection guidelines	Govt. Department / Forest Department / Research Institution / Municipal Corporation / NGO / Eco-development committee / Pollution control /Panchayat	
		Identify sensitive species		
	Conservation of biodiversity/ environment with particular emphasis to waste & waste water management	<i>In situ</i> and <i>ex situ</i> conservation measures		
		Involving & empowering FPC		
Waste disposal management	Formation of task force			
	Installation of proper waste management facilities			
Protecting conservation of local area and promoting better environment	Formation of "taskforce" at State / district level			
	Formation of Ecotourism committees in nearby villages			
<b>Policy</b>	Empowerment of local communities	Develop suitable legislation through state and central level committees		Govt Agencies/ Community / NGO / Concerned department
		Participatory policy formulation and its implementation		
	Integrated management	Development of integrated management plan		
		Involvement of institutions / experts		
	Participatory policy formulation and its implementation	Stakeholders participation		
	Mechanism to implement the policy	Integration of government, community, corporate, and NGO systems		
	Logistics	Roads / transports / lodging / boarding		
	Promotion	Marketing, proper media planning, package and theme based, networking		
	Liberalisation and reduction of restriction	Formulation of liberal legislation		
	Cross sectoral / inter departmental linkages	Establishment of linkages among all concerned institutions and departments / reduction conflict through coordination committee		
	Review and monitoring of tourism policy	Faster for better implementation mechanism		
Monitoring and evaluation of ecotourism projects	Strict legislation with dos and donts, rules and act			
Zonation of tourism activities I.E., virgin, reserved, undisturbed & restricted zone identification	Survey, observation, mapping & accordingly			
<b>Institutional</b>	Involvement of local communities	Institutionalise Ecotourism committees	Govt./Tourism Department/ Local	

	Formation of State level monitoring committee	Follow up of action on policy (State tourism policy)	villagers/ Local bodies
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### **SITE SPECIFIC RECOMMENDATIONS**

During the analysis, an adjoining area having the ecotourism was visited by the stakeholders. The following recommendations were made for the promotion of the ecotourism in the area.

1. Preparation of Ecotourism management plan.
2. Training of communities
3. Infrastructure development, laying of trails, construction of day-shelter, transport arrangement, interpretation skills (guides etc.)
4. Local handicraft, cuisine, folksongs/ music to be encouraged
5. Bigger and open water bodies should be only be used for recreational purpose
6. Infrastructure development
7. Basic facilities development
8. Publicity and promotion of the destination
9. Creation of local committees
10. Securities and departmental co-ordination
11. Promotion of local economic earning activities
12. Long-term planning

### **STRATEGY FOR COMMUNITY BASED ECOTOURISM**

The stakeholders made following recommendations for the short term and long term strategies for the community based ecotourism

SHORT TERM	LONG TERM
<ul style="list-style-type: none"> <li>➤ Identification of potential areas.</li> <li>➤ Motivation of community.</li> <li>➤ Infrastructure development</li> <li>➤ Attractive income generation packages</li> <li>➤ Organising workshops for the local community</li> <li>➤ Provide communication facilities</li> <li>➤ Formation of village (local) level committees</li> <li>➤ Local fee (entry fee)</li> <li>➤ Basic facilities development</li> <li>➤ Training for local youth &amp; inform of internship for tourism guides</li> <li>➤ Awareness program</li> <li>➤ Co-ordinating committee formation</li> <li>➤ Case study development</li> </ul>	<ul style="list-style-type: none"> <li>◆ Policy development</li> <li>◆ Research and monitoring</li> <li>◆ Development of good practices.</li> <li>◆ Empowering the people to self-sustain themselves</li> <li>◆ Ensuring the ecological character of the area on a long-term basis.</li> <li>◆ Designing media campaigns and other effective outreach measures.</li> <li>◆ Development of infrastructure</li> <li>◆ Providing attractive and economic tourist packages</li> <li>◆ Infrastructure development</li> <li>◆ Market promotion ecotourism</li> <li>◆ Creating Task force</li> <li>◆ Periodical review of the policy</li> </ul>

11.

## LOCAL INITIATIVES TO LOCALISE ECOTOURISM - AN EXPLORATORY STUDY IN KERWA - VAN VIHAR NATIONAL PARK CATCHMENTS, BHOPAL, INDIA

A K Bhattacharya, Suchitra Banerjee and Vandana Saxena

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### **Abstract**

*Ecotourism is growing fast. For sustainable ecotourism management proper planning through the involvement of the local people of the tourism destination areas is considered essential. The paper attempts to address the various issues of community based ecotourism of a local tourism destination area near Bhopal, the capital of Madhya Pradesh. The perception of the visitors and the local villagers have been captured and analysed, conclusions drawn from the survey and strategy suggested.*

### **BACKGROUND**

#### **FROM TOURISM TO ECOTOURISM**

Tourism in general has already become the most important civil industry in the world. According to World Travel and Tourism Council tourism is now the world's largest industry (Lindberg and Hawkins, 1999)<sup>1</sup>. Ecotourism is the most important segments of tourism (WTO 1984<sup>2</sup> and 1991<sup>3</sup>). The concept of ecotourism evolved in 1980s and this concept mainly developed in response to calls for sustainable forms of tourism. One of these was an increase in environmental consciousness, which had begun in late 1960s and gained momentum in 1980s (Figgis 1993<sup>4</sup>, Wight 1993<sup>5</sup>, Figgis 1994<sup>6</sup>, Harris and Leiper 1995<sup>7</sup>, Eagles 1996<sup>8</sup>, Ceballos-Lascurian 1996<sup>9</sup>).

When the term *ecotourism* first appeared in the 1980s, it was loosely applied toward travel that included any aspect of nature. Most of these travel packages and destinations,

however, were little more than mass tourism taken outdoors. Most imparted more impacts than benefits on local communities and habitats. Over the years, changing attitudes by travelers, tour operators, communities and conservationists have significantly narrowed the ecotourism focus.

Butler writes that whale watching that began in response to their depletion of the Humpback whale Blue Whale in the 1960s (resulting in them being declared protected in 1967 and 1966 consecutively) marked the birth of the ecotourism (Cebalos-Lascurian 1996)<sup>9</sup>.

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<sup>1</sup>LINDBERG KREG & DEONAL E HAWKINS (Eds) 1999. Ecotourism: A guide for Planners and Managers. Vol I, Norht Bennington, VT, USA : The Ecotourism Society. Natraj Publishers, Dehradun, India

<sup>2</sup> WTO, 1984. Economic review of world tourism. World Tourism Organisation, Madrid.

<sup>3</sup> WTO, 1991. Yearbook of Tourism Statistics. World Tourism Organisation, Madrid.

<sup>4</sup> FIGGIS P, 1993. Ecotourism: Special interest of major direction? Habitat, 21 (1) : 8 – 11.

<sup>5</sup> WIGHT P, 1993. Sustainable ecotourism: balancing economic, environmental and social goals within an ethical framework, The Journal Tourism Studies, vol 4, no 2, pp 2 – 10.

<sup>6</sup> FIGGIS P, 1994. Ecotourism : Panacea, Plague or Possibility. Eighth Richard Jones Memorial Lecture, October. University of Tasmania, Central for Environmental Studies, Hobart

<sup>7</sup> HARRIS R & LEIPER N (Eds) 1995. Sustainable Tourism: An Australian Perspective. Butterworth-Heinemann, Chatswood, NSW

<sup>8</sup> EAGLES, PFG, 1996. Issues in tourism management in Parks : The experience in Australia. Australian Leisure, vol 7, no 2, pp 29 – 37.

<sup>9</sup> CEBALLOS-LASCURIAN, HECTOR, 1996. Tourism, Ecotourism and Protected Areas. Cambridge, UK : International Union for Conservation of Nature and Natural Resources (IUCN).

As a result of the increased environmental awareness, eco-development arose as a model that sought to integrate cultural, social and ecological goals with development. It has been suggested that out of this popular school of thought, the concept of ecotourism was developed as an opportunity to put the ideas of eco-development into practice (Sagasti and Colby 1993<sup>10</sup>, Nelson 1994<sup>11</sup>). Ecotourism, being promoted as a means of 'giving nature value' and hence of achieving sustainable tourism development could be a useful choice besides the other types of tourism (Kamra 2001)<sup>12</sup>.

Ecotourism has been defined in different ways. Ecotourism was first defined by Cebalos-Lascurian as: "Traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants, as well as any existing cultural manifestations (both past and present) found in these areas" (Commonwealth Department of Tourism 1994)<sup>13</sup>.

The International Ecotourism Society defines Ecotourism as "Responsible travel to natural areas which conserves the environment improves the welfare of local people."

A general consensus has formed on the basic elements of ecotourism:

- Contributes to conservation of biodiversity.
- Sustains the well being of local people.
- Includes an interpretation / learning experience.
- Involves responsible action on the part of tourists and the tourism industry.
- Is delivered primarily to small groups by small-scale businesses.
- Requires the lowest possible consumption of nonrenewable resources.
- Stresses local participation, ownership and business opportunities, particularly for rural people.

### **COMMUNITY BASED ECOTOURISM (CBE)**

CBE management refers to ecotourism programs, which take place under the control and active participation of the local people who inhabit or own a natural attraction (Lindberg *et al* 1999)<sup>14</sup>. CBE works closely with local people, provides incentive for conservation, and more and more often, works outside of parks in locally owned land. Communities are an integral part of ecotourism ecosystem. They can help sustain ecosystem. Communities

are to be affected first by any influences of ecotourism destination areas. For sustainable ecotourism involvement of communities in planning and local management is essential (Coltman 1989<sup>15</sup>, WTO 1993<sup>16</sup>, Cater and Lowman 1994<sup>17</sup>).

Since ecotourism brings many changes at the community level therefore community should have greater voice in development and conservation of their natural resources. Ecotourism can play a significant role in livelihood security as integral parts of ecosystem. CBE implies that a community is taking care of their natural resources in order to gain income through operating a tourism enterprise and using that income to better their lives. It involves conservation, business enterprise and community development. Community managed tourism attempts to let communities decide what type of growth they would like to see and then help them implement their plans (Lindberg and Hawkins 1999)<sup>1</sup>

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<sup>10</sup> SAGASTI F & COLBY M, 1993. Eco-Development and Perspective's on Global Change from Developing Countries. In : Global Accord, Ed Chourci N, MIT Press, London

<sup>11</sup> NELSON JG, 1994. The spread of ecotourism: some planning implications. Environmental Conservation, 21 (3) : 248 - 255.

<sup>12</sup> KAMRA KRISHNAN A, 2001. Economics of Ecotourism. Kanishka Publishers, New Delhi.

<sup>13</sup> COMMONWEALTH DEPARTMENT OF TOURISM 1994. National Ecotourism Strategy, Australian Government Service, Canberra, Australia.

<sup>14</sup> LINDBERG KREG, MEGANEPLER WOOD & DAVID ENGELDRUM (Eds) 1999. Ecotourism: A guide for Planners and Managers. Vol II, Norht Bennington, VT, USA : The Ecotourism Society. Natraj Publishers, Dehradun, India.

<sup>15</sup> COLTMAN MICHAEL M, 1989. Tourism Marketing. Van Nostrand Reinhold, New York.

<sup>16</sup> WTO, 1993. Sustainable tourism development : Guide for local planners. A tourism and environment publication. World Tourism Organisation.

<sup>17</sup> CATER, ERLET & GWEN LOWMAN (Eds) 1994. Ecotourism : A Sustainable Option. John Wiley & Sons, England.

## **PLANNING FOR CBE**

Ecotourism areas often include existing communities, specially of traditional people, and therefore, ecotourism plan must be holistic in approach and consider ways to conserve local cultural traditions and identities and how to bring benefits to these communities. Although the researches indicate that the CBE can be a powerful force for conservation for conservation by providing benefits to local people, but meeting such conservation objectives requires careful and proper planning and design (Lindberg and Hawkins 1999)<sup>1</sup>.

Some planning principles for ecotourism are as follows (WTO 1998)<sup>18</sup> –

- Apply strict conservation measures to the natural areas to protect the flora, fauna and ecosystems and make existing archaeological of historic sites.
- Establish carrying capacity standards so that there is not over – development of the tourist facilities or over use of the environment by the visitors.
- Develop small scale tourist facilities in environmentally suitable locations, with locally based design, use of local building materials, energy saving devices and proper disposal of waste material. A visitor center with exhibits about the site and local conservation techniques should be developed.
- Prepare and distribute ecotourism codes of conduct for the tourists and tour operators, and monitor applications of these codes.
- Provide well – trained tour guides who will give accurate information to tourists, educate tourists about biological diversity, conservation techniques and observe good conservation measures during tours.
- Integrate local communities into tourism development by providing them jobs and income form tourism, arrange village tours where appropriate and educate tourists about the local cultures including their economic activities and how to show respect for their cultural traditions.

## **THE STUDY AREA – KERWA – VAN VIHAR NATIONAL PARK CATCHMENTS**



## **KERWA**

India in general and Madhya Pradesh in particular having unlimited potential in Ecotourism should be geared up to reap the benefits in a new perspective. One of the essential ingredients of ecotourism is community participation and community benefits. Since the destination areas for ecotourism in Madhya Pradesh are already under tremendous biotic pressure, for sustainable ecotourism, it becomes essential that the local communities are actively involved in its management. So close to the concrete jungle of Bhopal the Kerwa jungle are endowed with scenic and aesthetic values, which attract around one lakh visitors annually. The interesting issue is that most of them are local tourists including villagers from adjoining villages.

The area is close to Van Vihar National Park and has tremendous tourism potential and has also an impact on the socio-economic condition of the villagers. The local communities can play a significant role in the development of ecologically and sustainable management of ecotourism module in the area, on the other hand the ecotourism in the area can play an effective role in the economic development of the villages in the ecotourism destination area. Total available area is 50 sq km where Ecotourism impact area is 10 sq km. The common salient feature of the area are :

- Local – It is hardly thirteen kms from the main centers of the capital.
- Forests + wildlife – The areas is naturally endowed with forests and wildlife.
- Water body – There is a dam, perennial water stream and also some water bodies.
- Nearest nature – So close to the city the area provides a serene natural surroundings.

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<sup>18</sup> WTO, 1998. Guide for local authorities on developing sustainable tourism. A tourism and environment publication. World Tourism Organisation.

- Topography – The area has good landscape, suitable for trekking and aesthetic value
- Wilderness – The area also provides wilderness for nature lovers.

## **VAN VIHAR**

Van Vihar, the smallest National Park of India and one of most unique in the world is situated in Bhopal, the capital of largest state of India. Bhopal lies in the eastern edge of Malwa plateau and situated in the central part of state bounded by Rajgarh district in the northeast, Guna district in the east and south-east and Sehore district in the west and southwest.

Nature has tremendous capacity to resurrect itself. Van Vihar National Park is a living example that reflects this capacity of Nature. Van Vihar National Park was established in 1983. A 445 hectares of degraded and denuded hillock adjoining the city and dotted with numerous villages on the other side was provided legal protection by declaring it a National Park on 26th January, 1983.

Both Van Vihar and Kerwa are situated close by, the former being the zoo having the status of national park whereas the later falls in the revenue forests, part of which has been transferred to the Forest Department for protection.

## **THE STUDY**

Looking to the growing tourism in this area, a tourism potential survey was done to understand the perception of the various stakeholders for planning sustainable CBE in the area.

## **OBJECTIVES**

With the hypothesis that the small towns and the rural areas have considerable potential for ecotourism (Gunn 1988), the specific objectives of the study were set to

- ✓ Identify key emerging issues in CBE, specially the community benefits.
- ✓ Generate options to address the key issues.

The study was intended for the following outcomes

- ✓ Approaches for short term and long term strategy for CBE.
- ✓ Suggested module for CBE for operationalisation – Kerwa as a pilot project.
- ✓ Recommendations for State ecotourism policy guidelines.

### **APPROACH**

- The whole analysis was accomplished through participatory approach at all levels involving all the stakeholders ensuring active participation of the stakeholders.
- The stakeholders included officials of different levels from Forest, Tourism, Energy and Rural Developments, tourist operators, NGOs, Professionals, Scientists and Academicians, Community members, Village level institutions including forest committees and Gram Sabha members
- The methodology included intensive and extensive discussions, focus group discussions, village and house survey through schedules, field visits by combined team of major stakeholders followed by brain storming sessions and presentations of results of the analysis and open house discussions in the workshop.

The study was conducted during the period of October 2000 to March 2002. The field surveys were carried out in all the seasons.

The responses were received from

- 69 groups (approximately 500 individuals) – visitors invariably come in groups of 6 to ten.
- 40 households – households were selected through random selection.

However the questions were addressed to the heads of the groups / households, but attempts were made to obtain the group response through participatory approach. Finally the findings were discussed in a workshop participated by the major stakeholders.

## TOURISTS' PERCEPTION

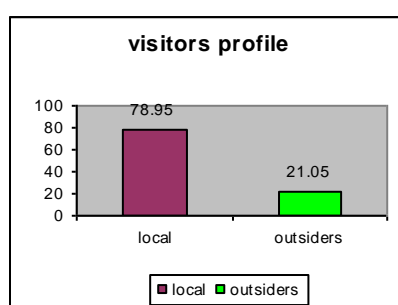
### TOURIST INFLUX

Tourists influx data indicate that rainy season is the peak period when the number of visitors visiting Kerwa is the maximum, specially on Sundays and general holidays. This is followed by winter and minimum influx is in summer.

Seasons	Average Sunday (annual)	Per day other holidays (annual)
Rains (July/August)	200 (16000)	1000 (8000)
Summer (May/June)	500 (4000)	125 (1000)
Rest of Months	1200 (38400)	600 (19600)
Average	1217	596
Total	58400	28600
<b>Annual total</b>		<b>87000</b>

### VISITORS PROFILE

Nearly 79% of the people visiting Kerwa are local visitors coming from different parts of Bhopal while 21% are outsiders.



### EDUCATION LEVEL OF TOURISTS

Most of the people visiting Kerwa are educated. The result of the survey indicates that 37.04% group heads are postgraduates while the percentage of graduates is 33.33%, followed by 18.52% matriculates and 11.11% technical.

Education	%
High school	18.52
Graduate	33.33
Post graduate	37.04
Technical	11.11

### OCCUPATION

The survey revealed that around 85% group heads belonged to the service class, of which 15% were from technical field while the rest were non-technical. Of the remaining fifteen per cent, 11% are from business community and 4% of visitors from the students community.

### INCOME GROUPS

Most of the people visiting Kerwa belong to the middle class having the monthly income ranging between Rs 3000 and Rs 10,000, followed by 26% between Rs 10000 and Rs 15000/-. The percentage of visitors whose income lies between 15001-20000 is 19%, while that of between 1500-3000 is 15%. A very small percentage of people visiting Kerwa is from the high income group.

Income group (Rs)	%
1500-3000	14.81
3001-10000	37.03
10001-15000	25.92
15001-20000	18.24
> 20000	4.0

**PURPOSE OF VISIT**

The majority of visitors visit the area for recreation. The number of nature loving visitors is also quite good. However from the discussion it emerged that the dividing line in the perception of the picnic, outing, and love for nature was quite thin.

Purpose of visit	Percentage
Close by picnic spot	57.8
Love for nature	17.5
Outing	15.7
Picnic spot and love for nature	3.5
Picnic spot and love for nature and outing	2.0
All purpose	3.5

**FREQUENCY OF VISITS PER MONTH**

About 91% people visit Kerwa between 1-5 times a month. About 6% people visit 6 -10 times a month. Only a small percentage visit it for more than 15 times in a month.

Frequency	%
1 - 5	91.3
6 -10	5.20
11 -15	1.75
> 15	1.75

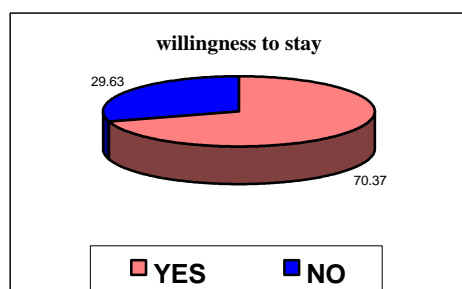
**OTHER ADJOINING PLACES BEING VISITED**

Besides Kerwa there are some other places also in and around Bhopal, which are of tourists attractions. These places are Kolar Dam, Bhojpur, Bhimbetika, Halali Dam, Lakeview, Kalia Sot Dam, Manbhavan ki Tekri (the highest peak of Bhopal), Delabadi (wildlife area), Lalghati, Chiklod, Raisen Fort and Indira Gandhi Dam. Percentage of the visitors who also visit these areas regularly area as follows –

Sl.No	Name of Place	Percentage
1.	Kolar Dam	40.7
2.	Bhojpur	33.3
3.	Bhimbetika	25.9
4.	Halali Dam	25.9
5.	Lake view	14.8
6.	Kalia Sot Dam	14.8
7.	Manbhawan Ki Tekri	7.4
8.	Delabadi	7.4
9.	Lalghati	3.7
10.	Chiklod	3.7

**WILLINGNESS TO STAY IF FACILITIES PROVIDED**

Many of the visitors showed interest in staying in the area subject to the availability of proper amenities such as safe drinking water, better roads, trekking, Rock gliding, lodging, Park, Restaurant, Medical facilities, fuel, etc. They are ready to pay for these facilities.

**NUMBER OF DAYS LIKELY TO BE SPENT**

Majority (61%) of the tourists are willing to stay up to three days if adequate facilities are provided.

Days	%
1	14.11
2	33.33
3	13.11
4	0
5	0
>5	12.8
Did not respond	26.65

**FACILITIES REQUIRED**

The facilities desired mainly include safe drinking water and access.

Facilities	%
Water	18.5
Road	8.2
Trekking	7.0
Rock gliding	6.6
Lodging	9.4
Park	7.8
Restaurant	7.4
Medical facility	7.4
Fuel facility	3.7
Did Not respond	24

**WILLINGNESS TO PAY FOR STAY**

Majority of the tourists agree to pay up to Rs 200/- per person per day for the necessary facilities.

Payment	%
50-100	22.22
101-200	14.81
201-300	0
301-400	7.41
401-500	0
>500	3.70
Did not respond	51.86

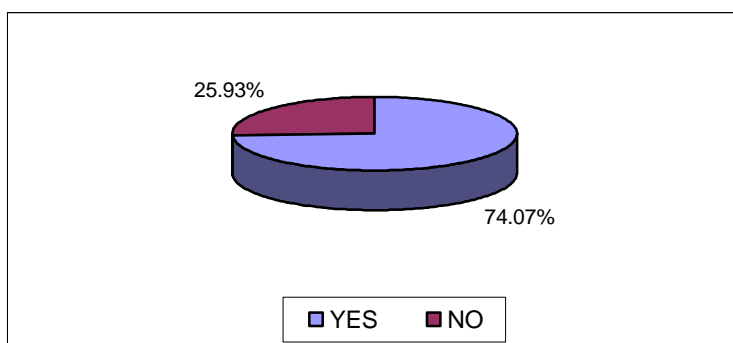
**PROBLEMS AND DIFFICULTIES**

Visitors complained for non-availability of safe drinking water, poor public transport, and non-availability of proper shops of essential commodities. Also no trained guide is available for proper guidance about the area. There is no arrangement to check the visitors taking a dip or a swim in the dam for pleasure and fun, as a result there is always a fear of accident. Every year there are reports of few casualties. Besides, the visitors also face the problem of proper toilets and health care facilities.

Problems	Percentage
Water	64.9
Transport	22.8
Shop	8.7
Security	5.26
Guides	5.26
Shades	5.26
Others	5.26
Medical facility	3.5
Toilet facility	3.5

**WILLINGNESS TO STAY WITH VILLAGERS**

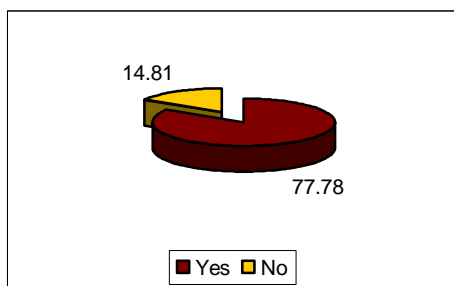
A large percentage of visitors (74%) are ready to stay with the villagers.



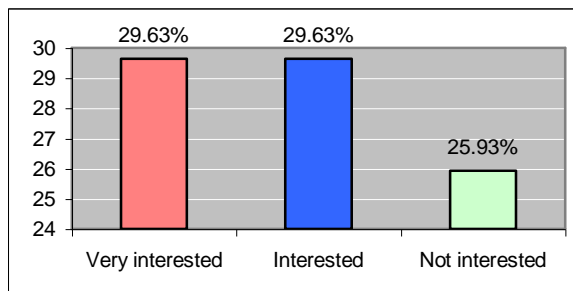
**INTEREST IN LOCAL CULTURE & CUISINE**

Visitors showed lot of interest in local culture including local folk songs and dances. Visitors were also found to be interested in local cuisine.

**Interested in local cuisine**



**Interested in local culture**



## VILLAGERS' PERCEPTION

### VILLAGERS' PROFILE

For the purpose of villagers' perception two adjoining villages named Mendora and Chichli were selected. These villages, being closest to the ecotourism destination area, were considered for the study.

Description	Mendora	Chichli
Number of families	64	32
Population	650	187
Total agriculture land (Acres)	Nil	77 A
Livestock	80	191
Distance from ecotourism destination area	2 Kms The village is on way to the area	3 Kms This village is situated on the other side of the area
Village area	8 acre	5 acre
Communities	3-ST,SC, General	2-ST, SC

### TRADITIONAL BUSINESS OF THE AREA

The traditional businesses of the area are agriculture (30%), Labour (30%), animal husbandry (23.3%) and remaining people are involved in fishing (15.3%).

Traditional Business of the area	%
Agriculture	30.7
Labour	30.7
Animal husbandry	23.3
Fishing	15.3

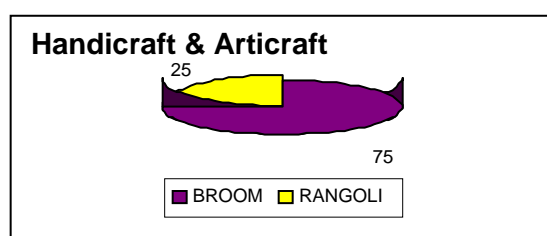
### PRESENT OCCUPATION

Most of the villagers of these two villages are occupied in 'animal husbandry' followed by nursery (plantation), agriculture, cow dung selling, Tendu leaves collection, fishing and others.

Options	%
Animal husbandry	72
Nursery	52
Agriculture	21
Cow dung selling	17
Tendu leaves collection	13
Fishing	11
Others	03

### HANDICRAFT AND ARTICRAFT OF THE AREA

Villagers feel that the 'broom', which is presently being made for self-consumption, can have potential as handicraft. Besides this, some ladies are also involved in 'Rangoli'.



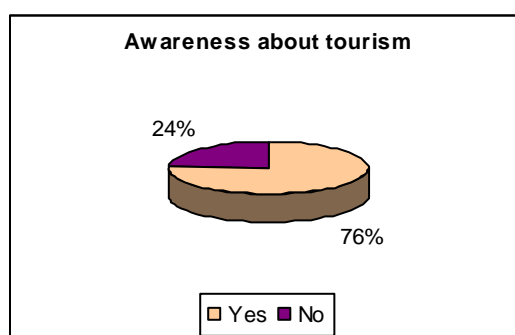
### **CONSERVATION ACTIVITIES BY COMMITTEE**

'Mendora Village Forest Committee' contributes to the conservation of forest. The committee is involved in plantation, fencing, checking illegal felling of trees, protection from fire, land filling, sanitation works etc.

<b>Conservation Activities</b>	<b>%</b>
Plantation	70.2
Fencing	15.7
Checking illegal felling of trees	8.5
Protection from fire	2.8
Land filling	1.4
Sanitation work	1.4

### **AWARENESS ABOUT ECOTOURISM**

Most of the villagers are aware about purpose of the visit to the area by visitors, thus they are aware of ecotourism in their own perception. Nearly 76% of them are aware of ecotourism and related activities.



### **REASONS OF TOURISM**

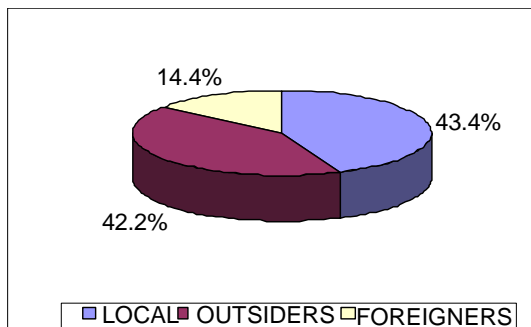
Through the perception of their interaction with the visitors, the villagers consider that people usually visit the place for picnic and recreation, to enjoy the nature, wildlife, fairs and festivals, adventure sports and for religious purpose.

<b>Reasons</b>	<b>% response</b>
Picnic and recreation	60
Natural beauty	48
Wild life seeing	13
Fairs & festivals	10
Adventure sports	03
Temple	02



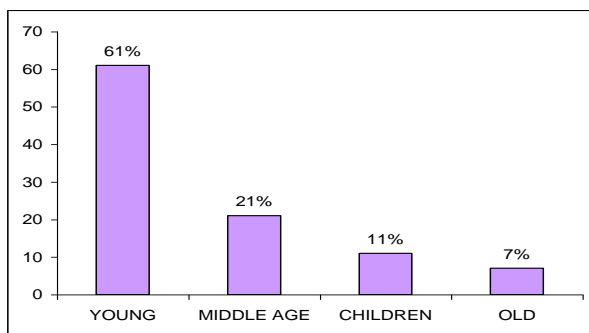
**TYPES OF TOURISTS**

As per the villagers' perception about 43.4% people are local people who come from in and around Bhopal, while 42.2% are outsiders, those come from different places. It is interesting to note that foreign tourists (14.4%) also visit the area as guests of the local people.



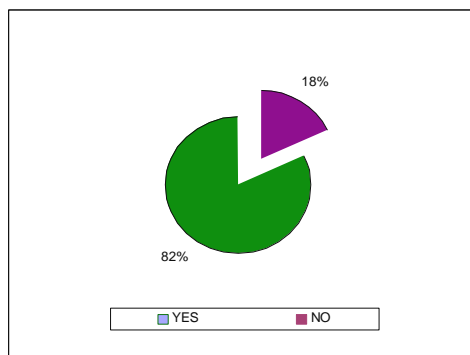
**AGE CLASS OF THE TOURISTS**

According to the villagers most of the people who visit the area belong to the young generation (between 18-30 years), followed by middle class (31-50), children (below 18) and aged people (above 50).

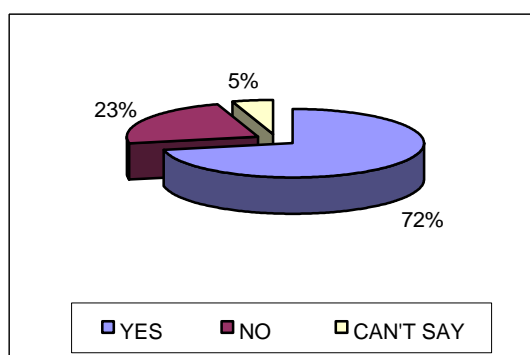


**BENEFITS FROM TOURISM**

It has been observed that only a small percentage of local people are benefited from tourism. The main beneficiaries are petty shopkeepers e.g. Grocery store, tea stall.



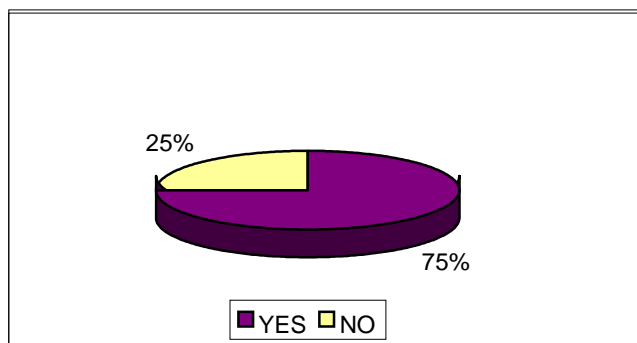
Benefits from tourism



Willingness to host tourism

**WILLINGNESS TO HOST TOURISTS**

About 72% people are in favour of hosting tourists, while 25% are not in favour of tourism. 3% percent people did not respond.



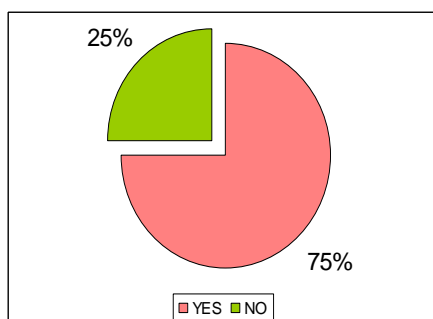
Willingness of Community Control of tourism

**WILLINGNESS OF COMMUNITY TO CONTROL TOURISM**

Nearly 75% of the villagers have been found to be interested in community control of the local tourism. They are of the opinion that village level forest committees could take over the activities of the tourism.

**INTERESTED TO BE ASSOCIATED WITH ECOTOURISM**

About 75% of the villagers are willing to be associated with ecotourism and related activities. They are of the opinion that this may improve their economic status as they will get more opportunities to earn through tourism. Showing interest in various enterprises and earning activities, about 23% people want to establish small shops, 23% want to become tourist guides, 19% are in favour of establishing hotels or restaurants, followed by trading (10.7%), general employment (8%), self-employment (5%), folklore and handicraft (2.2%), cottage industry (1.1) and adventure sports (1.1). Significantly, as against the opinion of men, the women appeared apprehensive that their children might be affected by undesirable behaviour and lifestyle of some of the tourists.



Interested to be Associated with Ecotourism

**INFRASTRUCTURE NEED**

The villagers of Mendora and Chichli villages reported that in order to adopt ecotourism for enhancing their economy, they need certain basic facilities for tourism development. About 18% wanted infrastructural facility, followed by drinking water (12.5%), waste management and disposal facility (9.4%), electricity (9.4%), roads (9.4%), transportation (8.9%), communication (8.0%), Hoardings (6.7%), men and women toilets

(6.7%), police station (4.9%), children park (3.1%), speed breakers (2.2%), medical facility (0.4%).

### **COMMUNITY BASED IMPLEMENTATION**

Villagers were interested in ecotourism ventures if launched at the village level so as to enable their youths to get better job opportunities. Besides the male, women may also earn through home run centers of papad and pickles, tailoring and stitching, local cuisine.

<b>Requirements</b>	<b>%</b>
Building	17.9
Drinking water facility	12.5
Waste management facility	9.4
Electricity	9.4
Roads	9.4
Transportation	8.9
Communication facility (STD booth)	8.0
Boarding on the road	6.7
Basic Toilet facility	6.7
Police station	4.9
Children park	3.1
Speed breakers	2.2
Medical facility	0.4

### **VILLAGERS EXPECTATIONS**

#### **Capacity building**

Villagers appeared quite clear that to take up ecotourism as an economic venture they require capacity building specially for

- entrepreneurship development (self employment ventures)
- tourism activities (guides / management)
- small scale industries like making of *papad*, *achar*, basket weaving and stitching

**Financial support** – The villagers also consider that some initial financial is essential to invest in small scale industries, shops, dairy, livestock, raw material, starting business etc.

**Infrastructure development** – Villagers feel that some infrastructures development are required for operation of the whole tourism activities specially the sheds and other logistics.

**Institutionalisation and regulations** – The villagers firmly believe that in order to institutionalize the process, some regulatory measures are required. Institutional mechanism is considered necessary for providing logistics, support services, fuel supply (cow dung etc).

### **REACTIONS**

#### **Negative**

- Villagers do not like tourists' behaviour to spread dirt and wastes anywhere on roads and other places thus spoiling the area by dumping empty bottles and waste food in water resulting in garbage and pungent smell.
- “Gundagardi” (hooliganism) is increasing because of tourism; sometimes youngsters come and shout under intoxication causing irritation to the people.
- Careless drinking / intoxication leads to dirty atmosphere.

- Few women complained that the tourists should not be allowed to enter the area as their growing up children may easily copy their bad habits

### **Positive**

- Some people running road side small shops of tea and snacks are benefited from tourists while others do not get much benefit.

### **Suggestions by villagers**

- Hoardings at prime locations should be raised for drawing the attention of visitors towards tourists' code of conduct and better civic sense.
- Efforts should be made to educate tourists about proper disposal of waste in order to foster eco-friendly atmosphere and clean environment,
- A check post at the entry and near the dam be established to monitor anti-social, undesirable and accidental possibilities.
- Entry fee may be imposed.
- Fishing in the dam should be allowed so that the local community may be benefited.
- Publicity campaign be launched to enlighten the tourists as well as the villagers about Environmental laws, rules and regulations framed by the government from time to time.
- Banners like “ Make Your Trip Green and Clean”, “Wandering one gathers honey” “Enjoy Nature-the Glory of God” be put up on all over the area.

### **CONCLUSIONS**

1. The area has tremendous potential of ecotourism and with proper organized planning and implementation, ecotourism can make a breakthrough for the conservation and economic development of the area.
2. The CBE module can be implemented as the local people are aware and sensitive about the tourism ventures, thus they can be involved in planning and implementation of the ecotourism.
3. Most villagers strongly feel that ecotourism should be encouraged and more and more ecotours be promoted. While there is liking for tourists, there is strong disliking as well for the non-environmental tourist behaviors of contributing pollution.
4. There is need for capacity building for providing them opportunities for starting business at small-scale level. The youths of the village are very much interested to be a part of ecotourism to act as tourist guides.
5. Women are also interested to take up the ecotourism related activities.
6. There is need to streamline the functioning of the village forest committee with a view to involve villagers in the development and management of the area.
7. An integrated holistic plan for the community-based ecotourism should be prepared through the involvement of all stakeholders and implemented through the local people and a strategy for the sustainable ecotourism management should also be evolved for all such areas.

12.

**ECONOMIC VALUATION OF ECOTOURISM AT KERWA REGION, BHOPAL (MP)**Samita Vasudevan, Vanya Jha and A K Bhattacharya

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**Abstract**

*The present study was undertaken to assess the economic value of the Kerwa region. Kerwa is an ideal site for promoting Ecotourism given its proximity and popularity among the citizens of Bhopal city, easy approach roads and the extensive cover and of variety of fauna and flora. The method adopted for the present study is known as the Travel Cost Method (TCM), which is a commonly applied tool while valuing user benefits of environmental goods in monetary terms, such as in our case of a recreational park. An attempt has been to assign a monetary value to the area incorporating only the use-value so as to reveal what the site is "worth" to the public, and provide an economic justification for conservation, further development and application of management practices. Alternatively, the results from the study could also be used by relevant authorities as a guideline for the introduction of entry fees for the tourist site.*

**INTRODUCTION**

Ever since the second half of the twentieth century, concern about current and future use of our natural resources and environment has emerged at an increasing rate. This growing concern is accompanied by an increasing interest in so-called nature-based tourism or ecotourism, which can be defined as responsible travel to natural areas that conserves the environment and sustains the well being of local people. Presently, both benefits and threats have been observed resulting from the growing importance of tourism in environmentally sensitive areas.

India in general and Madhya Pradesh in particular is having unlimited potential in Ecotourism.

For realising this potential, two of the main aspects to be stressed upon are

- the needs of the domestic and local tourists
- promoting tourism destinations outside forest areas.

The Kerwa Dam area near the city of Bhopal is one such site that has the potential to address both these aspects. Thus the present study has been conducted to obtain economic information about benefits that flow from Kerwa Dam Recreational Site near Bhopal, M.P.

The recreational value of an outdoor site is supposedly reflected in a visitor's willingness to pay for the visit. The present study adopts the travel cost method (TCM) to reveal this value. This method is based on conventional consumer demand theory where utility is maximised by the individual, and demand falls with rising prices. The method has been applied to estimate a value for the Kerwa Recreational Park situated near Bhopal. A standard assumption for interpreting travel costs as a valid proxy for the price of a trip is that the travel cost be incurred exclusively to visit that particular site and nothing else. For the Kerwa Recreational Park, this assumption often proves to be true and valid as people tend to go exclusively to the Dam site, due to its greater distance with any other recreational site in near proximity.

## **BACKGROUND**

The environment provides goods in term of resources (e.g. flora, fauna and minerals) and services (e.g. waste sink assimilation), a source of amenity services, use for recreational purposes and life support functions. While natural habitats in the past often seemed to have no reason for preservation, environmental goods are nowadays increasingly being recognised as being valuable and limited in supply. Tropical rainforests for example protect watersheds, act as a habitat for potentially valuable species, and regulate climate. Furthermore, they provide a natural environment for recreational experiences and tourism, such as bird watching, nature photography, camping and outdoor education.

Attractions within the tourist sector are often dominated by the natural environment. Nature-based tourism and ecotourism are popular terms, associated with sustainable tourism. Driml (1997) developed a working definition of sustainable tourism in protected areas as follows:

*“sustainable tourism is tourism where natural environmental resources that are fundamental to preserve life support systems and the conservation of biodiversity are maintained, resulting in a positive and non-declining stream of net economic benefits, thereby retaining investment in adequate management.”*

Ecotourism thus is nature-based tourism that places an emphasis on conservation, education and interpretation of the natural environment.

There is a rising demand of nature-based recreational experiences, which is obvious; people want to spend more time and money in natural settings that are unspoiled as yet, as they become more aware of the value of pristine environments and their specific features. On the other hand however, it can be argued that presence of more people in these areas will undoubtedly have impacts upon the environment, which may be negative. Nevertheless, the Ecotourism sector is growing rapidly. Visits to such areas bring along positive economic, social, and cultural effects as well as negative environmental impacts.

Economic benefits are gained through visitors who spend money, thereby creating economic activity and employment. Social benefits include opportunities for recreation, and the appreciation and enjoyment of nature. Cultural benefits are to be gained by promoting the understanding and revitalisation of the culture of the local community in the recreational site. However, the presence of people undertaking tourism and recreation activities in environmentally fragile areas also poses threat of adverse environmental impacts on the particular site.

## **RATIONALE OF THE STUDY**

The present study has been undertaken to assess the economic value of the Kerwa region. This assigns a monetary value to the area incorporating only the use-value. The value so obtained can be utilized for assessing the feasibility of carrying out further developmental and conservation activities in the region. This is especially relevant in the context of the management plan that has been prepared for the region.

## **OBJECTIVES OF THE STUDY**

It is quite evident that nature based tourism sites like the Kerwa Dam site has a potential to gain substantial benefits from tourism activities, provided that these are catered for in an environmentally sustainable way.

Furthermore, with rising high demands on resources, and a non-existent mechanism of ‘user-pay’ to obtain contributions towards management costs, there is an increasing need for more stability in funding arrangements. In most cases, natural environments have no

entry fees or have only nominal fees imposed to cover some management costs. This is exactly the case in the site chosen for the purpose of our study, where no user fee is charged from the tourists, who visit the site. This does not necessarily reflect the "true" value to visitors of the opportunity to visit the site.

Thus, the specific objective of our study is to estimate consumer's demand for Kerwa Dam recreational site. By applying the Travel Cost Method (TCM), current visitor's demand will be assessed. In a second stage, demand will be predicted at various hypothetical entrance fees. This will provide an assessment of the benefits that are experienced by the visitors, i.e. an economic value is calculated for the area.

The explicit analysis of the benefits can be used to reveal what the site is "worth" to the public, and provide an economic justification for conservation, further development and management practices. Alternatively, the results the study could also be used by relevant authorities as a guideline for the introduction of entrance fees for the tourist site.

## **METHODOLOGY - VALUATION METHOD**

The method adopted for the present study is known as The Travel Cost method (TCM), which is a commonly applied tool when valuing user benefits of environmental goods in monetary terms, such as in our case of a recreational park.

Harold Hotelling had originally suggested the Travel Cost Method (TCM) in 1947, when The US National Park Service had wanted to know how economic principles could be used to demonstrate economic values produced by national parks. Hotelling suggested that the travel costs an individual incurs to visit a recreation site could be used as an implicit price for that site's services. The basic premise of a TCM is that the number of trips to a recreation site will decrease with increases in distance traveled. Exploiting the empirical relationship between increased travel distances and associated declining visitor's rates should permit one to estimate a true demand relationship. If estimated empirically, this demand schedule could be used to compute the total benefits produced to park visitors, which were equal to any entry fees they paid plus their remaining unpriced benefits, referred to as consumer surplus.

### **TCM does not take any non-user benefits into account. This characteristic relates to the basic**

assumption of weak complementarity between the environmental asset and consumption expenditure. This concept was first discussed by Mäler (1974), stating that if the demand for a private good is zero, then the demand for the environmental service is also zero. For example, if the private good is swimming in a lake, and the environmental service is the quality of that lake, then if a person does not use this lake for recreation, he will most likely be indifferent to the quality of the water.

One of the drawbacks of the TCM is concerning the problem of multi-destination or multi-purpose trips. Since people often do not undertake the trip for one single purpose, or to visit one single site, assigning total travel cost to this one specific site would be incorrect and presumably overestimate demand. However, in this particular study of estimating the economic valuation of the Kerwa Recreational Site, we have assumed that all the visitors to the site are exclusive to the site, i.e. they undertake the trip for the sole purpose of visiting Kerwa Dam, and nowhere else. We have assumed this, because the main visitors to this site are locals from nearby Bhopal city, and not national and international tourists.



## **SAMPLING**

Convenience sampling was used to select the respondents. A sample size of 20 respondents was taken and data was collected from the visitors to the area on a single day. Due to time constraints, a larger sample size could not be taken.

## **TOOLS**

Questionnaires were used for data collection.  
SPSS package was used for data analysis.

## **ABOUT KERWA**

Kerwa region is endowed with scenic and aesthetic values, which is in close proximity to the concrete jungle of Bhopal. The area is close to VanVihar National Park and has tremendous tourism potential and has also an impact on the socio-economic condition of the villagers. The local community can play a significant role in the development of ecologically and sustainable management of ecotourism module in the areas, on the other hand the ecotourism in the area can play an effective role in the economic development of the villages in the ecotourism destination area.

## **LOCATION**

Kerwa region is spread over an area of 50 sq. km. Limited within the north Latitude N 23 18' and Longitude E 77 20' Kerwa region lies with Mendora, Mendori, Sarotipura, Kekeriya, Ransudriya, Bhanpur, Daulutpura and Chichilli villages .Bhopal station is 22 km and Habibganj railway station 18 km. The entry points in Kerwa region are from Bhadbadha Dam & Law Institute side and from Kolar Road, Rai Gas agency side.

## **TERRAIN**

The terrain is mostly undulating and hills of various heights and slopes are many in this tract. The attitude varies from 535 meters.

## **FOREST**

The forests found here are Tropical Dry Deciduous forest, with teak plantations.

## **WILDLIFE**

Region holds a variety of wildlife. Different species of carnivorous and herbivores are reported from this area.

## **WATER**

The position of water availability is not good during pinch period. Many nallas flow from July to November. The river in region is Kerwa river which originates from Kerwa dam and flows to Mandideep. It holds water in pools in summer.

## **Prospects of Kerwa as an Ecotourist spot**

Kerwa is an ideal site for promoting Ecotourism. The proximity to Bhopal city, easy approach roads, the extensive cover variety of fauna and flora contribute to prime potentially of ecotourism. However lots of basic infrastructure amenities have to be provided for the visitors without jeopardizing ecological serenity of the ecosystem of Kerwa Region.

## TOURISM

Tourists, mostly from Bhopal visit the Kerwa Region mainly in daytime on Sundays & holidays. Wildlife visibility is not good but people see Peacocks, langurs etc. Also there are so many spots of historical, archeological and scenic interest. But at present they are neither preserved and the attempts to present it to the tourists have also been very poor. Hence all the tourists arriving are picnic-makers, not hardcore wildlife enthusiasts or adventure lovers.

## LITERATURE REVIEW

Many different researchers have contributed to the now substantial body of empirical experience using Travel Cost Models for the Valuation of Environmental Goods, especially of tourist and recreational sites. To our knowledge, the use of economic valuation methods for non-market environmental goods and services in India has been extremely limited.

However, data from other countries may be examined to indicate the type of values identified. Menkhous & Lober (1996)<sup>1</sup> used the Travel Cost Method to estimate the value that US ecotourists

assign to Monteverde Cloud Reserve in Costa Rica. They arrived at a total annual US ecotourism value of USD 4.5 million. Values such as this can be used to calculate revised (higher) entrance charges that more adequately reflect the ecotourism benefit for the area. This study arrived at an average entrance charge of USD 40, which is considerably higher than the USD 5- 10 usually charged at national parks in Costa Rica (Lette & Boo, 2002)<sup>2</sup>.

Similarly, Maille & Mendelsohn (1991)<sup>3</sup> found a consumer surplus for ecotourism demand in Madagascar of between USD 276 and USD 360 per person. Brown & Henry (1989) found that 265,000 to 300,000 tourists on safari in Kenya in 1989 received a consumer surplus of USD 182-USD 210 million, or around USD 700 per tourist (Lette & Boo, 2002)<sup>2</sup>.

In the Philippines, the value of watershed protection for marine tourism is estimated at US \$14-19 million. In Costa Rica, the total value of their tropical forests (hydrological benefit, carbon sequestration, ecotourism, option for future pharmaceuticals, existence and option value) is estimated at US \$102-213 per hectare per year. The net present value (at 8%) is calculated to be US \$1,278-2,671 per hectare per year.

Fix & Loomis (1998)<sup>4</sup> compare non-market valuation techniques by applying a count data TCM and dichotomous choice CVM to a form of recreation for which it has not been previously applied: mountain biking. Due to mountain biking's increasing popularity these estimates of benefits may be useful in addressing conflicts. One of the most famous mountain biking sites in the U.S. (Moab, Utah) was chosen as the site for which to apply these two models. The benefits that were estimated for trips taken in the spring of 1996 are US\$205 and US\$235, for the TCM and CVM, respectively.

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<sup>1</sup> Bowker JM, English DBK & Donovan JA, 1996. "Toward a Value for Guided Rafting on Southern Rivers", *Journal of Agricultural and Applied Economics*; 28(2).

<sup>2</sup> Lette H & de Boo H, 2002. Economic Valuation of Forests and Nature: A support tool for effective decision-making. Theme Studies Series 6, International Agricultural Centre (IAC), Wageningen, The Netherlands.

<sup>3</sup> Tobias D & Mendelsohn R, 1991. "Valuing Ecotourism in a Tropical Rainforest Reserve", *Ambio*, 20:2,91-93.

<sup>4</sup> Fix P & Loomis J, 1998. "Comparing the Economic Value of Mountain Biking Estimated Using Revealed and Stated Preference," *Journal of Environmental Planning and Management*; 41(2).

Greene et al (1997)<sup>5</sup> estimated the demand for recreational fishing in Tampa Bay, Florida, to facilitate the environmental management of the bay. A nested random utility travel cost model is used to estimate access values. Results suggest that average annual values for the bay alone are \$18.14 and \$0.048 for participants and nonparticipants, respectively.

Research by Layman et al (1996)<sup>6</sup> extends the standard travel cost method to develop estimates of the economic value of recreational chinook salmon fishing on the Gulkana River, Alaska, under existing and hypothetical fishery management conditions. Respondents were asked to state how the number of trips that they took to the study area would change if alternative fishery management practices were imposed. Three hypothetical management conditions were considered: a doubled 1992 sport fish harvest, a doubled daily bag limit, and a season bag limit of five. Each of the hypothetical fishery management conditions provides increased economic returns to anglers.

Study by Bowker et al (1996)<sup>1</sup> examines per trip consumer surplus associated with guided whitewater rafting on two southern rivers in USA. First, household recreation demand functions are estimated based on the individual travel cost model using truncated count data regression methods and alternative price specifications. Findings show mean per trip consumer surplus point estimates between \$89 and \$286, depending on modeling assumptions and river quality. Magnitudes of these surpluses are very dependent on assumptions about the opportunity cost of time.

The analysis by Bell & Leeworthy (1990)<sup>7</sup> deals with tourists that come from significant distances to use principally beach resources. As earlier authors have argued, those that use the conventional travel cost methods (TCM) do not recognize its potential spatial limitations. One day trips as used by the TCM are certainly inapplicable to those coming from significant distances, such as tourists to Florida. The empirical data are consistent with the thesis that annual consumer demand by individual tourists for Florida beach days is positively related to travel cost per trip and inversely related to on-site cost per day. There are compelling reasons for treating recreational decision-making for tourists differently than for residents or those traveling relatively short distances. Employing the on-site cost demand curve for tourists using Florida's beaches, they found out the daily consumer surplus to be nearly \$34.00.

The research by Wen (1998)<sup>8</sup> evaluating both tourism and tourist resources in China has considered only the positive contributions of tourism and ignoring the aspects of disparities between the east coast and the inland area, inbound tourism and domestic tourism, nature-based and city-based tourism and negative effects from tourism. On the micro-and site-specific level, tourist resources characterised by non-marketable and non-use values are not properly evaluated, exposing these fragile resources to the plight of exploitation. Commercialisation of tourist resources, including natural environment and ethnic cultures, threatens further development of tourism in China. Further, the limited applicability of the travel cost and the contingent valuation method in measuring the value of recreation sites in China is discussed.

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<sup>5</sup> Greene G, Moss, CB & Spreen TH, 1997. "Demand for Recreational Fishing in Tampa Bay, Florida: A Random Utility Approach," *Marine Resource Economics*; 12(4).

<sup>6</sup> Layman RC, Boyce JR & Criddle KR, 1996. Economic Valuation of the Chinook Salmon Sport Fishery of the Gulkana River, Alaska, under Current and Alternate Management Plans, *Land Economics*; 72(1).

<sup>7</sup> Bell FW & Leeworthy VR, 1990. "Recreational Demand by Tourists for Saltwater Beach Days," *Journal of Environmental Economics and Management*, 18(3), May 1990.

- <sup>8</sup> Wen J, 1998. "Evaluation of Tourism and Tourist Resources in China: Existing Methods and Their Limitations," *International Journal of Social Economics*; 25(2-3-4).

## ANALYSIS AND RESULTS

For the analysis, the following steps were carried out :

1. Data was collected through the questionnaires on the following aspects:
  - number of visits to kerwa in the year
  - distance travelled to reach Kerwa (km)
  - roundtrip time taken (min)
  - mode of transportation
  - monthly income
2. The above data was used to calculate the following :
  - travel cost per km (cost of fuel \* average mileage of the transport mode used)
  - cost of time per minute (derived from monthly income of the respondent)
  - total cost of roundtrip (roundtrip distance \* travel cost per km)
  - total cost of roundtrip travel time (roundtrip time \* cost of time per min)
  - total travel cost (total cost of roundtrip + total cost of roundtrip travel time)
3. The above data for each respondent was fed into SPSS data sheet and a regression equation taking number of visits per year as the Dependent variable and the total travel cost as the Independent variable was calculated (Annexure II). This regression equation gives us the demand function for the "average" visitor to the site.

The equation obtained is :

$$\text{Number of Visits} = 3.375 - 0.00992 * \text{Travel Cost}$$

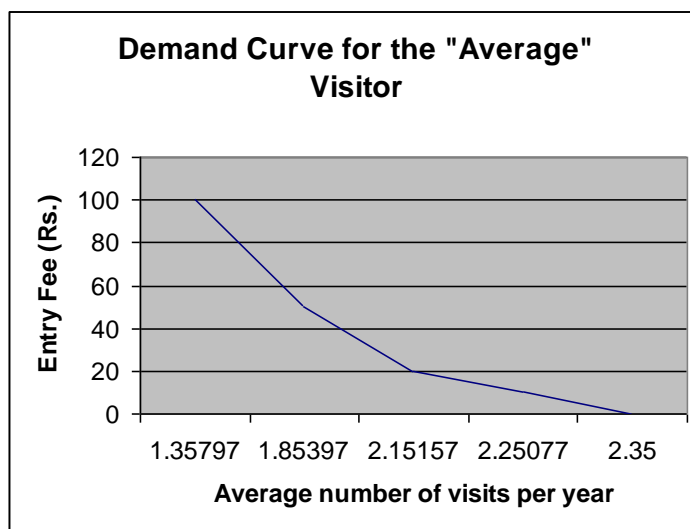
To maintain the simplest possible model, calculating the equation with only the travel cost and number of visits. If more independent variables (like gender and purpose of visit are taken, the regression model could be a better fit.

1. Using this equation the average number of visits for an "average" visitor were calculated taking the average travel cost (calculated by summing the individual travel cost and dividing by the number of respondents i.e. 20). At this travel cost, the entry fee is taken to be zero.
2. Next, a demand function for visits to the site was constructed, using the results of the regression analysis. The first point on the demand curve is the total average visits to the site at current access costs (assuming there is no entry fee for the site), which in this example is 2.35 visits per year. The other points are found by estimating the number of visitors with different hypothetical entrance fees (assuming that an entrance fee is viewed in the same way as travel costs). The entry fees assumed for calculation were Rs.10, Rs.20, Rs.50 and Rs.100.

Entry Fee (Rs.)	Average Number of Visits per year
Nil	2.35
10	2.25
20	2.15
50	1.85
100	1.36

3. A Demand Curve was plotted using the above schedule. The area below this demand curve gives the average consumer surplus (calculated to be Rs. 49.6). This is multiplied by the total relevant population (the population of Bhopal as given in the Census of India, 2001, i.e. 14,33,875) to estimate the total consumer surplus for the site.

Thus, the value of the consumer surplus derived from the above step gives us the total economic value of Kerwa. This value comes out to be Rs.7,11,20,200 i.e.



*Rs. Seven Crores Eleven Lakh Twenty Thousand and Two Hundred*

13.

## ASSESSMENT OF ENVIRONMENTAL IMPACTS OF TOURISM - ISSUES, OPTIONS AND TOOLS

A K Bhattacharya, Ravi Sharma and Suchitra Banerjee

### **Abstract**

*The paper deals with the various issues related to the potential impacts of tourism on the environment. The knowledge gaps in the area have been identified and research works carried out have been discussed. Different types of the possible environmental impacts and existing models for the assessment of environmental impacts of the tourism activities have been analysed and the research issues have been captured. The methodology and tools for the assessment of environmental impacts of tourism have been suggested.*

### **INTRODUCTION**

Tourism is the fastest growing industry in the world and the world's largest civilian industry (Lindberg and Hawkins, 1993)<sup>1</sup>. According to a report by the World Travel and Tourism Council (WTTC, 2002)<sup>2</sup>, India could generate 25 million additional jobs in the Tourism Sector by 2010. This is due to the reason that an increasing number of tourists now prefer to visit attractive natural environments or protected areas set aside for conservation. Undisturbed ecosystems, their plant and animal communities are critical in maintaining the clean air, clean water and healthy environments that are key tourism attractions in many destinations (Buckley, 1999)<sup>3</sup>.

Located at the top of the environmental and industrial chain, tourism is extremely sensitive to environmental conditions and to the impacts others have on the system. In fact, the state of tourism itself may be a key indicator of system stability. Tourism, a multifaceted economic activity, interacts with the environment in the framework of a two-way process. On the one hand, environmental resources provide one of the basic "ingredients", a critical production factor, for the production of the tourist product: the natural and/or manmade setting for the tourist to enjoy, live in, and relax. On the other hand, tourism produces a variety of unwanted by-products, which are disposed, intentionally and unintentionally, to and modify the environment; the case of negative environmental externalities (Briassoulis, 1992)<sup>4</sup>. Moreover, economic activities besides tourism use up and modify environmental resources quality available for tourism purposes. Because of this linkage, the tourism sector needs increasingly to become a knowledge participant in the planning as the use of the environment and its impacts (Batta, 2000<sup>5</sup>; Manning, 1992<sup>6</sup>)

1 Lindberg K & Donald E Hawkins, 1993. Ecotourism – A guide for local planners and managers. North Bennington, VT, USA: The Ecotourism Society.

2 Warnken J & Buckley R, 2000. Monitoring diffuse impacts: Australian Tourism developments. Environmental Management 25 (4), 453- 461.

3 Buckley RC, 1999. Tourism and biodiversity: land-use, planning and impact assessment. Journal of Tourism Studies, 10 (2): 47- 56.

4 Briassoulis H, 1992. Environmental impact of tourism: A framework for Analysis and Evaluation. In: Briassoulis, H and Straaten, Jan Van der (Eds.). Tourism and the Environment: Regional, Economic and policy Issues. Kluwer Academic publishers: 11-22.

5 Batta RN, 2000. Tourism and the Environment - A quest for sustainability. Indus publishing company, New Delhi.

6 Manning, Edward, 1992. Managing Sustainable Tourism - Indicators for Better Decisions: Proceedings of the 1992 world congress on Adventure Travel and Ecotourism.

Impacts on biodiversity are particularly severe for large new tourism developments in relatively undisturbed areas, such as those in and around conservation reserves and other Protected Areas. These developments involve clearing vegetation, major disturbance to fauna through loss of habitat, noise, barriers etc (Buckley 2001)<sup>7</sup>, and a marine and freshwater pollution from discharges, which include nutrients, metals, pathogens, and toxic chemical compounds such as solvents (Warnken and Buckley 2000)<sup>8</sup>. Even without accommodation and large scale facilities, nature and adventure tours which are designed and managed for minimum impacts may have considerable impacts on biodiversity and other components of the natural environment. It is evident that not only has tourism grown rapidly worldwide, but also many of those concerned about the negative impacts of the destinations assume that mass forms of tourism are responsible for these problems (Cooper and Ozdil 1992)<sup>9</sup>.

### **Tourism and Environmental impacts**

It is undeniable that tourism has enormous potentials for the environment conservation of environment. However, it must also be borne in mind that the balance between tourism and the environment is very fragile one. Many developing countries, anxious to reap the full benefits of tourism have, without undertaking a proper analysis of the potential impacts transformed their virgin areas into tourists' centers to cater for the tastes and desires of mass tourism. Such rapid development may lead to a complete transformation of an area, producing irreversible impacts to the natural environment.

Among the three impacts of tourism namely, the economic, socio-cultural and environmental, the economic impact has undoubtedly played a dominant role in tourism literature and policy making till 1960s. With the focus on the economic benefits obtained by the areas due to the development of tourism, the adverse non-economic, socio-cultural and environmental-impacts are totally ignored. Environmental costs continued to be neglected because of the prevalent belief of the nature being inexhaustible and renewable. This led to an indiscriminate and unplanned growth of tourism infrastructure in many countries and soon the negative effects in the form of social and environmental degradation started emerging. Specialists tours such as photographic safaris and wildlife watching, which can affect animals through noise, visual and scent disturbances, and by affecting predation and breeding behaviour. Similarly, wildflower tours can affect plant biodiversity if participants collect plants or fruit, introduce weeds or pathogens, or start fires (Buckley, 2002)<sup>10</sup>.

In some destinations, tourism can produce a local economic boom leading to uncontrolled high-impact private development, high resource consumption, waste generation beyond the capacity of local waste treatment disposal systems, if any, and land clearance and harvesting with major impacts on biodiversity. In addition, infrastructure built for tourism may be used for illegal collection of endangered plant and animal species (Buckley, 2002)<sup>10</sup>. Small-scale operations may eventually turn into much larger and more destructive operations (Hunter and Green, 1995)<sup>11</sup>.

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<sup>7</sup> Buckley RC, 2001. Environmental Impact of Ecotourism, In D. Weaver (Ed). The Encyclopedia of Ecotourism. CABI, Wallingford: 379 - 394.

<sup>8</sup> WTTC 2002. Corporate Social Leadership in Travel & Tourism. London UK, World Travel and Tourism Council.

<sup>9</sup> Cooper CP, & Odzil I 1992. 'From mass to responsible tourism- the Turkish Experience', Tourism Management, December 13 (4): 377-386.

<sup>10</sup> Bukley Ralf, 2002. Tourism and Biodiversity in North and South. Tourism Recreation research Vol. 27(1), 2002: 43-51.

<sup>11</sup> Hunter C & Green H, 1995. Tourism and the Environment : a sustainable relationship. Routledge, London.



## The existing knowledge

The study of the Environment Impacts of Tourism is currently in a growing stage and more research is expected to appear. The first effort towards environmental Impacts Assessment was directed basically to Impacts of Leisure activities and especially outdoor recreation. The first studies concerning the environmental impacts of tourism appeared after the mid seventies (Tangi, 1977<sup>12</sup>, Baud-Bovy and Lawson, 1977<sup>13</sup>) followed by more research activity in the 1980s. Useful Reviews on the subject have been made by Pearce (1985)<sup>14</sup>, Farrel and McLellan (1987)<sup>15</sup>, Farrel and Runyan (1991)<sup>16</sup>.

The biological and ecological impacts of tourism have been studied in the case of specific environments - Islands, Coastal Zones, alpine areas, National Parks etc (Lindsay, 1986<sup>17</sup>; Nijkamp et al, 1991<sup>18</sup>). Nijkamp (1980)<sup>19</sup> and Onyeanus (1986)<sup>20</sup> developed the impact structure matrix combining environmental elements and the range of possible impacts of these elements from the development of tourism to a certain level (carrying capacity levels). To fill out the structure matrix a set of different tools are used (Social surveys, behavioral inquiries, multiple measurement techniques, ecological indicators etc.).

The study of the environmental impacts of tourism thus started basically after 1970s. The analysis of the environmental impacts of tourism has been predominantly qualitative and mostly descriptive. The type and intensity of the environmental impacts of tourism depends on the interaction between the type of tourism development, the socio-economic and other characteristics of tourists and the natural, socio-economic and institutional characteristics of the host area. The environment is being increasingly recognized as a key factor in tourism. In the last decade of the twentieth century, it was noted that tourism depends ultimately upon the environment, as it is a major tourism attraction itself, or is the content in which tourism activity takes place (Holden, 2000)<sup>21</sup>

The relationship between tourism and the environment is taking place on various levels. In addition to direct tourism impacts on the environment through e.g., pollution, noise and disturbance, indirect, irreversible and long term consequences between tourism and environmental quality is characterized by dynamic feedback mechanisms (OECD, 1980<sup>22</sup> & 1994<sup>23</sup>). It has been suggested that controlling the volume of tourism might alleviate the situation (Wheeler, 1994)<sup>24</sup>, especially since the tourism is typically found in locations with fragile environments, such as mountains and coasts which are peripheral to the

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<sup>12</sup> Tangi M, 1977. Tourism and the Environment. *Ambio*, Vol. 6, pp. 336- 346.

<sup>13</sup> Baud - Bovy M & Lawson F, 1977. *Tourism and recreation development*. London: The Architectural Press.

<sup>14</sup> Pearce DG, 1985. 'Tourism and environment research: a review', *International Journal of Environmental Studies* 25: 241-255.

<sup>15</sup> Farrel BH & Mc Lellan, RW, 1987. 'Tourism and Physical environment research', *Annals of Tourism Research* 14(1): 1-16

<sup>16</sup> Farrel BH & Runyan D, 1991. *Ecology and Tourism*. *Annals of Tourism Research*, 18 (1): 26-40.

<sup>17</sup> Lindsay J, 1986. Carrying capacity for tourism development in national parks of the United States, *UNEP Industry and Environment*. Jan/Feb/March. 8(1): 17-18.

<sup>18</sup> Nijkamp P & Bergh JCJM van den, 1991. Operationalizing sustainable development- dynamic ecological – economic models. *Ecological Economics* 4, 11- 33.

<sup>19</sup> Nijkamp P 1980. *Environmental policy analysis*. New York: John Wiley and Sons.

<sup>20</sup> Onyeanus AE 1986. Measurements of impacts of tourist off- road driving in grassland in Masai Mara National Reserve, Kenya: a simulation approach. *Environmental Conservation* 13 (4), 325- 329.

<sup>21</sup> Holden A, 2000. *Future of Tourism's Relationship with Environment*. Environment and Tourism. London, Routledge.

<sup>22</sup> OECD, 1980. *The impacts of tourism on the environment*. Paris: Organisation for Economic Cooperation and Development.

<sup>23</sup> OECD, 1994. *Environmental Indicators- OECD, Core Set*, Paris.

<sup>24</sup> Wheeler B, 1994. Ecotourism : A reuse by any other name . *In: Cooper, C. and Lockwood, A. (eds). Progress in Tourism Recreation and Hospitality Management*. Vol 6, Chichester: Wiley, pp. 3-11.

world economy (May, 1991)<sup>25</sup>. Ecotourism not only depends on mass tourism enterprises and infrastructure (air, travel, other forms of transports, tour operators, hotels, etc.), but also involves the danger to eventually promote mass tourism itself. Unfortunately, the experience of alternative tourism in general shows that adventurous travelers have just served to open up destinations “of the beaten track ” to large-scale tourism projects, accelerating the pace of social and environmental degradation of these areas. As a result of increasing globalization and liberalization, the competition within the international tourism industry and among tourist-receiving countries has become so fierce that there is hardly any margin left for social and ecological concerns. Many studies throughout the world have now documented the ecological impact of indigenous population on the environment (Bhattacharya, 2003a<sup>26</sup> & 2003b<sup>27</sup>).

### **Emerging research Issues**

In order to analyze the impacts of Tourism on the Environment as a necessary prerequisite for tourism planning and policy decisions, following major issues need to be addressed

- Identification and analyses of various impacts of Tourism on environment in the target area.
- Assessment of the contribution of tourism in the observed or expected environmental modification in the destination area.
- Estimation of the demand for resources and the amounts of residuals disposed to the regional environment.
- Analyses of the environmental impacts of tourism on the local communities.

### **Research Output**

The expected research output will include

- Better understanding of environmental impacts of Tourism in general and in the study area in particular.
- Scientifically validated report on the impacts of tourism in the study area
  - Direct Environmental Impact.
  - Indirect Environmental Impacts through the changes in physical, demographic and other characteristics.
- Identification of tourism activities that are compatible / incompatible with the area and suggesting mitigation measures.
- Guidelines and strategies for formulating effective policies, plan and programmes about sustainable tourism.

### **Models for tourism impact research**

Very few models have so far been validated and standardised for the tourism impact studies. Two models (Material Balance Model and Integrated Impact Analysis Model) are being discussed here. These models have potential to be used in the present or improvised form for the tourism impact analyses.

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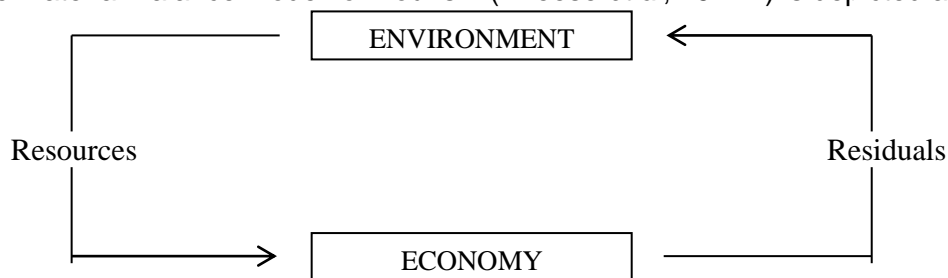
<sup>25</sup> May V, 1991. Tourism, environment and development: Values, sustainability and stewardship”. *Tourism Management*, 12 (2) : 112-118.

<sup>26</sup> Bhattacharya AK, Banerjee S & Saksena V, 2003a. "Local initiatives to localize Ecotourism - An Exploratory study in Kerwa - Van Vihar National Park Catchments. *Journal of Tourism Recreation Research*, Vol 28(1) 2003.

<sup>27</sup> Bhattacharya AK, Banerjee S & Saksena V, (2003b). Community based Ecotourism - Identification of issues, options and strategy through Stakeholders Analysis. Paper submitted for publication.

**Material Balance Model for Tourism** (Source: Briassoulis, H. 1992)<sup>4</sup>

The material Balance Model for Tourism (Kneese *et al*, 1972<sup>28</sup>) is depicted as follows: -



On the basis of the above framework, 4-major classes of environmental impacts of tourism can be distinguished.

- (a) Consumption - related impacts on resources.
- (b) Production - related impacts on resources.
- (c) Production - related residual impacts.
- (d) Consumption - related residual impacts.

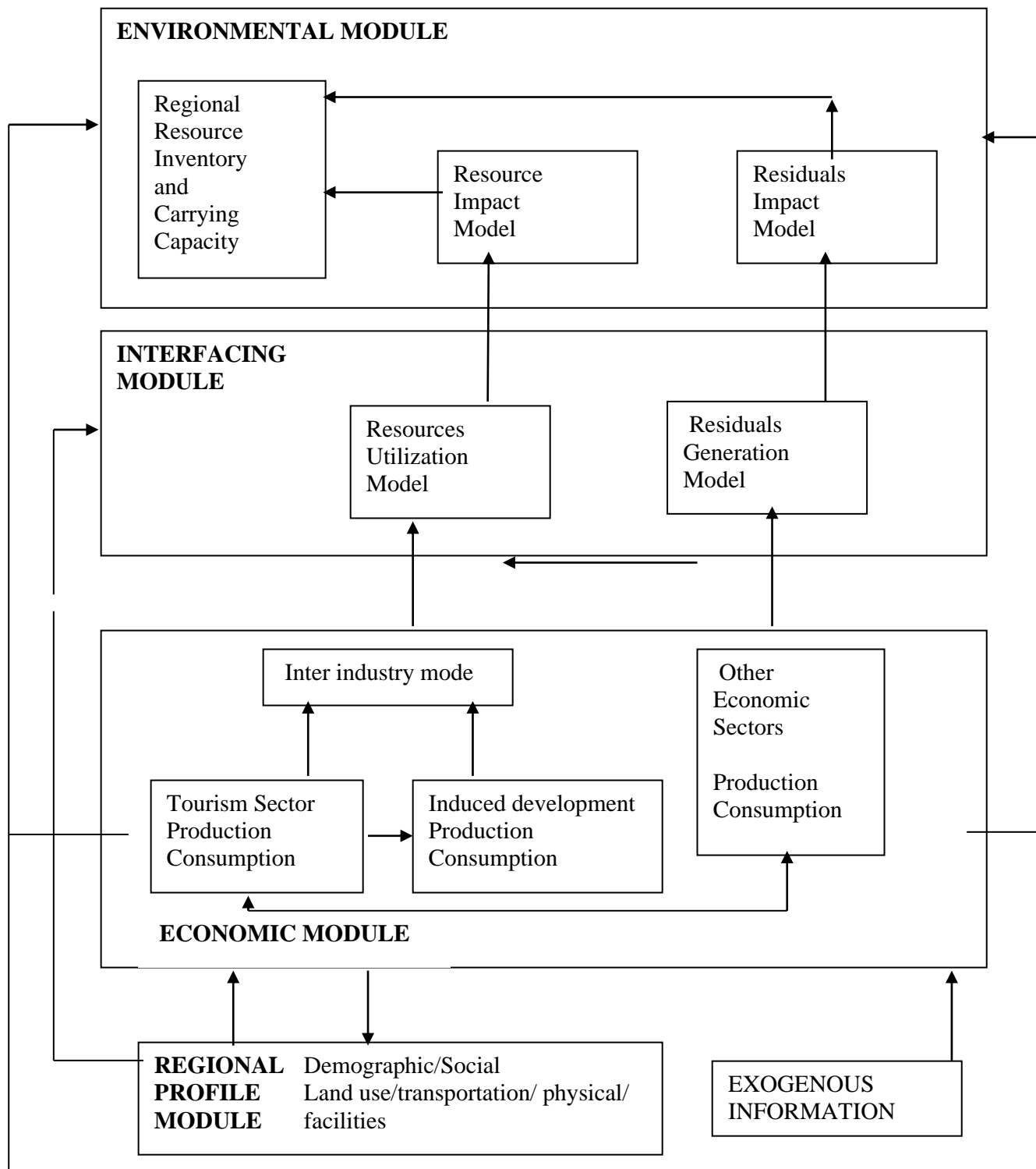
The resource impacts concern depletion and Competition for resources between tourism and other economic activities while the residual impacts refer to pollution and environmental degradation of resources.

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<sup>28</sup> Kneese AV, Ayres RU & D'Arge RC, 1972. *Economics and the Environment. A Materials Balance Approach*. Baltimore, Md.: Johns Hopkins University Press.

**The Integrated Impact Analysis Model**

(Redrawn from Briassoulis, 1992: Environmental impact of tourism- A framework for analysis and evaluation.)<sup>4</sup>



## Impact categorization

Environmental impacts can be categorized further on the basis of following criteria:

### (a) Directedness of Impact

- Direct - impacts that directly emanating from tourism activities linked to tourism activities such as accommodation travel, sightseeing etc.
- Indirect - impacts that are caused by activities linked to tourism such as retail trade, entertainment, etc.
- Induced - impacts due to non-tourist related activities, which are induced by tourism

development of a region and would not otherwise occur.

(b) Spatial scale and extent: local, region, national as well as point and non-point.

(c) Temporal scale: short -, medium - and long - term impacts.

## Methodology

The methodology adopted to achieve the specific goal is consisted of both Experimental (Laboratory work, field) as well as Non-Experimental (field studies, surveys, questionnaires). An Integrated Model for Tourism Impact Analysis is adopted to attain the specific goal. An Integrated Economic / Environmental model is suitable for the analysis of the Environmental Impacts of Tourism and Ecotourism. This Integrated model is best for *ex post* impact Assessment (for regions already developed touristically) and also for *ex ante* (for regions considering some form of new or additional tourism development).

Three approaches can be adopted in the study

- Systematic information collection and analysis approach.
- Participatory approach.
- Consultative approach.

### **Framework of the methodology**

1. Gathering Information of the study Area.
2. Field and visitor survey for the purpose of determining Production and consumption characteristic of tourism and associated Sectors: -
  - 2.1. Production characteristic (Infrastructure and Superstructure) :-
    - Transport Network (Travel, Roads and Transportation).
    - Water supply and sewage and waste disposal.
    - Utilities like electricity, telephones etc.
    - Man-made attractions - monuments, buildings, facilities etc.
    - Specialized facilities (like trekking, picnicking etc.).
    - Accommodation (Hotels, campings etc.) (No. of beds).
    - Shops etc. (foods, souvenirs etc.)
  - 2.2 For consumption characteristic: -
    - Number of tourists visiting annually.
    - Types of tourists.
    - Reason for visitation.
    - Frequency of visits.
    - Willingness to pay (WTP).
    - Duration of stay/length of tourists' period (Tourist night).
    - Average consumption of water, energy etc. per tourist per day.
    - Awareness about Ecotourism and environmental issues.
    - Environmental Attractions.
    - Average consumption expenditure by type of good and service.

3. Data collection for Regional Profile: -
  - Demographic
  - Social
  - Physical structure of the Region.
4. Determination of Categories of Environmental resources.
 

Identification of the scope of Impacts:

  - A. Identification of impacts.
  - B. Categorization of Impacts
    - Negative and Positive impacts.
    - Primary and Secondary Impacts.
    - Short term and Long term impacts.
    - Individual and Cumulative impacts.
    - Socio-Cultural and Economic impact (Interfacing with ecological impacts)
  - C. Study of following Impacts: -

S No	Elements	Parameters	Indicators	Measures
1.	<b>Flora</b>	Distribution, Floral diversity composition		Quadrat study (IVI)
	Human	Human threats. (Noise pollution due to tourists and vehicles)	Average No. of days in which pollution standards are exceeded per year	Measuring decibel levels at key locations.
		Human encroachments	Human population in the surrounding areas	Nos. of peoples within adjacent to the tourism area in study area
2	Agriculture	Land use pattern		Determining the change in land use pattern by comparing with secondary data collection
3.	Land	Characteristics (soil)	Solid Waste and Visual effect	Visual spectrum method
		Land use Pattern	Changes in land use pattern.	Determining changes in land use pattern by comparing with secondary data pertaining to the change in land under use and under tourism activities
			Erosion.	Field determination for measurement of erosion potential
			% of land abandonment in last decade	Secondary data collection pertaining to land and change in land pattern
4.	Roads transport /	Clearing of vegetation		Site evaluation and interviewing forest department Staff, drivers, guides and tourists.
		Road erosion and road degradation due to vehicular traffic		
		Dust and smoke creation due traffic on unsealed roads		

		Loss of access to key sites		Questionnaire schedule
	Buildings/ constructions	Changes in land use pattern due to construction.		Determining land use pattern by comparing with secondary data collection of change in land use during last decade
		Visual effects Rate of growth of tourism in area leading to more facilities being constructed.		Site evaluation and collecting the data regarding the change in tourist numbers and tourism development during the past few years.
	Villages	Socio-cultural and economic impacts: a) Change in cultural pattern. b) Problems due to tourists. c) Employment generation (alternative livelihoods). d) Income generation e) Objection from the local people against the facility	-Nos. of retail establishments/No of establishments serving local needs(as opposed to tourists) -% of local establishments open year around . -% Of locals involved. -% of jobs supported by tourism.	By questionnaire survey and field survey to collect the information regarding the social, cultural and economic activities.
		Social issue created by the tourism:	a) Alien culture b) Nuisance created to the local people. c) Eve-teasing of local women. d) Socio-inequalities created within the community. e) Problems from local people to tourists.	By questionnaire schedule.
	Visitors experience	a) Pollution in tourism area. b) Dust and smoke generated by vehicles. c) Information imparted about nature through interpretation facilities(if any) d) Willingness of the tourist for another visit.		By questionnaire schedule.
5.	Economic	a) Increased employment or increased dependence of local people on		By field survey and questionnaire.

		tourism for their livelihood. b) Increased cost of living in and around the tourism area c) Increased earning from tourism		
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## 5. Synthesis of data, interpretation and Impact Analysis with the Integrated Model and Assessment.

### 5.1. Assessing for preparing economic module

- Description of Economic structure and tourism's position.
- Direct, indirect and induced impacts of changes in production and consumption characteristic of Tourism.
- Find Tourism induced development effects.

### 5.2. Assessing for preparing regional profile module:

- Changes in Regional environment according to tourism requirements.
- Tourists effects on Regional profile are assessed such as population growth caused by tourism-related employment, Land-use etc.

### 5.3. Assessing for preparing interface module: -

- Assess the demand of tourist and related physical changes.
- Types and amounts of residual generated.

### 5.4. Assessing for preparing environmental module:

- Impacts on the Quality and Quantity of regional resources.
- Linking various modules:
- Impact Analysis to assess the contribution of tourism on the environment -
  - Environmental Impact directly during the production and consumption of the tourist product.
  - Environmental Impact indirectly, through the changes in economic, demographic, physical and other characteristics of the region.

## 6. Use of simple statistical tools for Analysis of Impacts.

### 7. Impact evaluation of tourism to address main issues -

- Relative importance of tourism direct, indirect and induced impacts on environmental resources.
- Distinguishing the impacts as beneficial or negative on the environment.



**Objective wise parameters for impact assessment**

S No	Objective	Parameters
1.	To identify and analyze the various impacts of tourism on Environment in the study area.	<p>a. Field survey (Questionnaire schedules), Secondary data collection regarding tourist annual flow, demographic pattern , change in land use pattern during last years etc.</p> <p>c. Identifying parameters and indicators of Environmental elements (physical, ecological, built etc.).</p> <p>Measuring the parameters by using techniques /tools/instruments etc.</p> <p>Assess the impacts on environment due to tourism.</p>
2.	Assess the contribution of tourism in the observed or expected environmental modification in the study area.	<p>a. Analyzing different environmental parameters and its impacts due to tourism.</p> <p>b. Synthesis of data and interpretation by linking different modules and impact analysis with integrated model and assessment.</p> <p>c. Use of simple statistical tool for analyzing the impacts.</p> <p>d. Enlist the different environmental impact identified due to tourism.</p>
3.	To estimate demand for resources and the amount of residuals disposed to the regional environment.	<p>a. By questionnaire /schedule collect data, which will specify the tourists demand and facilities provided, pressure indicator.</p> <p>b. Secondary data collection of the standards fixed by the agencies.</p> <p>c. Compiling the data of indicators of environmental elements.</p> <p>d. Comparing the calculated residuals disposed with the standards and its related environmental consequences and health hazards.</p>
4.	To analyse the effects of environmental impacts of tourism on the local communities.	<p>a. Collection of primary data through focus and household through structured questionnaires and secondary data collection like tourists flow ,land under use etc.</p> <p>b. Identifying different environmental parameters and measuring the effects of the parameters.</p> <p>c. Logically analyzing and evaluation and linking different determinants.</p> <p>d. Statistical analysis of the effects of the impacts.</p>

14.

## RELEVANCE OF CARRYING CAPACITY AND ECO-DEVELOPMENT LINKAGES FOR SUSTAINABLE ECOTOURISM

A K Bhattacharya and Suchitra Banerjee

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### Abstract

*The concept and significance of carrying capacity with respect to SET has been explained and analysed in the paper. The emerging importance of CC and ED linkages in ecotourism and wildlife management has been addressed and critically examined. The scopes of further research, methodology and bibliography for further readings in the field have been suggested.*

### INTRODUCTION

The understanding of the concept of carrying capacity (CC) as a determinant of sustainable ecotourism (SET) raises many issues, which suggest further analysis of the existing concept of CC and exploring different viable models for using CC as an effective tool for SET. CC has been defined differently in different perspectives but because of the complexities of variables associated with CC it has not been possible to arrive at any simple holistic definition of CC, which could be applied and used with respect to SET. Most of the definitions of CC mainly relate to the visual impacts of the total load of the number of tourists on the physical environment along with some notional impact on social, biological and psychological environments. These impacts endure the limitations of being notional, unexplained and non-measurable. The absence of certain well defined verifiable indicators and quantitative variables of CC makes the whole phenomenon more complex and also makes it difficult to establish linkages between CC and SET.

Some of the researchers (WTO, 1984<sup>1</sup>; O'Reilly, 1986<sup>2</sup>; Pearce, 1989<sup>3</sup>) have reservations about the usefulness of CC, as they consider that CC has very limited use in SET, whereas others (Romeril, 1989<sup>4</sup>; Martin & Uysal, 1990<sup>5</sup>; Hunter & Green, 1995<sup>6</sup>) appreciate that CC is an essential measurement for SET and it has further been accepted as an effective tool for tourism managers by many researchers (Wall, 1983<sup>7</sup>; Williams & Gill, 1994<sup>8</sup>; Hunter & Green, 1995<sup>6</sup>). Therefore, the premonition that CC can not be measured quantitatively and hence has no practical value is a matter of concern and demands further research works, because the quantitative measurement of CC has not been possible mainly owing to lack of appropriate research data (Romeril, 1989<sup>4</sup>; Buckley, 1995<sup>8</sup>) and also adherence to the traditional approaches (Williams & Gill, 1994)<sup>9</sup>. Matching our requirements a system can be evolved to assign empirical values

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<sup>1</sup> WTO, 1984. Economic review of world tourism. World Tourism Organisation, Madrid.

<sup>2</sup> O' Reilly AM, 1986. Tourism carrying capacity. *Tourism Management*, 7 (4), 254 – 258

<sup>3</sup> Pearce, Douglas, 1989. *Tourist Development*. II ed. Longman Scientific.

<sup>4</sup> Romeril M, 1989. Tourism and the environment - accord or discord? *Tourism Management*, 10 (3) : 204 - 208.

<sup>5</sup> Martin B S & Uysal M, 1990. An examination of the relationship between carrying capacity and tourism lifecycle : management and policy implications. *Jour Env Manag*, 31 : 327 - 333.

<sup>6</sup> Hunter C & Green H, 1995. *Tourism and the Environment : a sustainable relationship*. Routledge, London.

<sup>7</sup> Wall G, 1983. Cycles and Capacity : A Contradiction in Terms ! *Annals of Tourism Research*, 268 - 269.

<sup>8</sup> Buckley RC, 1995. Where Tourism and Ecology Meet. International Conference : Ecotourism: Concept, Design and Strategy, February 6-8, Bangkok, Institute of Ecotourism, Srinakharinwirot University.

<sup>9</sup> Williams P W & Gill A, 1994. Tourism CC management issues. In : *Global Tourism : The next decade*. Ed Theobald W, Butterworth Heinemann, Oxford.

for quantitative estimation of CC. Statistical and mathematical relationships for the quantitative measurement of CC can be developed by using Environment Impact Assessment (EIA) techniques and matrices (Tivy, 1973)<sup>10</sup>. Impacts can be quantified in many cases and gauged in others, which means that they may be measured and quantified in discreet ways. Empirical models for determination of quantitative measurement of CC (Canestrelli & Costa, 1991)<sup>11</sup> need to be further verified and modified with more field research data and experiments.

Significantly more investigations and information are required regarding the cumulative impacts associated with ecotourism (Stabler, 1994)<sup>12</sup> as the understanding of the cumulative impacts is very essential to analyse the total CC for SET. By adopting an alternative approach through identifying and establishing the appropriate factors influencing CC, it is possible to use the CC management technique for SET (Williams & Gill, 1994<sup>8</sup>). In India, as in the case of most of the developing countries, ecotourism is on taking off stage and growing rapidly. On one hand, as a result of the gradual phenomenal increase in the population of human and livestock, there is constant consequential increase in biotic pressure on the natural resources including the forest lands, whereas on other, concomitantly, the ecotourism is assuming a larger dimension, which might result into a conflict in sustainability of development. Therefore, it is appropriate and high time to devise and standardise tools which might help to derive a balance between these two challenges and evolve a realistic and pragmatic package of solutions for managing these challenges. With the existing knowledge, it appears that the technique of CC can be used as a tool for meeting these long term challenges for better management of natural resources for SET.

## CC FOR SET

The concept of CC with respect to SET needs to be perceived in a different perspective and requires the visualization of the whole process with a more comprehensive viewpoint. The concept of CC is very old in wildlife management, and was used for the first time by Dasmann in 1945 (Wall, 1983)<sup>7</sup> for assessing the capacity of the forests for grazing by animals. The technique of CC is very pertinent and has special relevance for the protected areas (PAs) for analyzing the interactions of the biotic pressure, ecotourism and PAs ecosystem to maintain the natural equilibrium, and the judicious and scientific determination of CC can serve to be an effective tool for the management of PAs and SET. Since the primary objective of the PAs is the management of wildlife, therefore, biodiversity conservation becomes the priority area for the CC consideration in PAs. The definition of CC as propounded and applied by Lindsay (1980)<sup>13</sup> for PAs emphasises all aspects concerning SET but apparently does not take into consideration the probable long term impacts of ecotourism on biodiversity. The qualitative and quantitative implications of ecotourism on wildlife viz. species diversification, health, and even breeding need to be essentially considered for the determination of CC for SET in PAs. Thus the quantitative measurement of CC for certain variables also becomes a prerequisite for assessing the scope for SET in PAs. The example of occasional discontinuation of the visit of the migratory Siberian Cranes indicates that sometimes the

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<sup>10</sup> Tivy Joy, 1973. The concept of determination of CC of recreational land in the U S A . Countryside Communication, Perth, Scotland. Occasional paper No. 3, Perth, Scotland.

<sup>11</sup> Canestrelli E & Costa P, 1991. Tourist CC - A Fuzzy Approach. Annals of Tourism Research, 18 : 295-311.

<sup>12</sup> Stabler M, 1994. An economic critique of tourism environmental auditing. Tourism Research and Education in Australia: Proceedings from the Tourism Research and Education Conferences, Eds Faulkner B, Fagence M, Davidson M & Craig Smith S. Bureau of Tourism Research, Canberra.

<sup>13</sup> Lindsay J, 1980. Compatibility planning for different types of outdoor recreation and resources. In : Tourism Planning and Development Issues (D Hawkins et al, eds) pp 138 – 47, Washington DC, George Washington University.

attitude and behavior of the ecotourists plays a significant role as a variable of CC towards SET in PAs. In India and other developing countries the displacement of the communities from the National Parks (NPs) and their rehabilitation may act as a limiting factor for CC towards SET. Thus the concept of destination area as extended by Hovinen (1982)<sup>14</sup> and Martin and Uysal (1990)<sup>5</sup> needs to be redefined or modified for the Indian NPs, specially when the communities have been displaced outside the NPs areas . Because of the ban on prevailing community rights in NPs and Wildlife Sanctuaries (WLSs), the impact of ecotourism in such cases goes beyond the destination areas through the ecotourists and NPs based community linkages. Thus in order to determine CC for SET in PAs it becomes essential to include the impact of ecotourism even outside the destination area, taking into consideration the interrelationship of NPs based community and ecotourists visualising both human and non human factors. In reference to SET in PAs the level of tolerance of the ecosystem is more important variable vis-a-vis the load of number of ecotourists. Unscientific management of ecotourism in PAs may cause more environmental damage than that caused to any other destination areas (Ashton, 1992)<sup>15</sup>. For PAs the ecotourism may be designated as 'Environmental Tourism', which not only covers all the parameters of ecotourism but also provides a wider horizon to include all environmental factors of the destination area - both micro and macro - viz. ecological, social, cultural, psychological and anthropological etc.

## ECO-DEVELOPMENT (ED)

The ED model, originally advanced by UNEP (Dasmann, 1985)<sup>16</sup>, aims towards an ecologically sustainable form of development through the economic sustainable development of local communities dependent on the environment for their basic needs . Thus ED attempts at overall development through which the local communities become self reliant to achieve both their basic needs and help them in sustaining biodiversity. Some researchers prefer to use the concept of ED for both ecological and economic development, and thus consider that 'eco' stands for both 'ecological' and 'economic' (Gupta, 1988)<sup>17</sup>. The concept of ED has been pursued through a series of projects in management practice of PAs (Collins, 1994<sup>18</sup>; Rao & Geisler, 1990<sup>19</sup>). IUCN (1984)<sup>20</sup> has reported human encroachment as the second of the top ten kinds of threat facing 43 of world's most threatened PAs, which manifests the significance of ED in the management of the PAs.

The term 'ED' has been adopted in India since 1980s and a number of definitions have been proposed (World Bank, 1995)<sup>21</sup> Most commonly it has been applied in connection with PAs such as NPs and WLSs to define a strategy for protecting ecologically valuable areas from unsustainable or otherwise unacceptable pressures resulting from the needs and activities of the people living in and around such areas. It is based on the assumption

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<sup>14</sup> Hovinen GR, 1982. Visitors Cycle : Outlook for Tourism in Lancaster Country. Annals of Tourism Research, 9 : 565 - 583.

<sup>15</sup> Ashton R, 1992. World Tourism trends in Tourism and Conservation (Ecotourism). In : Proceedings of the 1992 World Congress on Adventure Travel and Ecotourism. The Adventure Travel Society Inc, Engel pood, Columbia. pp 67 - 73

<sup>16</sup> Dasmann RF, 1985. Achieving the the sustainable use of species and ecosystems. Landscape Plan, 12 (3) : 211 - 219.

<sup>17</sup> Gupta A, 1988. Ecology and development in the third world. Routledge, U S A.

<sup>18</sup> Collins C, 1994. Conservationists call on tourism industry to join green movement. The Australian, 14 April, pp 6.

<sup>19</sup> Rao K & Geisler C, 1990. The social consequences of protected areas development for resident populations. Society and Natural Resources. 3:19-32. ([www.gu.edu.au/centre/capsm/Corbett.htm](http://www.gu.edu.au/centre/capsm/Corbett.htm) - 101k -)

<sup>20</sup> IUCN, 1994. Ecotourism Consultancy Programme. IUCN, Mexico.

<sup>21</sup> World Bank, 1995. The India Eco-development Project : Project Document. The World Bank – GEF, World Bank, World Bank India.

that if alternative natural and social resources are created in areas peripheral to the PAs, exploitation of resources within the PAs will be reduced. There is also an assumption that the involvement of the PAs management in the creation of employment opportunities in fringe areas resources, which may include fodder, veterinary services, water services, and other village infrastructures, will motivate communities to collaborate in the protection of forest areas. ED involves participatory management of resources but communities do not receive direct benefits of forest produce from the PAs. In other forest areas managed through Joint Forest Management, the communities dependent on them derive usufruct benefits by sharing of products. This anomaly in usufruct sharing mechanism in PAs and adjoining non PAs may lead to a conflict in sustainability of PAs and this issue needs to be examined from the viewpoint of management.

In many of Indian states including Madhya Pradesh, Gujarat, West Bengal and others, the term ED has been used in a more general way to denote ED of villages close to forest lands. The more general usage is referred to as 'Village Resource Development Programme', which is similar to ED in trying to reduce pressure on forest land by providing alternative sources of income. The proposed strategy for biodiversity conservation would be to focus on improved PAs management of high priority areas of biological importance, in which human impacts are readily manageable. Also the management of lower priority would be maintained through fewer resources. PAs management would be complemented by ED in areas peripheral to PAs. The PAs network, in particular, linkages between existing PAs, would be developed through identification of relatively undisturbed satellite areas and for the intervening zone, the preparation of management plans that are compatible with biodiversity conservation. Thus the issues related to ED with respect to new strategy of management of PAs and its impact on SET need to be thoroughly examined.

## **CC AND ED LINKAGES FOR SET**

The preceding paras clearly suggest that in the management of PAs the ED approach is going to have great impact on CC with respect to SET. The impact of communities living in and around the PAs on the CC of the destination area needs to be critically examined for the determination of total CC. The different indices of interrelationship and interactions between the PAs and the dependent communities have to be linked with other factors / variables of CC. Whether the local communities along with the ecotourists can be used as contrivance for conservation of biodiversity and whether ecotourism can be practised as an incentive for the local people for the conservation leading to SET are challenging issues to be addressed by the managers of PAs, and the success of SET in PAs will largely depend on this complex but natural relationship. The knowledge of CC – ED linkages should prove to be an effective tool for evolving suitable strategy for both integrated management of PAs and also environmentally compatible ecotourism. Participation of local people in managing PAs becomes essential for a fundamental shift away from the old conventional approach to conservation (Williams & Gill, 1994)<sup>8</sup>. The necessity for incorporating the needs and perceptions of local people in the establishment and management of the resources was first emphasized by Man and Biosphere Programme in 1979 (UNESCO, 2002)<sup>22</sup>.

Conservation of biodiversity and integration of protected area management with the needs of local people and their development has emerged as a priority for the management and sustainability of NPs and SET (Wells & Brandon, 1995<sup>23</sup>; Buckley, 1995<sup>9</sup>). Conservation, thus, requires a perspective which stretches beyond the NPs

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<sup>22</sup> UNESCO, 2002. UNESCO, Man and the Biosphere Programme (WWW.UNESCO.ORG/MABI, 3 AUG, 2002)

<sup>23</sup> Wells M & Brandon K, 1995. People and Park : Linking protected area management with local communities. The World Bank, World Wildlife Fund, USAID, Washington DC.

boundaries. Many case studies have indicated that the community involvement in the SET of PAs has not been very effective mainly because of two reasons . First, the participation has not been beneficiary oriented and, therefore, has not been sustainable and secondly, methods of participation have not been matched with requirements and thinking of the local people . Although community involvement has widely been accepted as an essential key element and prerequisite for PAs management and SET (Sadler, 1990<sup>24</sup>; Burchett, 1991<sup>25</sup>; Wight, 1993<sup>26</sup>; Lay, 1996<sup>27</sup>), but no pragmatic and effective devices for active involvement have so far been evolved. Thus it becomes imperative that specific models for community involvement are required to be evolved for better cooperative relationship between PAs and local people (Wells & Brandon, 1995)<sup>23</sup>. Long term success of SET ultimately depends upon community perception and involvement in planning and management of SET (Craik, 1991)<sup>28</sup>.

## **WORLD BANK AND FUTURE STRATEGY FOR SET**

In countries, where World Bank sponsored forestry projects are being implemented, the SET will largely depend upon the strategy being adopted for PAs management under the project. In India the World Bank Forestry Project encompasses the component of Biodiversity Conservation for PAs, which aims at improved management of high priority PAs through provisions of support for development of management plans, staff training, equipments, and other facilities . There is special provision for funds to support the development of alternative resources of income for communities resident within PAs and in areas peripheral to them . A low level of project funding would be made available for low priority PAs whilst the identification and planning of linkages to complete the PAs network would be finalized . It would be interesting to examine the impact of the provisions of the project on the management of the PAs with respect to the SET.

## **SCOPE OF RESEARCH**

Based on the analysis of the existing knowledge of the subject, as discussed in the preceding paragraphs above, and the evaluation of the strength and gaps in the knowledge, the following issues need to be taken into consideration :

1. With the growing environmental awareness, the ecotourism is going to assume very large dimension in the recent future, more widely in the developing countries, and the PAs will be the main destination areas for the majority of ecotourism.
2. CC can serve as one of the most effective tools for the management of PAs with respect to promotion of SET. The lack of adequate field data and research work act as an impediment to the use of CC as a practical management supplement for SET. Relevant techniques are required to be generated to analyse the cumulative impacts affecting the total CC.
3. It is possible to evolve certain correlationship / matrices for the quantitative measurement of CC for SET in PAs. With the help of some relevant research work and field data practical models for quantitative measurement of CC may be developed

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<sup>24</sup> Sadler B, 1990. Sustainable development, northern realities and the design and implementation of regional conservation strategies. In : Achieving sustainable development through northern conservation strategies, pp 3 – 31, University of Calgary Press, Calgary.

<sup>25</sup> Burchett C, 1991. Ecologically sustainable development and its relationship to Aboriginal tourism in the Northern Territory. Ecotourism: Incorporating the Global Classroom, Canberra, Bureau of Tourism Research.

<sup>26</sup> Wight PA, 1993. Ecotourism : Ethics or Eco-Sell? Journal of Travel Research, 31 (3) : 3-9.

<sup>27</sup> Lay B, 1996. Community Involvement in the Establishment of an Access Network to Scenic Areas. Paper presented at the Best Practice Ecotourism Conference, Coolangatta, Qld.

<sup>28</sup> Craik J, 1991. Resorting to Tourism: Cultural Policies for Tourist Development in Australia. Allen and Unwin, North Sydney.

4. Because of lack of certain well defined objectively verifiable indicators the effectiveness of CC technique for SET in PAs has been impaired. Based on practical research and field data some simple responsive applicable indicators may be formalized for the use and monitoring of CC techniques for SET in PAs.

5. The process of ED influences CC largely in PAs, and the CC in PAs is regulated by the factors involved in the ecologically oriented economic development of the communities dependent on the PAs. The analyses of the synergistic impact of the ecotourism and the communities on the PAs by scrutinising the CC - ED linkages may provide some pragmatic solutions for the challenges likely to be met for SET in PAs.

6. Involvement of communities living in and around PAs is an essential element for SET. Realistic and pragmatic models ensuring active involvement of communities may be evolved by examining and extending CC - ED linkages for SET. This will in turn facilitate SET and also protect PAs which will contribute to both management of PAs and SET.

7. Under the new forestry projects being assisted by World Bank there is a distinct shift in strategy of management of PAs, from the traditional top bottom approach to bottom top approach, the emphasis being on community participation in forest management . The implementation will have many challenges mainly because the existing models of people's participation have not been found to be effective.

8. In spite of the obvious significance and relevance of CC for SET, no organised study on the CC with respect to SET in PAs in India has so far been pursued . A detailed pilot study should be fruitful to develop a sound strategy for SET in many developing countries .

## **PARAMETERS OF FURTHER INVESTIGATIONS**

In the light of the above mentioned background it clearly emerges that some more intensive and integrated research works are necessary to

- a. redefine the CC for PAs , with respect to SET, specially in developing countries,
- b. evolve certain applicable models for quantitative measurement of CC,
- c. determine ED and CC linkages for SET , and
- d. design appropriate management modules suitable for SET in PAs.

In order to bridge the gaps in the existing knowledge on the subject the research should aim at the following objectives:

1. To critically analyse the process and frameworks of CC in PAs with respect to SET, by identifying the various factors / parameters linked with and / or influencing CC and their interactions and cumulative impacts.
2. To develop certain empirical / statistical correlations / matrices for the determination of quantitative measurement of CC with respect to SET in PAs.
3. To study the linkages between the CC and ED in PAs by evaluating the qualitative and quantitative impacts of the communities on the CC - both individual and synergistic.
4. To identify and standardize certain objectively verifiable and applicable indicators for CC and ED linkages and SET based on the field standards.
5. To evolve certain realistic models / package for CC and ED linkages for the management of PAs and SET.

6. To critically evaluate the cumulative and synergistic impacts of the World Bank Forestry Project on the management of the PAs and SET.
7. To develop an appropriate package for training and education for SET for all levels involved in ecotourism including the local communities.

## **DESIGN AND METHODOLOGY FOR RESEARCH**

The methodology of the study should, however, be decided on the basis of the available literature and preliminary reconnaissance survey of the area, and nevertheless, and following criteria may be taken into consideration while finalising the methodology:

1. Review of the available literature / case studies and collection of data available on the subject.
2. Critical examination and analysis of the existing management practices and Working / Management Plans being implemented and their impacts in PAs with respect to SET and scrutiny of the mechanisms of various operations .
3. Use of participatory rural appraisal / rapid rural appraisal techniques for the study of the relationships of communities and PAs with respect to their dependence on PAs and their involvement in management practices.
5. Development of empirical relationships for quantitative measurement of CC on the basis the existing EIA techniques .
6. The study area (PAs) may be selected on the basis of following norms :
  - The National Park attracting the maximum number of ecotourists .
  - The National Park receiving the minimum number of ecotourists .
  - The largest National Park ( in terms of area ).
  - The smallest National Park.
  - The National Park where ED and community participation are successful.
  - The National Park where ED and community participation are reportedly failure
  - Comparison of the observations with those of a NPs of some other developing countries and also with those of developed countries, where ecotourism is rapidly growing as an industry.

## **CONCLUSION**

There is considerable scope for research on the concept of CC and its use as a management tool for ecotourism in PAs, specially in developing countries, where the ecotourism may add to the cumulative impact of the already existing biotic pressure on the PAs. Exploratory research is essential to evolve some viable mechanisms and models to involve the local communities in the management of ecotourism in these areas. Sustainability of ecotourism will largely depend on the active involvement of the local communities. Ecotourism and ED linkages may probably be used as tool for the conservation of the natural resources and sustainable development.



15.

## ESTIMATING THE TOTAL CARRYING CAPACITY OF PROTECTED AREAS WITH RESPECT TO TOURISM ACTIVITIES - A CASE STUDY OF BANDHAVGARH NATIONAL PARK, MADHYA PRADESH, INDIA

A K Bhattacharya and Thriveen Shanker

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### Abstract

*Tourism in and around the protected areas (PAs) has the capacity to positively transform the ecological, social and economic set up of the region by ensuring sustainable utilisation of the resources. But on the other hand, the contingent and uncontrolled tourism activity has the potential to propagate the malignancies of pollution, crowding and congestion, damage/ destruction of heritage resources, land use change, ecosystem effects, loss of flora and fauna and increased urbanisation. Thus the limits of tolerance to the impacts of tourism or the Carrying Capacity (CC) of the area is an important yardstick in tourism management. But the calculation of total CC of an area is intricate owing to the process of integrating the impacts on incompatible components like ecological and social impacts. The study tries to resolve the above problem by adopting a method that converts all the indicators and components of CC into a common unit of impact assessment based on the percentage of people recognising the impact. The results obtained from the study show the percentage of decline in the component CC and total CC from their original values. This enables the pinpointing of factors that are adversely affected by tourism, which in turn leads to suitable mitigation measures.*

### BACKGROUND

Tourism is the largest growing civilian industry that employs the maximum number of persons, both directly and indirectly (WTO, 1999)<sup>1</sup>. It is also the sector which has a high multiplier effect of 3.2 – i.e. for every rupee invested in building the infrastructure, the revenue generated is more than three times (Singh, 1996)<sup>2</sup>. But these meritorious attributes have not manifested into ground reality, as tourism is yet to become a powerful engine of socio-economic upliftment for the local communities or to be utilised as a tool for natural resource management in India. On the contrary, the uncontrolled growth of tourists and tourism activities in the areas of natural beauty and historical significance is exhausting the very resources that transform an area into a tourist destination.

A basic problem which arises while managing the impacts of tourism on environment is the difficulty in quantifying the magnitude of the ecological resources and determining what proportion of its potential should be committed to the baseline demands imposed within the natural environment itself. It is important to specify these capacities so that human activities can be reoriented to operate within these natural constraints. It was at this juncture that carrying capacity concept was recognised as a tool for establishing management standards for natural resource managers (Wall, 1983<sup>3</sup>; Williams & Gill, 1994<sup>4</sup>; Hunter & Green, 1995<sup>5</sup>).

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<sup>1</sup> WTO, 1999. World Tourism Statistics, World Tourism Organisation, URL:www.world-tourism.org

<sup>2</sup> SINGH RATANDEEP, 1996. Infrastructure of Tourism in India, Kanishka Publishers, New Delhi, p. viii

<sup>3</sup> WALL G, 1983. 'Cycles and Capacity: A Contradiction in Terms!' Annals of Tourism Research, pp.268 - 269.

<sup>4</sup> WILLIAMS PW & GILL A, 1994. 'Tourism CC Management Issues'. In: Global Tourism: The next decade. Ed Theobald W, Butterworth Heinemann, Oxford.

<sup>5</sup> HUNTER C & GREEN H, 1995. Tourism and the Environment: a sustainable relationship. Routledge, London.

## Carrying capacity (CC) concept in tourism management

Even though CC concept was used in many other fields of natural resource management, it was adopted by the tourism sector only in 1960s (Lucas, 1964<sup>6</sup>; Wagar, 1964<sup>7</sup>). In the context of tourism, World Tourism Organisation (1993)<sup>8</sup> defines CC as, the level of visitor use an area can accommodate with high levels of satisfaction of visitors and few impacts on resource.

But the estimation of the comprehensive CC of a destination area has always been a factious proposition, with arguments upwelling for and against its utility both as a criterion for impact appraisal and as a management device. As it has a multi-dimensional existence, quantification of CC is not easy and thus many researchers have doubts about its usefulness (WTO, 1984<sup>9</sup>; O'Reilly, 1986<sup>10</sup>; Pearce, 1989<sup>11</sup>). But another section of thinkers believe that the fault lays not with the concept itself, but due to lack of appropriate research data (Romeril, 1989<sup>12</sup>; Buckley, 1995<sup>13</sup>) and also adherence to the traditional approaches (Williams & Gill, 1994)<sup>4</sup>. This study pursues a new methodology to estimate the comprehensive CC of a tourism destination by estimating the impacts on the indicators identified and then extrapolating it to the individual components of CC.

The site selected for the study was Bandhavgarh National Park in Madhya Pradesh, which is one of the Tiger Reserves of India. Bandhavgarh is an ideal site for such a study as it is a tourism destination of international reputation with relatively high visitor influx and one in which the tourism infrastructure has been in existence for an extensive duration.

### The broad objectives of this study were asunder:

- To collect data on the number of visitors and vehicles arriving at the protected area each year and the amount of facilities available for the visitors outside the protected area.
- To collect information on the impacts of tourism on the different components of carrying capacity of the tourism destination from the different stakeholders using questionnaire surveys and interview schedules.
- To calculate the percentage of total carrying capacity left for utilisation by the tourism activity from the estimated impacts on indicators and components.

### Methodology

The methodology was selected on the assumption that a tourist destination has a CC of 100% before the tourism activity was initiated. The adverse impact of these activities reduces its CC, while management initiatives can augment it.

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<sup>6</sup> LUCAS RC, 1964. 'Wilderness perception and use: the example of boundary water canoe area', *Natural Resources Journal* 3(3): 394-411.

<sup>7</sup> WAGAR J, 1964. 'The carrying capacity of wildlands for recreation', *Forest Service Monograph*, Society of American Foresters, 7: 23

<sup>8</sup> WTO, 1993. *Sustainable Tourism Development: Guide for local planners*, World Tourism Organisation, Madrid.

<sup>9</sup> WTO, 1984. *Economic review of world tourism*. World Tourism Organisation, Madrid

<sup>10</sup> O' REILLY AM, 1986. 'Tourism carrying capacity'. *Tourism Management*, 7 (4), 254 – 258.

<sup>11</sup> PEARCE DOUGLAS, 1989. *Tourist Development*. II ed. Longman Scientific

<sup>12</sup> ROMERIL M, 1989. *Tourism and the environment - accord or discord?* *Tourism Management*, 10 (3): 204 - 208.

<sup>13</sup> BUCKLEY RC, 1995. 'Where Tourism and Ecology Meet'. International Conference: Ecotourism: Concept, Design and Strategy, February 6-8, Bangkok: Institute of Ecotourism, Srinakharinwirot University.

The total CC is divided into five integral components, viz. Ecological, Facility (or Infrastructure), Social, Economic and Visitors' experience-based carrying capacities. After field visits and consultations with the experts, appropriate indicators were identified for these components which can predict the impact due to tourism on the respective component.

The methodology consists of a two-tier impact analysis, where the impacts of tourism on the indicators are at first evaluated (Indicator Quality Unit or IQU) and multiplied by the relative importance of each indicator in predicting the impact (Parametric Importance Unit or PIU). The stakeholders are asked to examine whether the indicators selected are showing any kind of deviation from the status quo and on the basis of the percentage of people agreeing to the existence of impacts is taken as IQU. This is based on the assumption that the number of people agreeing to the impact statement is directly proportional to the severity of impact. The PIU is calculated from the arithmetic mean of scores given by experts based on the ability of the indicators to accurately predict the impact on that component.

The IQUs and PIUs of all the indicators of a component are added up to obtain the total impact of tourism on that component (Carrying Capacity Impact Unit or CCIU). Then the relative importance of each component in determining the total CC (Component Importance Value or CIV) is multiplied to the individual CCIU of each component to get the specific CC percentage left. The summation of all the CC percentages of the components will give the Total CC remaining in the destination area with respect to tourism activity.

## RESULTS

The results obtained by the step-by-step method to obtain the total CC of Bandhavgarh National Park is given below.

**Table.1. IQU of Ecological carrying capacity**

INDICATOR	% OF AGREE-MENT	IQU	Final PIU	CCIU
a) Less animal sighting during the trip inside the PA (N)	10%	0.9	6.797	6.117
b) Crowding of vehicles around the animals, especially tiger (N)	80%	0.2	13.594	2.719
c) Aggressive behaviour of animals towards the vehicles(N)	50%	0.5	13.594	6.797
d) Disturbance caused to the tigers due to elephants (N)	40%	0.6	10.681	6.409
e) Road erosion and degradation of roads due to vehicular traffic (N)	40%	0.6	5.826	3.496
f) Dust and smoke generated by the vehicles inside the PA (N)	70%	0.3	12.623	3.787
g) Reduction of ocular forest quality in and around the tourism zone (N)	10%	0.9	7.768	6.991
h) Pollution in the tourism zone – air pollution or solid waste pollution (N)	0%	1	11.652	11.652
i) Awareness generated about the environmental protection in visitors (P)	70%	0.7	9.71	6.797
j) Importance given to wild animals by the local people (P)	93.3%	0.933	7.755	7.235

Total carrying capacity impact unit for ecological aspects = **62 % or 0.62**

**Table 2 - IQU of Facility carrying capacity**

<b>INDICATOR</b>	<b>% OF AGREEMENT</b>	<b>IQU</b>	<b>Final PIU</b>	<b>CCIU</b>
a) Legal restrictions present during construction of facility (P)	<b>0%</b>	<b>0</b>	<b>19.98</b>	<b>0</b>
b) Rate of growth of number of tourists in the area, leading to more facilities being constructed (N)	<b>33.3%</b>	<b>0.333</b>	31.18	<b>10.383</b>
c) Water or natural resource shortage faced by the facilities (N)	<b>0%</b>	<b>1</b>	<b>13.32</b>	<b>13.32</b>
d) Objections from the local people against the facility (N)	<b>0%</b>	<b>1</b>	<b>15.54</b>	<b>15.54</b>
e) Willingness of the local people to sell their land for facility construction purposes (P)	<b>76.6%</b>	<b>0.766</b>	<b>19.98</b>	13.305

Total carrying capacity impact unit for facility aspect = 52.548 % or 0.525

**Table 3 - IQU of Social carrying capacity**

<b>INDICATOR</b>	<b>% OF AGREEMENT</b>	<b>IQU</b>	<b>Final PIU</b>	<b>CCIU</b>
a) A social issue created by the tourism – Alien culture (N)	20%	0.8	18.24	14.59
b) A social issue created by the tourism – Nuisance created to the local people (N)	0	1	10.64	10.64
c) A social issue created by the tourism – Drinking culture (N)	3.3%	0.967	7.6	7.349
d) A social issue created by the tourism – Eve-teasing of local women (N)	0	1	9.12	9.12
e) A social issue created by the tourism – Social inequalities created within the community (N)	20%	0.8	18.24	14.592
f) Preservation of local art and culture due to tourism (P)	23.3%	0.233	10.64	2.479
g) Improvement in the functioning of local institutions like Panchayat due to the growth of tourism (P)	26.6%	0.266	16.4	4.362
h) Problems from local people to tourists (N)	0%	1	9.12	9.12

Total carrying capacity impact unit for social aspects = **72.252 or 0.723%**

**Table 4 - IQU of Economic carrying capacity**

<b>INDICATOR</b>	<b>% OF AGREEMENT</b>	<b>IQU</b>	<b>Total PIU</b>	<b>CCIU</b>
a) Increased employment or increased dependence of local people on tourism for their livelihood (P)	<b>63.3%</b>	<b>0.633</b>	<b>68.75</b>	<b>43.519</b>
b) Increased cost of living in and around the tourism zone (N)	<b>10%</b>	<b>0.9</b>	31.25	28.125

**Total carrying capacity impact unit for economic aspect = 71.644 % or 0.716**

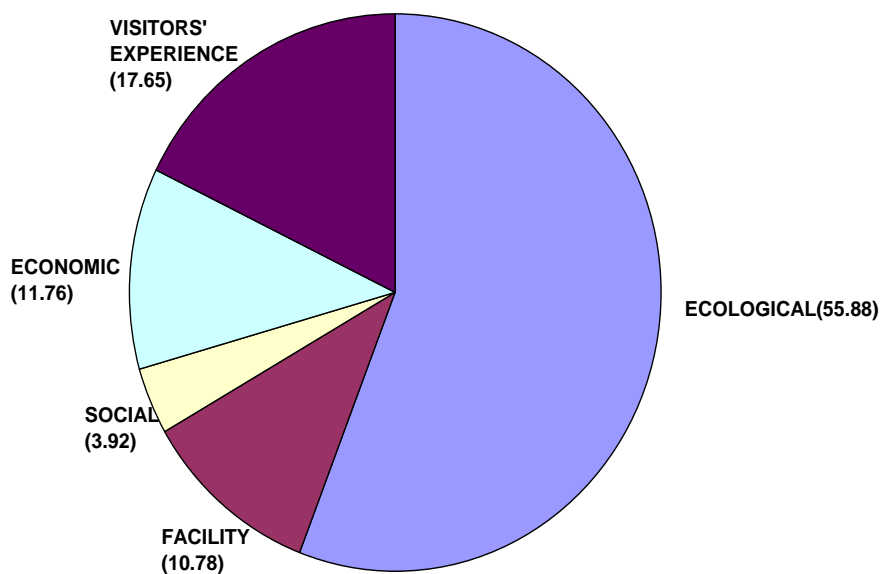
**Table 5 - IQU of Visitors' Experience based CC**

<b>INDICATOR</b>	<b>% OF AGREEMENT</b>	<b>IQU</b>	<b>Total PIU</b>	<b>CCIU</b>
a) Pollution in the tourism zone (N)	<b>0%</b>	<b>1</b>	<b>12.21</b>	12.21
b) Overcrowding inside or outside the PA (N)	<b>14%</b>	<b>0.6</b>	16.75	10.05
c) Dust and smoke generated inside the PA, disabling the enjoyment of the wilderness (N)	<b>33.3%</b>	<b>0.667</b>	<b>15.54</b>	10.365
d) Quality of guides and the interest generated by them in nature (P)	<b>50%</b>	<b>0.5</b>	<b>14.43</b>	7.215
e) Information imparted about nature through interpretation facilities (P)	<b>33.3%</b>	<b>0.333</b>	<b>15.54</b>	5.175
f) Feeling of worthiness of the visit (P)	<b>90%</b>	<b>0.9</b>	<b>13.32</b>	11.988
g) Willingness of the tourist for another visit (P)	<b>96.6%</b>	<b>0.966</b>	<b>12.21</b>	<b>11.795</b>

**Total carrying capacity impact unit for visitors' experience aspect = 68.798 % or 0.688**

**Table 6 - CIV for Bandhavgarh National Park**

<b>COMPONENT</b>	<b>Values given by the experts</b>					<b>FINAL</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
Ecological	55%	50%	60%	60%	60%	<b>55.884</b>
Facility	10%	15%	5%	10%	15%	<b>10.784</b>
Social	5%	5%	5%	0%	5%	<b>3.924</b>
Economic	15%	10%	15%	10%	10%	<b>11.764</b>
Visitors' experience	15%	20%	15%	20%	10%	<b>17.648</b>

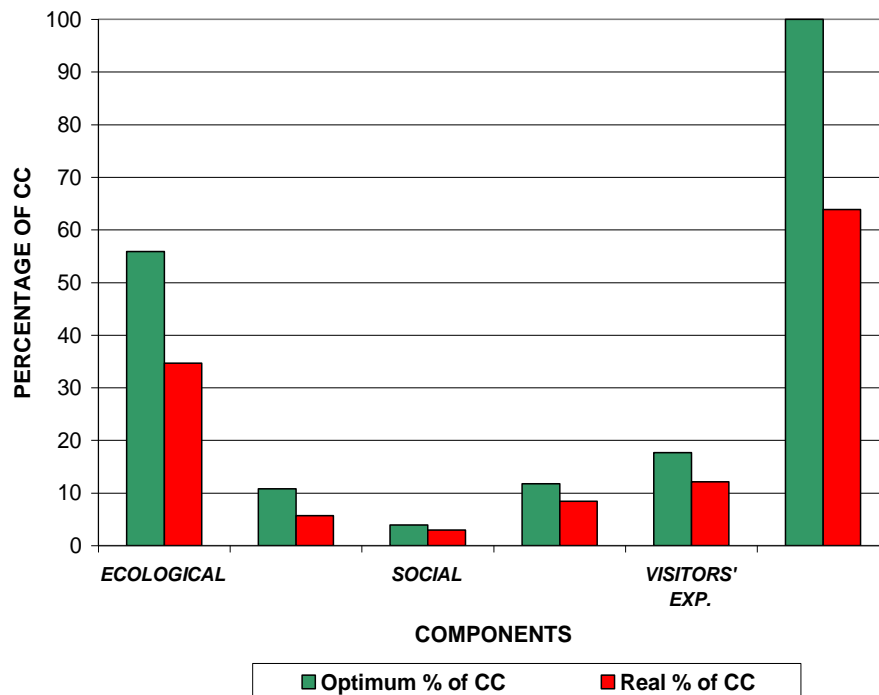


**Fig 1 - Component Importance Value for Bandhavgarh National Park**

**Table 7 - Percentage of CC left in Bandhavgarh National Park**

COMPONENT	CCIU	CIV	% of CC left for tourism
Ecological CC	<b>0.62</b>	<b>55.884</b>	<b>34.648</b>
Facility CC	<b>0.525</b>	<b>10.784</b>	<b>5.661</b>
Social CC	<b>0.723</b>	<b>3.924</b>	<b>2.837</b>
Economic CC	<b>0.716</b>	<b>11.764</b>	<b>8.423</b>
Visitors' Experience based CC	<b>0.688</b>	<b>17.648</b>	<b>12.142</b>

Thus the total carrying capacity left in Bandhavgarh National Park for tourism activity = **63.711%**.



**Fig 2 - Percentage of Carrying Capacity left v/s Optimum Carrying Capacity in Bandhavgarh National Park**

## DISCUSSION

The CCIU values of different components indicate that Facility or Infrastructure CC and Ecological CC are most affected by the tourism, as the CC of these components are reduced by 50% and 40% respectively. These values are within or near the moderate impact zone and should be a serious concern for the authorities. The important indicators for the ecological impact were the crowding of vehicles around the animals (especially tiger), dust and smoke generated by the vehicles inside the PA and aggressive behaviour of animals towards the vehicles. The facility CC was reduced mainly due to problems such as lack of any legal restrictions on the construction of facility around PA and high rate of growth in the number of tourists in the area, leading to the construction of more facilities. The other components are in a relatively better condition, with a CCIU near 70%.

The CIU scores indicate the predominance of ecological CC in determining the total CC. But a large number of the tourists who visit Bandhavgarh are hardcore nature-lovers and thus the Visitor's experience-based CC is also very important. The factors that are leading to a reduction in this component are the poor quality of guides and the interest generated by them in nature, information imparted about nature through interpretation facilities, dust and smoke generated inside the PA, disabling the enjoyment of the wilderness and to a lesser extent the overcrowding inside the PA especially during the tiger sightings.

The overall impact produced by tourism on the total carrying capacity of Bandhavgarh National Park belongs to the 'Low' impact category (61-80 %), but the Facility CC has reached the 'Moderate' impact zone.

## **CONCLUSION**

The tourism activity has reduced the total CC of the area by about 36% from its original state. Though the impact still remains within the low impact category, it is perilously close to the MODERATE impact level (41-60).

Management initiatives are required to mitigate the adverse impacts arising from the tourism activities and special emphasis should be laid upon the sensitive components as Ecological and Facility CC in this case. There should be the formulation of a state level authority to control the construction of facilities around the PAs and regulate the flow of tourists within the CC limits of the destination area. The initiatives such as proper training of guides and including the local communities as a stakeholder in the tourism activity can alleviate the impacts on Visitor's experience-based and Social CC respectively. Calculation of Total CC is important from the perspective of tourism management, as it gives a holistic view of impacts due to tourism. The reductionism exhibited in management of tourism can only lead to pervert mitigation measures. So total CC is a better tool than the individual capacities for controlling and coordinating the tourism activities carried out by different stakeholders.



16.

## A NEW METHODOLOGY FOR ESTIMATING THE TOTAL CARRYING CAPACITY OF TOURISM DESTINATIONS – A CASE STUDY OF PENCH NATIONAL PARK, MADHYA PRADESH, INDIA

A K Bhattacharya and Thriveen Shanker

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### **Abstract**

*The uncontrolled tourism activity in the important protected areas in India is a major concern for the authorities. Carrying capacity (CC) of these destination areas to support tourism was considered as the benchmark for tourism regulation and management, but its estimation is still a contentious issue. This paper tries to estimate the total CC of Pench National Park using a new methodology using a two-tier mechanism of impact analysis. Indicators were identified for the different components of the total CC and the impact of tourism on these indicators were calculated. In the next stage, the impacts on individual components were estimated to calculate the total CC, without the problem of differing units of impact prediction. This can also be useful for monitoring and evaluation or environmental auditing of tourism activity.*

### **Background**

The industrial growth of the 20<sup>th</sup> century has instigated a proportional increment in the field of mass tourism. The apparent progenies of these altered economic conditions like the modified work culture with paid holidays (Urry, 1990)<sup>1</sup>, demographic and social changes (e.g. dual income households and a growing proportion of single adults), relaxation of immigration restrictions, increased paid leave and more flexible working time, improved education and awareness of travel possibilities, and technological improvements (Ceballos-Lascurian, 1992)<sup>2</sup> have all played a part in this progress. But this evolution of tourism facilities was not in tune with the resource limits of the destination and resulted in skewed development of infrastructure as well as subsequent social and environmental impacts.

But the notion that mass tourism is a bad thing is rather simplistic and it has been suggested that controlling the volume of tourism might alleviate the situation, especially since the tourism is typically found in locations with fragile environments, such as mountains and coasts which are peripheral to the world economy (May, 1991)<sup>3</sup>. Carrying capacity is often cited as a framework in which the objective of regulating the scope of tourism in a destination can be achieved (Hunter and Green, 1995<sup>4</sup>; Inskeep, 1991<sup>5</sup>; McIntyre, 1993<sup>6</sup>; O'Reilly, 1986<sup>7</sup>; WTO, 1993<sup>8</sup>).

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<sup>1</sup> Urry J, 1990. *The Tourist Gaze: Leisure and Travel in Contemporary Societies*, Sage Publications, London.

<sup>2</sup> Ceballos-Lascurian H, 1992. *Overview on ecotourism around the world: IUCN's Ecotourism Program*, IUCN Ecotourism Consultancy Program, Mexico.

<sup>3</sup> May V, 1991. "Tourism, environment and development: Values, sustainability and stewardship". *Tourism Management*, 12 (2) : 112-118.

<sup>4</sup> Hunter C & Green H, 1995. *Tourism and Environment: a sustainable relationship*, Routledge, London, pp.10-121.

<sup>5</sup> Inskeep E, 1991. *Tourism Planning: an integrated and sustainable development approach*, Van Nostrand Reinhold, New York

<sup>6</sup> McIntyre G, 1993. *Sustainable Tourism Development: Guide for local planners*, World Tourism Organisation, Madrid.

<sup>7</sup> O'Reilly AM, 1986. 'Tourism carrying capacity: concepts and issues', *Tourism Management*, 7(4): 254-258.

<sup>8</sup> WTO, 1993. *Sustainable Tourism Development: Guide for local planners*, World Tourism Organisation, Madrid.

## Carrying capacity (CC) of tourism destinations

The concept of carrying capacity is very old in wildlife management, and was used for the first time by Dasmann in 1945 for assessing the capacity of the forests for grazing by animals (Wall, 1983)<sup>9</sup>. It was from early 1960s that this concept was applied in recreational research for the purpose of determining the ecological disturbance from use (Lucas, 1964<sup>10</sup>; Wagar, 1964<sup>11</sup>).

World Tourism Organisation (1993)<sup>8</sup> defines CC as, the level of visitor use an area can accommodate with high levels of satisfaction of visitors and few impacts on resource. Mathieson and Wall (1982)<sup>12</sup> defines it as the maximum number of people who can use a site without an unacceptable decline in the quality of experience gained by visitors.

The concept of carrying capacity of tourism activities can be explained on the basis of following interrelated elements: - (1) The amount of use of a given kind (2) a particular environment can endure (3) over time (4) without degradation of its sustainability for that use (Fennel, 1999)<sup>13</sup>. The technique of CC is very pertinent and has special relevance for the protected areas (PAs) for analyzing the interactions of the biotic pressure, ecotourism and ecosystem to maintain the natural equilibrium, and the judicious and scientific determination of CC can serve to be an effective tool for the management of PAs and sustainable ecotourism (Bhattacharya and Banerjee, 2003)<sup>14</sup>.

But the methodology to be adopted for estimating a comprehensive carrying capacity for tourism destination areas is still a bone of contention. It may be due to the following reasons: -

- It is still uncertain whether the basis of fixing the carrying capacity should be in proportion to the number of tourists allowed or the impacts caused due to them.
- Many of the factors used for the estimation of CC are qualitative and their interdependencies unknown. Thus their estimation becomes subjective.
- The different sub-components of Total CC like ecological CC or social CC may have different scales and units and thus it becomes difficult to estimate comprehensive CC by integrating all these elements.

Thus it was necessary that an integrated method be adopted for calculating the Total CC and it acts as the background for this attempt.

## Methodology used for the study

The methodology is adopted from Batelle Environmental Evaluation System (BEES) used in Environmental Impact Assessment (EIA) studies and Limits of Acceptable Change (LAC) framework from the field of tourism research. The method is a two-tier system, where the impacts are at first estimated for the individual indicators of components and then for the components itself.

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<sup>9</sup> Wall G, 1983. 'Cycles and Capacity: A Contradiction in Terms!' *Annals of Tourism Research*, 268 - 269.

<sup>10</sup> Lucas RC, 1964. 'Wilderness perception and use: the example of boundary water canoe area', *Natural Resources Journal* 3(3): 394-411.

<sup>11</sup> Wagar J, 1964. 'The carrying capacity of wildlands for recreation', *Forest Service Monograph*, Society of American Foresters, 7: 23.

<sup>12</sup> Mathieson A & Wall G, 1982. *Tourism: economic, physical and social impact*, Longman, London, p.38.

<sup>13</sup> Fennell David A, 1999. *Ecotourism: an introduction*, Routledge: London.

<sup>14</sup> Bhattacharya AK & Banerjee, Suchitra, 2003. 'Relevance of Carrying Capacity and Eco-Development linkages for Sustainable Ecotourism', Indian Forester, 129 (3).

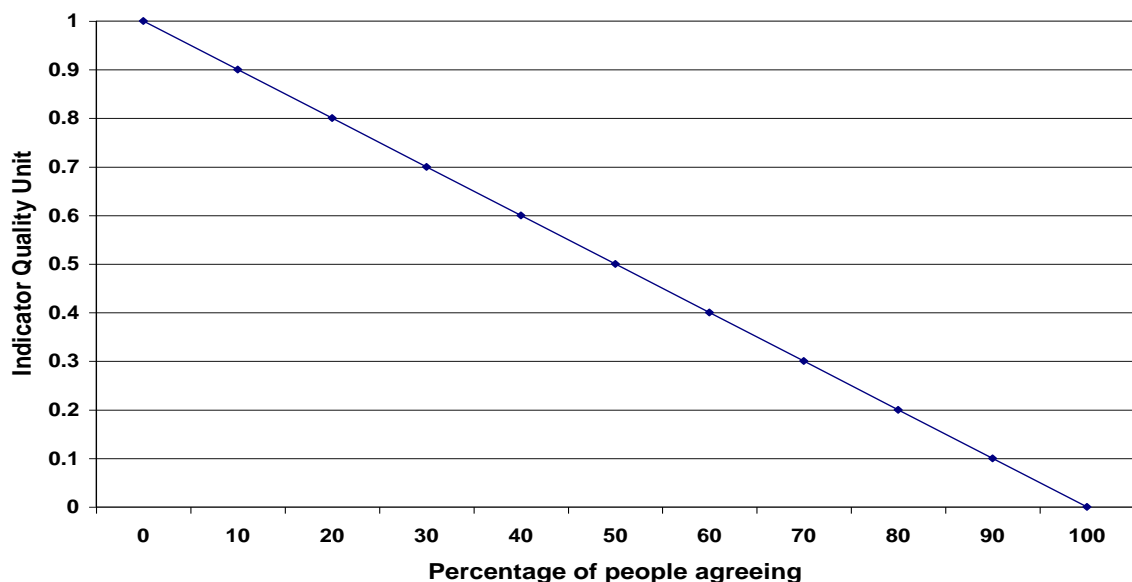
### The different steps in calculating the Total CC are as follows

1. The total CC is divided into five components, i.e. Ecological CC, Facility (or Infrastructure) CC, Social CC, Economic CC and Visitor's experience based CC. Fix the relative importance of these components as percentages of Total CC. This is calculated from the ratings given by the experts in the subject, who are familiar with the study area. Then arithmetic means of the different ratings are taken to be the Component Importance Value (CIV) of respective components of CC.
2. Select local level indicators for each of the components to identify the impacts of tourism on the five components of carrying capacity. The indicators were selected after discussions with experts of ecotourism and field visits.
3. Make a Value Function Curve (VFC) for each indicator on the basis of percentage of people who recognise the impact of tourism on that specific indicator and respective quality of the indicator. So greater the number of people who recognises the impact, greater is the impact.

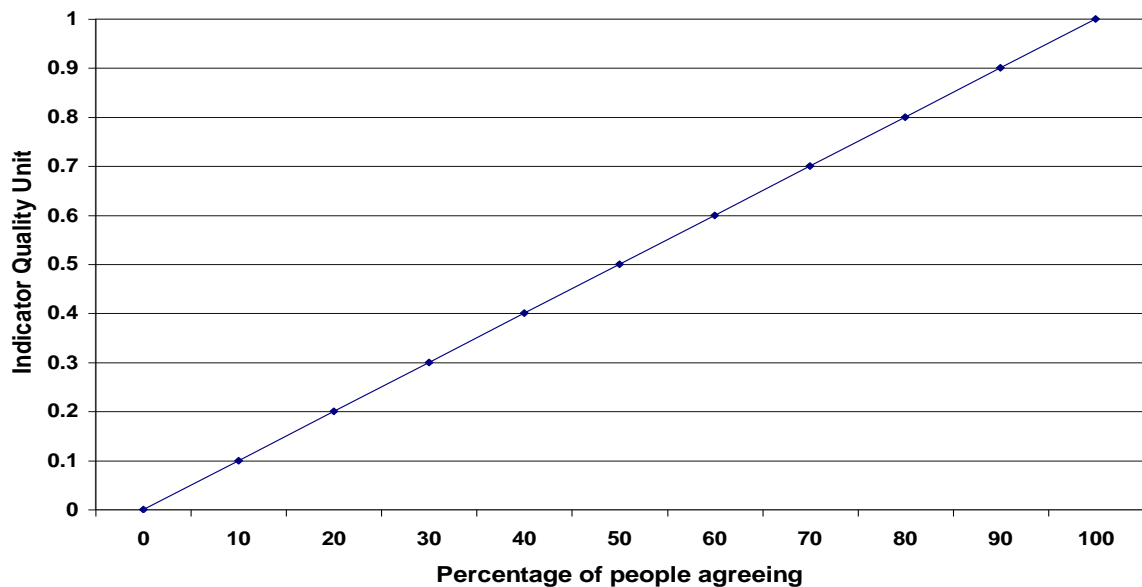
There will be two types of VFC, for negative and positive indicators. Negative indicators are those indicators, which are given a higher value when lesser number of people states that there is an impact on it. The positive indicators will be given higher value as the numbers of people agreeing with the statement of impact on it increases. Thus the indicators selected are classified as positive and negative indicators.

The value function curve for a negative indicator is as follows: -

**Fig.1. Value function curve of negative indicators**



The positive indicators will have the following kind of VFC -

**Fig 2 - Value function curve of positive indicators**

If no one among those surveyed says there is an impact on the positive indicator it will be given an Indicator Quality Unit (IQU) of 1. If 1-10% of people consider there is an impact then the value given will be 0.9, 11-20% will be 0.8, 21-30% will be 0.7 etc and 91-100% will get an IQU of zero. In the case of the negative indicators the valuation will be vice-versa. It is based on the assumption that the impact is directly proportional to the number of people who recognise that there is an impact.

1. Fix a Parametric Importance Unit (PIU), for each of the indicator. Delphi technique is used in BEES to fix this value. But due to time constraint, another technique was adopted. In this method, a set of experts was asked to give ratings for the indicators on the basis of its ability to accurately predict the impact. The experts were given the guidelines for rating, which is as follows:

- *High importance: - These are the indicators that directly indicate the impact as well as the chances that the occurrence is only due to tourism activity is also high. The impacts on these indicators are directly observable and the cause-effect relationship can be easily produced. So it should be an important indicator of impact on that component.*
- *Medium importance: - These are also indicators that directly indicate the impact, but the chance of tourism activity being the lone causative factor is doubtful. Thus the cause-effect chain is not clearly discernable. Thus these indicators should be of medium importance.*
- *Low importance: - These indicators are indirect signs of an impact. They are not directly observable or quantifiable. The possibility that the reason for the impact on these indicators is due to tourism is very difficult to establish. Due to this reason, these indicators should be assigned only a low importance.*

Once the data on ratings is collected, then a value was assigned to these ratings, such 'x' for Low importance, '2x' for medium importance and '3x' for high importance indicators. A summation of the rating of all the experts were done and the arithmetic mean is calculated. This will be the Parametric Importance Unit of that indicator.

2. Multiply the Indicator Quality Unit (IQU) with Parametric Importance Unit (PIU) of each indicator to get the Carrying Capacity Impact Unit (CCIU) for that indicator.
3. Sum up the CCIU for all indicators to get the Total Carrying Capacity Impact Unit for that component of CC.
4. Multiply the Total CIU for the component with its respective Component Importance Value (CIV) as calculated in step no.1. E.g. the Total CIU of Social Carrying Capacity is obtained as 2 out of a maximum possible 3, and its Component Importance Value (CIV) is 15%, then for that area the percentage of Social Carrying Capacity's quality is  $(2/3) \times 15 = 10\%$  out of a maximum possible 15%.
5. Sum up all the carrying capacity percentages for all the components to get the total carrying capacity value in percentage out of a total possible 100%. This indicates the level of impacts caused due to tourism activities. Lower is the value, greater is the impact caused.
6. Set standards for the total impact and compare it with obtained percentage. The standards was set as follows:
  - 0-20% = Very High Impact on Carrying Capacity.
  - 21- 40% = High Impact on Carrying Capacity
  - 41- 60% = Moderate Impact on Carrying Capacity
  - 61- 80% = Low Impact on Carrying Capacity
  - 81- 100% = Very Low Impact on Carrying Capacity.
7. The percentage of CC and the standards obtained from the study can form the basis of formulating the management plans for individual PAs. Additional emphasis of mitigation can be given on those components or indicators that are shown to be impacted heavily by the tourism activities.

## RESULTS

A total of 33 indicators were identified for the 5 components of CC. These indicators were rated as those of high, medium and low importance by the experts and the stakeholders were asked for their perception of impact that has occurred on these indicators due to tourism. From this data IQU and PIU were calculated for each of the indicator. Then CCIUs for the components were found out by multiplying the IQUs and PIUs and it was as follows: -

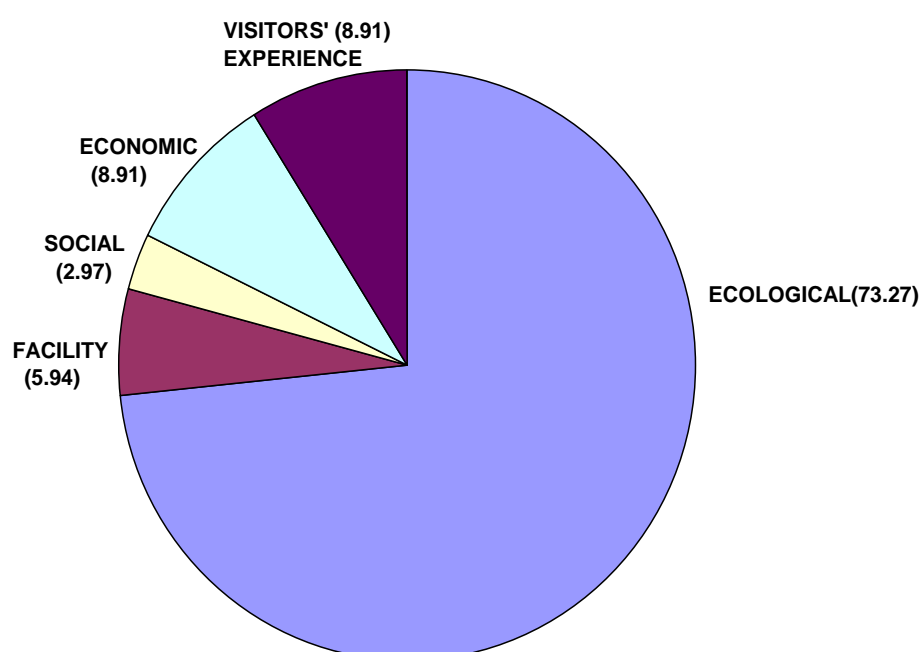
**Table 1 - Total carrying capacity impact unit of components of CC**

<b>Component</b>	<b>CCIU</b>
Ecological CC	<b>84.518 % or 0.845</b>
Facility CC	<b>80.02 % or 0.8</b>
Social CC	<b>63.48 % or 0.635</b>
Economic CC	<b>66.09 % or 0.661</b>
Visitor's experience based CC	<b>78.894 % or 0.789</b>

The table shows that the component most affected by the growth of the tourism activity in Pench National Park is the Social CC, which has been reduced from the original level of 100% to about 64%. The least affected is the Ecological CC, which is reduced by only 15% from the original stage.

**Table 2 - Component Importance Values of components of Total CC**

COMPONENT	Values given by the experts					FINAL CIV
	1	2	3	4	5	
Ecological	75%	80%	65%	70%	75%	<b>73.27</b>
Facility	5%	5%	10%	5%	5%	<b>5.94</b>
Social	5%	0%	5%	0%	5%	<b>2.97</b>
Economic	10%	10%	10%	10%	5%	<b>8.91</b>
Visitors' experience	5%	5%	10%	15%	10%	<b>8.91</b>

**Fig 3 - Component Importance Value for Pench National Park**

The table indicates that the experts apprehend a dominant role of ecological aspect in determining the carrying capacity of Pench National Park vis-à-vis other components.

**Table 3 - Percentage of CC left for tourism activity in Pench National Park**

COMPONENT	CCIU	CIV	% of carrying capacity left for tourism	% of CC reduced from the original level
Ecological CC	0.845	73.27	61.913	15.5%
Facility CC	0.80	5.94	4.752	20.0%
Social CC	0.635	2.97	1.886	36.5%
Economic CC	0.661	8.91	5.89	33.9%
Visitors' Experience based CC	0.789	8.91	7.03	21.1%
<b>TOTAL</b>	---	---	<b>81.47%</b>	<b>18.53%</b>

Thus the total carrying capacity left in Pench National Park for tourism activity is 81.47%.

According to the standard table ratings, the impact is VERY LOW (81-100 %), but is perilously close to enter the LOW impact level (61-80 %).

## **DISCUSSION**

The fact that the number of tourists has increased enormously only in the last few years may be the reason for ineffectual impacts on ecological or infrastructural aspects of the area. As the benefits from the tourism activity becomes more pronounced, social CC may be superceded by other components in its CCIU. The impact on social aspect is mainly due to the apprehension towards the creation of social inequalities and lack of any apparent social benefits from the growth of tourism. But the relative importance of components indicates that the ecological aspect of the area is most prominent in deciding the total CC of the destination area. It may be due to the level of growth of tourism at present in and around Pench National Park, where the infrastructures such as tourist resorts are underdeveloped.

The percentage of CC reduced from the original value indicates a fall of around 35% for both social and economic CC, but the increased benefits from tourism can act as the compensatory mechanism and these values may increase in the future. But a decline of 20% in the visitor's experience CC is a more serious concern. The factors such as quality of guides, their ability to generate interest in tourists about nature, and information imparted through the interpretation facilities (Interpretation Centres, Natural museums, Amphitheatres, etc) will have to given more attention for the mitigation of this impact.

## **CONCLUSION**

The total CC of Pench National Park has declined by 18.53% due to the tourism activities. This still belongs to a 'Very Low' impact category as the area has retained more than 80% of its CC, but it is perilously close to entering into the 'Low' impact zone. Though there is no large-scale deterioration of standards in tourism but the aspects such as reduction in visitor's satisfaction or alienation of local people from the tourism can become the Achilles' heel if not managed properly. Management initiatives such as superior training of guides, creation of interpretation centres and involving the local people in tourism activities by programmes like Community-based ecotourism can ensure the growth of sustainable and equitable tourism.

The new method adopted was able to predict the total CC of the destination areas of tourism, including the distinct percentage of reduction in each indicator and component. This can be a useful tool in the hands of the policy-makers and managers, as it can pinpoint to the exact element that will have to be managed intensively. It is also useful for monitoring and evaluation where the CC estimated can be the baseline data for periodic examination. It may also be utilised as the basis for conducting Environmental Auditing on tourism sector.

17.

## BIODIVERSITY CONSERVATION AND ECOTOURISM: LESSONS FROM SUNDERBAN TIGER RESERVE

A K Bhattacharya, Saurabh Jha and Ankur Dave

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### **Abstract**

*Biodiversity conservation is essential to human development because of the goods and services it provides. Its components can be used directly as food, medicine, building materials and indirectly in the form of environmental regulation, soil conservation, and pollution control. The tourism can contribute to sustainable development by having less impact on environment in comparison to other industries, by playing a positive role in awareness generation for conservation, by providing economic incentives to protect habitat and since it depends on environment as part of its product, it is motivated to protect them. The paper discusses conservation and ecotourism development strategies in Sunderban Tiger Reserve (STR), India, which was inscribed on the UNESCO World Heritage list in the year 1985 and recognised as a Biosphere Reserve in the year 1989. STR is particularly known for being the home of famous Royal Bengal Tiger.*

### **BACKGROUND**

Tourism is “one of the most important economic, social, cultural and political phenomena of the twentieth century” (Ceballos – Lascurian, 1996)<sup>1</sup>. Today tourism is described as the world’s biggest industry on the basis of number of jobs created, number of clients served and its contribution to global Gross Domestic Product (GDP). Statistics produced by the World Travel and tourism Council (WTTC, 2002)<sup>2</sup> indicate that tourism generates 11 percent of global GDP, employs 200 million people, and transports nearly 700 million international travelers per year – a figure that is expected to double by 2020. The size of the industry and its rate of growth present both opportunities and threats for biodiversity conservation.

### **Biodiversity Considerations and Ecotourism**

The Convention on Biological Diversity (CBD) defines biodiversity as “ the variability among living organisms from all sources including, *inter alia* terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (CBD, 1992)<sup>3</sup>. In layman’s language it means all the living things on earth and the ecological processes associated with them (Vermeulen and Koziell, 2002)<sup>4</sup>.

Biodiversity conservation is essential to human development because of the goods and services it provides. Its components can be used directly as food, medicine, building materials and indirectly in the form of environmental regulation, soil conservation, and pollution control. Though these services are not widely recognized in economic terms but one of the studies estimated the combined economic values of 17 ecosystem services at

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<sup>1</sup> Ceballos-Lascurain H, 1996. Tourism, Ecotourism and Protected Areas. Gland, Switzerland: IUCN.

<sup>2</sup> WTTC, 2002. *Corporate Social Leadership in Travel & Tourism*. London UK, World Travel and Tourism Council.

<sup>3</sup> CBD / Convention on Biological Diversity, 1992. <http://www.biodiv.org/doc/legal/cbden.pdf>

<sup>4</sup> Vermeulen S & Koziell I, 2002. *Integrating Global and Local Biodiversity Values: A Review of Biodiversity Assessment*. London: International Institute for Environment and Development



US\$ 16.54 trillion per year (Costanza et al. 1997)<sup>5</sup>. According to an estimate, 40 percent of the global economy is based on biological products and processes (WEHAB Working Group, 2002)<sup>6</sup>.

The International Ecotourism Society (TIES) defines ecotourism as: “purposeful travel to natural areas to understand the culture and natural history of the environment, taking care not to alter the integrity of the ecosystem, producing economic opportunities that make the conservation of natural resources beneficial to local people” (TIES, 2002)<sup>7</sup>. The major underlying assumption is that visitors’ can provide the necessary economic incentives for conservation and development thus agreeing to the claim that ecotourism “is a mode of ecodevelopment which represents a practical and effective means of attaining social and economic improvement for all countries” (Ceballos – Lascurian, 1991)<sup>8</sup>.

### Ecotourism in Conservation

The Tourism can contribute to sustainable development by having less impact on environment in comparison to other industries, by playing a positive role in awareness generation for conservation, by providing economic incentives to protect habitat and since it depends on environment as part of its product, it is motivated to protect them (WTTC and IHRA, 1999)<sup>9</sup>. Though it holds good at an industry level – but less at an individual operator level, whose business is affected by seasonality (Buckley, 1995)<sup>10</sup>.

In recent years there has been concerns over global environmental degradation and ways to combat them. Several approaches like laws, advertising, economic incentives etc, can be used to check environmental degradation and tourism has been perceived as one of the potential tools in global conservation (Buckley, 1995)<sup>10</sup>. The idea is to persuade people to see such places whom upon returning home act as advocates for the area they have visited. The intentions are good but the concept of ecotourism still hasn’t agreed upon measures of a successful ecotourism project, “who are the beneficiaries and how the benefits be distributed”, which has ultimately translated into unrealized conservation goals and reduced benefits for many of the sectors which ecotourism seeks to support (Wells and Brandon, 1992)<sup>11</sup>. It is clear that in any project it is not always possible to satisfy all stakeholders simultaneously and hence conservation benefits should be always considered as the bottom line.

The key benefits for conservation from ecotourism can be clustered into five areas (Brandon, 1996)<sup>12</sup>:

- a source of financing for biodiversity conservation
- providing economic justification for protection
- providing economic benefits to local community
- awareness generation to promote conservation
- involving private sector for biodiversity conservation.

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<sup>5</sup> Costanza R d’Arge, R de Groot R, Farber S Grasso, M, Hannon B, Limburg K, Naeem S, O’Neill R V, Paruelo J, Raskin RG, Sutton P & van den Belt M, 1997. “The Value of the World’s Ecosystem Services and Natural Capital.” *Nature* 387:253–260.

<sup>6</sup> WEHAB Working Group, 2002. “A Framework for Action on Biodiversity and Ecosystem Management.” NewYork: United Nations. [www.johannesburgsummit.org/html/documents/summit\\_docs/wehab\\_papers/wehab\\_biodiversity.pdf](http://www.johannesburgsummit.org/html/documents/summit_docs/wehab_papers/wehab_biodiversity.pdf).

<sup>7</sup> The International Ecotourism Society, 2002. *Ecotourism statistical fact sheet*. (General Tourism Statistics).

<sup>8</sup> Ceballos-Lascurain H, 1991. Tourism, Ecotourism, and Protected Areas. *Parks* 2(3): 31-35.

<sup>9</sup> World Travel and Tourism Council (WTTC) & International Hotel & Restaurant Association (IHRA), 1999. The Global Importance of Tourism. Background Paper no. 1, prepared for the Commission on Sustainable Development, seventh session, 19–30 April 1999.

<sup>10</sup> Buckley R, 1995. Where Tourism and Ecology meet. Ecotourism conference, Bangkok, 6 – 8 February 1995.

<sup>11</sup> Wells M & Brandon K (with Lee Hannah), 1992. People and Parks: Linking Protected Area Management with Local Communities. Washington, DC: The World Bank.

<sup>12</sup> Brandon K, 1996. Ecotourism and Conservation: A Review of Key Issues. Environment Department Paper no. 33. Washington, DC, World Bank.

## The Conservation of Sunderban Tiger Reserve

This paper discusses conservation and ecotourism development strategies in Sunderban Tiger Reserve (STR), India, which was inscribed on the UNESCO world heritage list in year 1985 and recognised as a Biosphere Reserve in the year 1989. STR is particularly known for being the home of the famous Royal Bengal Tiger. Moreover, it is the largest delta in the world and home to large variety of species of fauna and flora (STR management plan, 2000). Over the past decades, the marine environment and forest resources came under increasing pressure from local community and commercial enterprises which has led to overexploitation and marine habitat destruction. While marine resource extraction has been regulated, adequate alternatives have thus far not been provided to residents living on the periphery of the reserve (STR management plan, 2000). Moreover, benefits from tourism have not yet materialised and are unlikely to provide feasible livelihood options in the future, as the industry is set to remain externally controlled and operated. Such restrictions on the use of the resources that local community depended upon for their livelihood has led to resource use conflicts with reserve management which is challenging the conservation objectives of the STR. The primary objective of the STR management is biodiversity conservation and sustainable use of the natural resources. Now sustainable use can be 'consumptive' forms of resource extraction like fishing and honey collection, to ecotourism, which is often seen as 'non – consumptive', as it is observed to be non – extractive (Brandon, 1998)<sup>13</sup>. Ecotourism, as a non-consumptive way of resource extraction can be considered a viable option. With resource extraction restricted or regulated, the involvement of local community in ecotourism development can be crucial to meet the livelihood needs of the community and also involving people in the conservation efforts.

### Ecotourism Development

Ecotourism has become a buzzword after 1990s in biodiversity conservation and protected area management context. It is distinguished from conventional tourism by its socio-economic implications and potential to self - finance the destinations to contribute to conservation efforts (Brandon, 1996)<sup>12</sup>.

In the context of STR, the management plan stresses on conservation of biodiversity and awareness generation with no written guidelines for providing economic benefits to local community and involving private sector for biodiversity conservation. The overall conception of 'ecotourism' being practiced in STR is more of traditional nature tourism what has historically been under control and ownership of outsiders and most of the revenue generated leaks outside the local economy. The type of jobs generated is labour related jobs on seasonal basis in the lodges outside the reserve. There hasn't been increase in the locally managed business as the local people lack the requisite skills, and the private operators are unwilling to invest time and money to train them. It has also not given impetus to traditional arts and culture of the area. Thus as poor and disadvantaged suffer under resource use restrictions, the outsiders attain to gain benefits by paying minimally for it.

One of the biggest benefits of ecotourism is that it has potential to raise money from visitors' and act as a major source of financing for conservation. Though a minimum fee is charged to visitors, but the entire money collected goes to the State exchequer. The fee is kept minimum to keep STR open to all citizens, even the poor. But almost every study (Brandon, 1996)<sup>12</sup> done of protected areas recommends capturing revenue to maintain protected areas and to offset the costs of visitor use. In short, "the money generated by ecotourism does not necessarily go towards maintaining biological diversity or management of Parks themselves" (Wells and Brandon, 1992)<sup>14</sup>.

<sup>13</sup> Brandon K, 1998. Perils to Parks: The social context of threats. In K. Brandon, K.H. Redford and S.E. Sanderson (eds), Parks in Peril: People, Politics, and Protected Areas. Washington, D.C.: Island Press, pp.415-439.

<sup>14</sup> Wells M and Brandon K (with Lee Hannah), 1992. People and Parks: Linking Protected Area Management with Local Communities. Washington, DC: The World Bank.

One of the biggest potentials of ecotourism is to generate awareness about the destination areas among the visitors and hence build support for the conservation of the area. In STR, this aspect has not been effectively as a high percentage of visitors are dissatisfied over guides' performance and standard of information dissemination. Though there is an interpretation center in STR at Saznakhali wildlife sanctuary but Forest department data shows that only 24% of the tourists coming to Sunderbans availing its facility. Thus one of the primary objectives of ecotourism development in STR (to create awareness among people about Conservation of Biodiversity) stands defeated.

Future tourism development inside the reserve is restricted and tourism infrastructure will continue to be developed outside the reserve. While West Bengal Tourism is running the tourism infrastructure within the reserve, the facilities outside the Park are run and owned by the private sector and the national and local elite. This further suggests that the revenue generated will leak from the local economy. Also the high rate of growth of visitors in the area leading to more facilities being created which are unchecked by any kind of legal restrictions might encourage the lodge owners to adopt environmentally sensitive designs and operations. The problem arises from the fact that the construction is carried on the Panchayat land and there is no legal framework to regulate the construction of these facilities within the acceptable limits. Moreover, there has been complains from STR management, local community and villagers about the laxity shown by launch owners during their tours. The major complaint has been regarding launches and boats being used in the region operating above permissible sound limits, whose effects though not monitored seem to affect the ecology of the area. Also efforts of tour operators in waste management is not adequate enough and as the reserve lacks full strength staff it is not easy to monitor every launch and boat moving in the area.

## **CONCLUSIONS AND RECOMMENDATIONS**

There is great interest in ecotourism as a source for conserving biodiversity, achieving socio – economic development and maintaining cultural harmony of an area. One of its major advantages is that it has the potential to be ecologically and culturally sensitive but to achieve these objectives, a proper planning needs to be laid, followed by ecotourism initiatives and involvement of all stakeholders and management controls to monitor the activities. Some of the key factors that are to be kept in mind for successful implementation of ecotourism projects are:

Mechanism for controlling the arrival of Visitors within acceptable limits:

Key to conservation is that ecological and cultural impacts are kept to minimum, which helps, in sustainable use of the resource from which the benefits are being derived. This can only be achieved by using the concept of carrying capacity whereby an appropriate level of visitation in an area is determined to keep in check the impact of tourism on ecology. This can be achieved by careful analysis of the local conditions, by defining a clear management objective, using authority and incentives to impose limitations on visitations and using tactics like zoning by which the impact is limited to an area.

### **Leakage from the local economy**

At most ecotourism sites, the businesses are generally controlled by outsiders or local elites which has not led to sufficient benefits for the local community to support conservation. The local community generally ends up with small jobs, which is not enough to motivate local community to conserve biodiversity. The resource extraction is already being prohibited which has affected the livelihoods of the people and when the community doesn't get any benefit from tourism it ends up in resource use conflict with the management.

### **Visitation and Conservation education**

Generally tourists are fickle and want to see wildlife, especially tiger has high tourist appeal, but if their sighting becomes difficult then visitors' satisfaction is low and eagerness to come back is reduced. But good guiding and interpretation involves the ability to make other resources attractive and educate visitors' about its ecological and cultural importance. Such interpretation programs should try to make visitors' sensitive towards ecology and culture of an area and its aim should be make visitors' 'brand ambassadors' of the area thereby strengthening the cause for its conservation.

To improve upon the visitation and conservation education, substantial investments need to be made to strengthen the management capacity of the authorities to design and implement sustainable ecotourism.

### **Thus to overcome this problem following points should be considered**

- A high 'staff to visitor ratio' be maintained in the ecotourism zone which can be achieved by hiring trained staffs on contract basis.
- The activities taking place in the interpretation area should be properly publicized and the activities be conducted to involve visitors during evening hours.
- The guides in the area should be properly trained to make them proficient in languages and interpretation skills.

### **Facilities and Services**

The facilities and services depends on "zoning, combined with an analysis of the type of tourist the Park wants to attract, the proximity of alternate facilities, acceptable levels of impact, and the revenue the Park wants to generate" (Brandon, 1996)<sup>12</sup>. A careful examination needs to be done on kind of tourists the destination area wants to attract depending on the ecological and cultural sensitivity of the area and the kind of impact which the area can sustain.

The problem can be tackled by:

- Application of "Ecologically Sensitive Area" ruling to the peripheral areas of the destination area. This ruling restricts the activities of infrastructure development within the area (as set by the authorities) and hence in future further facilities development can be regulated using this ruling.
- The management of tourism facilities will be on the basis of suggestions from experts in the fields of wildlife management, tourism and land laws. The responsibility of control and monitoring of construction will rest on the authority that controls the tourism activity.
- Environmental Impact Assessment (EIA) report should be made mandatory if the number of rooms and the floor area of construction exceed a limit. These limits can be set after discussion with the experts in the field of EIA.
- A monitoring mechanism should be developed for the area, which monitors the impact of infrastructure development and Visitation to the area on the ecology and culture of the area.

### **Community Based Ecotourism (CBE) activities should be promoted**

The villages around the protected areas should be encouraged to take up tourism related activities at community level and thus earn an alternative means of livelihood. Local people should be encouraged to form groups such as cultural group or co-operative committees, so that they can set up shops to sell locally made products and handicrafts to tourists.

Certain recommendations have been made before embarking on CBE:

- A detailed analysis of what the community can supply to the tourism enterprise is needed before investments are made.

- Funding entities must understand the organizational structure of the community, review various models for community tourism ownership before making any investments, ensure that an appropriate model for ownership and accounting of funds is implemented by the community itself, and provide on-site training in accounting skills.
- A Visitors' database should be maintained to know the demands and preferences of visitors for community based ecotourism.

It can play a vital role in not just the environmental conservation, but may hold the answer for livelihood issues in resource rich, yet economically poor rural set up near by the ecotourism destinations.

### **Shift from marketing of protected areas only for tiger sighting**

The emphasis must shift from tiger sighting and extend to wildlife sighting, wilderness experience, scenic beauty and cultural heritage. This is important to reduce visitors' expectations and inform visitors about the rich biodiversity in the reserve.

The marketing strategies should be taken into consideration a holistic view of forests and its nearby areas and must not brand the tourism as tiger tourism. The next step of changing this model towards an ecotourism activity is diversifying in to adventure activities, camping, developing alternate tourist areas outside the reserve, etc.

All the above mentioned aspects are inherent to the concept of Ecotourism and should be taken care of, so that in the future the tourist activities do not adversely affect the environment of the region and also positively contribute to the local community.

18.

**BIODIVERSITY CONSERVATION IN MADHYA PRADESH - POLICIES AND STRATEGIES**

Suchitra Banerjee and A K Bhattacharya

**Abstract**

*Madhya Pradesh with its unique location in the central India is a megabiodiversity State that encompasses the major ecosystems of the country. The paper attempts to describe the vast biodiversity of the State and the efforts being taken for their conservation. The paper also elaborates the existing administrative, institutional and policy frameworks operational for the biodiversity conservation in the State.*

**BACKGROUND**

Biodiversity is providing the basis for life on earth which includes the variability of animals, plants and microbes. It includes *inter alia*, lower plants (including bacteria, viruses and mycoplasma like organisms), higher plants (herbs, shrubs and trees), animal breeds including fish, birds and invertebrates. Based on natural resource categories, it is further classified into Forests, Croplands, Rangelands and Aquatic environment. All these species are used directly or indirectly for food and agriculture, feed for domestic animals and also for the provision of essential raw materials and services for life support such as fibre, fuel, fertilizer and pharmaceuticals. Hence, biodiversity makes ecosystem stable, functional and environmentally sustainable.

The very biodiversity that nurtured human cultural diversity since times immemorial now stands threatened. In fact, the present era is often described as an era of species extinction. The rate of species loss is as fast today as it was at the time of extinction of dinosaurs some 65 million years ago. The species loss is a threat to mankind next only to thermo-nuclear war. Of the estimated 10 million species, only 1.4 million species have been catalogued. At the current rate of tropical deforestation (17 million hectares per year), 4-8 per cent of the rain forest would be facing extinction by 2015 AD and 17-35 per cent by 2040 AD. Nearly 15 per cent of Earth's species will be threatened over the next 25 years.

**Biodiversity in Madhya Pradesh**

The state of Madhya Pradesh has an extremely large forest area-1,55,414 sq. kms., out of the total geographical area of 4,43,446 sq. kms., i.e. 34.8 % . The habitat diversity of the state is immense with the elevation varying from 61 msl to 1438 msl . The temperature in summer exceeds 45<sup>0</sup> C except in hilly region. The temperature during winters varies from 5<sup>0</sup> C to 25<sup>0</sup> C except in the plains of Chattisgarh, where the winter is not so pronounced. The rainfall ranges from 1500 mm in the eastern and southern regions to less than 800 mm in the western zone. On account of its size and varied habitats, its environment supports a unique and wide variety of plant life. Almost every plant family is represented in India's rich flora. Out of these many of the species have medicinal value. Biodiversity of Madhya Pradesh is extremely rich with a wide variety of species. The conservation and sustainable use of this Biodiversity is fundamental to ecologically sustainable development.

As per official statistics the forests of Madhya Pradesh are broadly classified into Reserved Forests (80,996 sq kms), Protected Forests (69,083 sq kms.) and Unclassified Forests (5,335 sq kms)

By composition, the forests of Madhya Pradesh are classified into following categories -

Teak Forests ( <i>Tectona grandis</i> ),	27,783 sq. kms	17.88 %
Sal Forests ( <i>Shorea robusta</i> )	25,704 sq. kms	16.54 %
Miscellaneous Forests	1,01,927 sq.kms	65.58 %
<b>TOTAL</b>	<b>1,55,414 sq.kms</b>	<b>100.00 %</b>

Source : *Madhya Pradesh Forest Department*

The Botanical Survey of India has identified more than 47,686 species of plants occurring in India. The details of the group-wise plants species are as under –

• Flowering Plants	17,000
• Algae	2,500
• Fungi	23,000
• Lichens	1,600
• Bryophytes	2,564
• Pteridophytes	1,022
• <b>TOTAL</b>	<b>47,686</b>

Source : *Indian Drug Manufacturers Association Bulletin - Volume XXVII (16)*

Madhya Pradesh boasts of a wide variety of wild animals inhabiting the vast expanse of its forest areas. It has 11 national parks and 35 sanctuaries covering nearly 11% of the forest area of the state. Madhya Pradesh has nearly 25% of the tiger population of the country. Herbivores like the *chital*, *sambar*, black buck, *chinkara*, *nilgai*, wild boars etc., roam about freely in the forests of the state. But this wildlife is gradually getting threatened in the wild because of poaching and dwindling of habitat.

The animal genetic resources make a large contribution to food and agriculture production but this resource is now being threatened. Important diversity is being lost, thereby reducing the options for achieving sustainable agriculture and food security. Animals are intricate part of agro-eco-systems, providing food, fiber, manure and fuel. They provide 70% of draught power for the rural communities and can provide a critical safety net for farmers and communities when crops fail. For many farmers and herders, animals also represent an asset that provides security.

The state has a total of 467 lakh animals out of which cattle and buffaloes constitute 79%, goat 17 % and remaining 4% animals include pig, sheep and other animals. Important recognized breeds of cattle considered as native breeds of Madhya Pradesh are 'Malwi' and 'Nimari'. 'Gaolao' breed is found all over 'Vidarbh' region of Maharashtra and adjoining areas of Madhya Pradesh (Chhindwara dist.) and 'Kankattha' breed of cattle in Panna district. Similarly, 'Bhadawari' breed of Buffalo is found in abundance at Bhind and Gwalior districts. 'Jaloni' breed of sheep is found in Tikamgarh and Shivpuri which forms the border with Jhansi and Jalaun districts of Uttar Pradesh. 'Jamnapari' breed of goat is found in various villages of Bhind district situated near chambal river. 'Malwi camel' are also found in Mandsaur district of Madhya Pradesh. In the poultry sector 'Kadaknath' is the native breed of Madhya Pradesh found at Jhabua and Dhar districts where as 'Aseel' is found in abundance at Bastar district of Madhya Pradesh.

The State of Madhya Pradesh is a predominantly a tribal state. The tribal population as per the 1991 census was 1,19,87,030 i.e. 22.97% out of a total population of 6,61,80,470. The major tribal groups inhabiting the state are *the Bhils, Bhilalas, Baigas, Gonds, Korkus, Saharias and Oraons* etc. Out of the 71,000 villages in the state nearly 30,000 villages are within or on the fringes of forest areas. It is evident that most of these

tribals groups inhabit the remote forested tracts of the region. Biodiversity constitutes a resource on which the local communities depend for their livelihood security but due to the ever-growing Indian population, this resource is threatened by overuse and consequent depletion. It is therefore, obligatory on part of the state to initiate action for the conservation, restoration and judicious use of biodiversity

There is also the need to recapture local knowledge about farming systems, environment, biodiversity and its sustainable use. A synthesis of traditional wisdom and ecological prudence of tropical agricultural modern advances in technology will help higher use, efficiency of inputs and sustainable use of biodiversity.

### **Establishment of the Biodiversity Board in Madhya Pradesh**

Considering the importance of Biodiversity and the need for its conservation, the State Government took the advice of Dr. M.S.Swaminathan, who had chaired the National Commission on Biodiversity. On the basis of discussions, it was felt that the Government of Madhya Pradesh should set up a State level "**Madhya Pradesh Bio-diversity Board**" in order to promote the conservation and enhancement of biodiversity, its sustainable use and to provide for equitable sharing of benefits. The board is chaired by Chief minister of MP and is constituted of 34 membership with representation from different ministries, department, planning commissions, nonn government organizations and individuals. A Biodiversity Board was established on 13<sup>th</sup> January 2000 by the state government under which three standing committees were constituted to provide policy oversight to the programmes relating to biodiversity encompassing its conservation, sustainable use and equitable sharing of benefits. The standing committee on sustainable use of biodiversity has been assigned the following tasks.

- *Promote the evaluation, characterization and cataloguing of genetic resources in a manner that protects the interests of communities and the State Government.*
- *Foster the use of biodiversity for improving agricultural productivity and stability.*
- *Promote a green health movement based on herbal drugs*
- *Promote research on micro-flora and micro-fauna.*
- *Identify micro-organisms useful in bio-remediation and bio-monitoring.*
- *Promote agro-forestry to meet the fodder and fuel wood needs of rural and urban communities.*

### **Integrated strategy for sustainable use of biodiversity**

The integrated strategy while recognising the need to conserve all biological resources (including genetic resources) also underlines the need to distinguish between "critical priorities" and "overall priorities." While critical priorities centre on the need to target "provenly endemic" biological resources of Madhya Pradesh, the "overall priorities" would cover all biological resources, both endemic and non-endemic, which qualify for conservation on account of their scarcity value. The salient features of this strategy are as follows -

#### **Promote the evaluation, characterization and cataloguing of genetic resources in a manner that protects the interests of communities and the State Government**

##### ***Evaluation, characterisation and cataloguing of the genetic resources***

- Rapid Biodiversity Assessment (RBA) and biological indicators, keystone species can carry out these surveys. Biodiversity indexing, documentation and its sustainable use is a long term continuous process. RBA will help in indexing and formulating action plan for the evaluation, characterisation and cataloguing of genetic resources in a manner that protects the interests of local communities. Geographical Information System (GIS) will serve as a pre-requisite for RBA work in the following manner :
- Remote sensing maps and their interpretation for selecting enriched, moderately degraded and severely degraded sites and/or using International Union for



Conservation of Nature (IUCN) criteria to assess the conservation status of sites to collate information that will be used for each agro-climatic zone of Madhya Pradesh.

- Identification of benchmark sites of one square kilometer area under each category of sites (viz. enriched, moderately and severely degraded) in each agro-climatic zone will be done. Pilot surveys in each category will be carried out by taxonomist (flora and fauna), in already identified benchmark sites in each agro-climatic zone. Information generated from aforesaid work will help in enlisting biological indicators indicating extent of biodiversity degradation. Assessment of the quantities that can be sustainably harvested from the sites will be done in order to arrive at the potential of the sites for various species.
- During bio-diversity assessment care will be taken to document the interest of the local communities. No shift from cultivation of landraces will be proposed (rather incentives will be proposed for funding such efforts). No addition of exotic strains or genotype will be encouraged. Efforts will be made to conserve and document ethno-knowledge of local communities and habitats from which they harvest non-timber forest produce. Efforts will also be made to identify areas in which the threatened and endangered species existed in the past for future restoration of species and their rehabilitation.
- Several Central and State Institutes/Organisation/NGOs have generated valuable information based on in-depth investigation on biodiversity and/or extent of degradation of natural resources. These include Survey of India, Zoological/Botanical/Forest/Geological Survey of India, Mining Corporation, Educational Institutes, State Forest Research Institute, Tropical Forest Research Institute, Jabalpur, and Central Research Institute of Ayurveda, Gwalior. But this information is extremely scattered and need to be consolidated under a single organisation in a systematic manner. This forum will be provided by the formation of the State level Grid. Information on biodiversity indexing documented by aforesaid organisations will save energy and time for identification of biological indicators and keystone species. It will also provide a base for enhancing the sustainable use of biodiversity.

Location specific participatory approach involving communities, NGO's and other concerned institutes and organisations is proposed for documentation of biodiversity and factors affecting sustainable use. The parataxonomist in the area will help to a great extent in the identification and documentation of biodiversity of the area. The above information gathered from different agro-climatic zones will be compiled in a state level data-base network. These data bases will be available at bio-informatic centres established in each agro-climatic zone.

### **Animal biodiversity**

Keeping in view the importance of conservation of genetic resources in the animal sector (including avian, insects and aquatic fauna), the following action points are proposed :

- establishment of state Informatics centre on indigenous animal genetic resources and creation of data bank with capacity to appropriately interlink at national and international level.
- network programme on characterization, evaluation and conservation of animal genetic resources through field survey.
- characterization of indigenous animal resources using genetic markers and their discrimination with allied and exotic types.
- to foster sustainable use system in the field/farmers herd through *in situ* conservation of animal genetic resources.

- *Ex situ* conservation of farm animal genetic resources through establishing animal germplasm repository/gene banks at different locations.

### Technical Programme

For evaluation, characterization and cataloguing of animal/genetic resources, Madhya Pradesh will be divided into three broad zones, each zone will have a head quarter at three Veterinary Colleges viz. Mhow, Jabalpur and Anjora (Durg). Under each zone following recognized breeds will be covered.

Particulars	ZONE I	ZONE II	ZONE III
Colleges	College of Vety. Science and A. H. Mhow, J.N.K.V.V., Jabalpur	College of Vety. Science and A. H. Jabalpur, J.N.K.V.V., Jabalpur	College of Vety. Science and A.H. Anjora, Durg, IGKVV, Raipur
Zones And (Districts)	Malwa Plateau (Ujjain, Shajapur, Rajgarh)	Satpura Plateau (Chhindwara, Rewa)	Chhatisgarh Plains (Raipur, Bilaspur)
	Narmada Valley (Khandwa, Khargone, Barwani)	Gird zone (Gwalior, Bhind, Shivpuri)	North Region and Chhatisgarh (Shahdol, Bastar)
Breed of Animal and Poultry	"Malwi" and "Nimari" breed of cattle "Malwi Camel" "Kadakhath" breed of poultry	"Gaolav" breed of cattle "Kenkatha" breed of cattle "Badawari" breed of buffalo "Jamnapari" breed of goat	"Aseel" breed of poultry

Efforts will be made for cataloguing other local breeds of animal and poultry found in other zones of Madhya Pradesh.

- (A) Field survey in establishing the status of breed and creation of breed descriptors.
- precise information will be generated through survey program on population, demographic distribution trend, production system used, availability of input, socio-economic conditions of farming communities and performance of the animals.
  - Appropriate tools including questionnaires and breed descriptors proformae will be developed as per guidelines by the National Bureau of Animal Genetic Resources (NBAGR), Karnal, to understand the status and development of breed descriptors in their natural habitat. This will provide a comprehensive picture of all animal breeds, their present use and future prospects.
  - Survey of breeds/animal types will include mandatory recording of the following information :
    - demographic and geographical distribution
    - the native environment
    - enumeration of population of breeds in terms of age and gender
    - management practices and utilization
    - qualitative and quantitative characterization of breeds in relation to morphological traits, production potential and reproductive status studies.
    - Qualitative and quantitative description of unique animals and elite producers.
- (B) Collection of blood samples for genetic evaluation preferably from the unrelated animals of that breed. Attempts will be made to generate breed specific markers like

- Cytogenetic markers
- Biochemical polymorphic markers and
- Molecular and DNA marker.

*Location specific participatory approach involving state veterinary department, NGO's other concerned organisations is proposed for survey and documentation of biodiversity starting from village, block, district, zone and state level.*

*Cytogenetic and molecular evaluation through blood samples is proposed at zonal headquarters i.e. three veterinary colleges of the state, for which specific required facilities will have to be created at all the three zonal centres.*

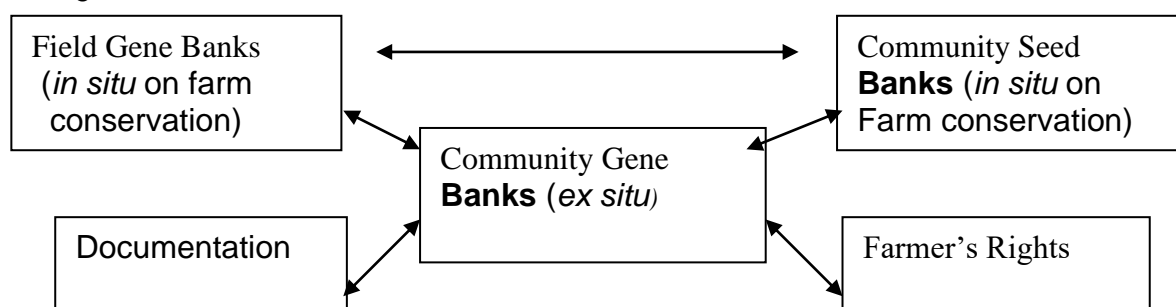
*Collaboration with National Bureau of Animal Genetic Resources (NBAGR), Karnal, Wildlife Institute of India, Dehradun, Bombay Natural History Society, Mumbai, Indian Institute of Forest Management, Bhopal and NBPGR, New Delhi is proposed*

### **Foster the use of biodiversity for improving agricultural productivity and stability**

In order to foster the use of biodiversity for improving agricultural productivity and stability, it is essential to conserve and sustainably use the biodiversity and arrest the constant depletion of germplasm. In order to achieve this objective the following activities are proposed to be initiated-

- **Establishment of Core collection centres for forest areas in each agro climatic zone** : These core collection centres will be identified and protected in each agroclimatic zones. These will be created in each forest type, rangeland and wetland. This will help to conserve the representative germplasm of the area having potential of practical utility in the future. It will also serve as an *in situ* gene bank and a wild species repository.
- **Participatory Approaches for Biodiversity Utilization** : The most important way of utilising bio-diversity is to identify and evaluate options in each agro-climatic zone in consultation with local communities for conservation of bio-resources as well as participatory piloting of programmes to convert dormant genetic wealth (under-exploited/unexploited) into dynamic products for sustainable livelihood. This will help improve agricultural productivity in harmony with the local environment without having any adverse effect on the stability of the delicate production pyramid of the area.
- **Linkages between *ex situ* and *in situ* conservation sites by Community Gene Banks (CGB) and Community Seed Banks (CSB)** : It will be necessary to establish a direct link between the *ex situ* and *in situ* conservation sites by CGB and CSB. This will help communities to have a stake in the conservation and development of various species and they can be benefited by propagating their local varieties/breeds.
- **Community Field Gene Bank (CFGB) at field level (*in situ* on farm) for land races** These will provide seed multiplication and seed regeneration in Community Gene Management systems (CGMS).

The linkages will be as follows :



- **Establishment of State level Active Germplasm Site and/or Repositories :**  
These will be identified for major species in different agroclimatic zones. These will be responsible for collection, conservation, characterization, documentation and enhancement of germplasm by pre-breeding. These sites will have effective liaison with the national repositories and National Gene Bank at the NBPGR, New Delhi, NPFGR, Lucknow and NBAGR, Karnal.
  - **Action plan for conservation and sustainable use of animal Bio-diversity :**
    - Each zone of Madhya Pradesh will identify and enlist all animal and poultry breeds and set priorities for breed characterization and conservation.
    - The conservation will be done by *in situ* and *ex situ* technique.
- (A) *In situ* conservation for sustainable management of biodiversity will be done by-
- (i) maintenance of grassland and efficient management of feed and fodder resources like silvi-pasture, multi-tier vegetation, controlled grazing of forest for balancing grassland ecosystem and animal population etc.
  - (ii) creation of public awareness for conservation and provide incentives to farmers/institutions maintaining purebreds.
  - (iii) *in situ* conservation at farm level by modern techniques like maintenance of effective population size and open nucleus breeding system, nuclear herd and improving the management system.
- (B) *Ex situ* conservation by in-vitro methods to regenerate endangered breed, to recognize and conserve local breeds evolved through natural selection, DNA studies and gene mapping. This will be done through:
- (i) Cryo-preservation of gametes, embryos and DNA.
  - (ii) Some new approaches like establishment of embryonic stem cell lines and somatic cell conservation.

A Detail plan of work along with budgetary requirements including both the mandates may be worked out for various species of animals.

### Promote a green health movement based on herbal drugs

Around 70 per cent of India's medicinal plants are found in tropical forests. Less than 30 per cent of the medicinal plants are found in temperate forests and higher altitudes. Micro studies show that a large percentage of medicinal plants occur in the dry and moist deciduous. The forests of Madhya Pradesh fall under the category of tropical dry and moist deciduous type and are extremely rich in medicinal flora. The group-wise plants species occurring in India with known medicinal value are as under

S. No	Group	Total No. of Species	No. of Species with known Medicinal value
1	Flowering Plants	17,000	8,000
2	Algae	2,500	650
3	Fungi	23,000	750
4	Lichens	1,600	650
5	Bryophytes	2,564	150
6	Pteridophytes	1,022	200
	<b>TOTAL</b>	<b>47,686</b>	<b>10,400</b>

Source : IDMA Bulletin - Volume XXVII (16)

The scenario of Medicinal Plants in India was enumerated as under :

- No. of Plants used in Ayurveda 1000
  - No. of Plants (Wild Species) used by tribals as their daily requirement 9500
- TOTAL 10,500**

Source : IDMA Bulletin - Volume XXVII (16), Pgs 469-470, 1996

The plants used by tribals have been classified as under

• No. of plants having direct medicinal use	7500
• No. of plants having edible utility	3900
• No. of plants giving new leads/claims	950
• No. of plants providing fiber and cottage industries raw material	525
• No. of plants used by tribals as pesticides	300
• No. of plants used by as Bio-pesticides	175

Source : ORG and Industry estimates FRLHT Research Deptt. –August 1997

About 2000 drugs that have been used in curing human elements in India, about 1500 are of plant origin, out of which 1000 medicinal plants are used in Indian System of Medicine (ISM), though about 60 species are in larger demand. Madhya Pradesh is enriched with about 625 medicinal flora representing 123 families. About 181 medicinal herbs (used in ISM) are found abundantly in Madhya Pradesh.

#### The proposed programme of work is as follows :

- Establishment of medicinal plants conservation reserves *in situ* and *ex situ* with ethno-medicinal garden and nursery network in each agro-climatic zone.
- Regulation on wild collection of non-timber forest produce based on ecological status survey and slow but regular switch over to herbal drugs and non-timber forest produce based agro-forestry systems in revenue and waste land areas around villages.
- A committee of the state level grid will be formed with SFRI, TFRI and centres of JNKVV, IGKVV working on medicinal and aromatic plants with the pharmaceutical and ethno-medicinal knowledge rich tribal societies to cater herbal wealth for health care at grass root level. Production technologies and post harvest processing technologies generated at ACRIP-M and AP, GOI - Adhoc Projects at JNKVV as well as at SFRI, TFRI and NGO's will be made available to the communities organised under the village level committees like the JFM committees and herb collecting and dispensing centres will be established for post harvest value addition to the raw material for own use and trade. These centres can be manned by local healers who will be identified and registered by the DISM and not only help the local communities sell value added herbal products but also dispense local medicines to the local people for minor ailments.
- CBD has provided a new opportunity for upholding the sovereign rights of nations on their bio-resources. It stipulates conditions for access to the resources and suggestions for fair and equitable sharing of benefits resulting from the use of such resources and the associated knowledge systems. By contrast the WTO upholds the principle of the protection of IPR through its agreement on Trade Related Intellectual Property Right (TRIPS). By virtue of its maxim of rewarding new and innovative inventions, the TRIPS tends to ignore the role played by farmers and tribal communities in conserving biodiversity and in breeding today's landraces. Farmers' rights over genetic resources should be recognised and enshrined. There are pharmaceuticals and traders utilizing raw material/knowledge on drug herbal wealth of the state. Economic instruments could be explored so that funds can be generated from them for conservation of herbal wealth. Madhya Pradesh has an innovative "benefit sharing model" that is being implemented in the Tendu Patta Trade. The same model can be expanded to meet the requirements of article 8 (1) of CBD.
- A medicinal plants conservation and indigenous knowledge fund is proposed to be created to receive contributions from Pharmaceuticals and traders. This fund should be established under the Biodiversity Board. This fund can be used onward to revitalise local health traditions in rural areas and also to promote conservation projects.

- Conservation of health care herbal species –  
Conservation of existing health care herbal species in their natural habitat will be given utmost importance keeping in view the IUCN standards and other rapid assessment systems. Advantage will be taken of work already done at the TFRI, Jabalpur on indexing of medicinal species in the forest area and on threatened species.
  - *Health care at grass root level –*  
Attempts were made by SFRI and TFRI to popularize 16 medicinal plants under the scheme ‘**Dadima ka Batua**’ which can take care of common health problems at grass root level. In addition, abandoned forest nurseries will be revived in each agro-climatic zone as health care herbs nurseries and repositories. They will provide planting material to tribal and village communities for their court yards, kitchen garden, community garden.
  - *Post Harvest value addition –*  
Project on post harvest value addition to medicinal raw materials, non timber minor forest produce is under progress at TFRI. Work done on these aspects by the Madhya Pradesh Minor Forest Produce Federation (MPMFPP) should also be taken into account before formulating a viable strategy for the state. The recommendation package will be popularised amongst the growers etc. by different extension methods through extension agencies. The MPMFPF can act as a nodal agency for popularizing these methods through its network of primary forest cooperatives and the JFM committees.
  - Promote cultivation through organic resources as per accepted standards of APEDA.

### **Promote research on micro flora and micro fauna**

Soil is a habitat for a vast complex and interactive community of micro- organisms whose activities largely determine chemical and physical properties of soil. It is important to determine optimum diversity of soil microbial populations of both natural and agricultural systems for their sustainable management. Microbial biodiversity indices can function as biological indicator to show the community stability and describing the ecological diversity of a community.

Bio science department of R.D.V.V., Jabalpur has already indexed flora of Jabalpur, Mandla and Pachmarhi. The Department has also documented ethno – knowledge which rests with tribes of Madhya Pradesh on herbal drugs.

The Central Regional Station of Zoological survey of India, Jabalpur and other organisations and institutes in the state have worked on bio-diversity of fauna series of Madhya Pradesh. Attempts will be made to form a joint team of Scientists/Taxonomists (micro and macro flora) and Scientists from zoological survey of India for documentation of floral species with which macro-faunal have association and inter-dependency in different agro-climatic zones to assess the interrelationship of species and principles of their co-existence.

### **Identify micro-organisms useful in bio-remediation and bio-monitoring**

There is a need to utilize natural resources in a sustainable manner without affecting environment. biodiversity indexing of macro/micro flora can be a better way to predict environment degradation with special reference to flora (micro/macro) in a particular habitat.

Documentation of work done on bio indicators at different institutes followed by indexing of bio indicators in bench mark sites will help to assess the factors regulating sustainability of natural/physical resources.

Bacteria are among nature's chief recyclers. Because of its ability to break down a variety of compounds into their basic elements, bacteria are extensively used in environmental biotechnology. One of the applications where bacteria are gaining greater use is in the oil industry. Two of the major families in which these microbes are found are *Pseudomonas* and *Bacillus*. It has been demonstrated that a special process that utilizes a strain of *Pseudomonas* can cost-effectively remove contaminants from oil industry wastewater. This process has been further tested by the Saskatchewan Research Council (SRC), using the *Pseudomonas* strain and another type of oil-eating bacteria currently found in bio-remediation lagoons,. Both types of bacteria were able to remove the hydrocarbons from the wastewater in far less time than it takes to treat the water in a lagoon. Tests have shown that using the bio-film reactor of bio-reactor, is a very efficient way to enable bacteria to do their work.

A naturally occurring bacteria called *Nitrospira* converts the harmful form of nitrogen in water (nitrite) to a less harmful form (nitrate). This could help to clean wastewater from abattoirs, sewage plants and aquaculture farms before its release to rivers and streams. This discovery was made at the Co-operative Research Centre for Waste Management and Pollution Control, Australia and revolutionizes scientific thinking about the biological breakdown of nitrogen in water. It is to be noted that until now it was believed that *Nitrobacter* was the bacterium of choice for nitrate conversion.

A new method of de-contaminating waste-water consists of applying a fungus, *Rhizopus arrhizus* as the organism is a superior metal accumulator for metal ions when compared with certain bacteria and yeast (adsorption land biomass). Heavy metal uptake of chitin can be attributed to the chemical changes occurring at the outer layer of the organism during biosorption.

Identification of aforesaid genus and other microbes having activities as bio-remediation, bio-monitoring and bio-termination can help in a long way in reducing the pollutants effects on bio-diversity.

Considering the fact that patent regimes on micro-organisms are in the offing, greater efforts are needed to identify the organisms and their beneficial uses as stated above with a view to establish priority. There is also a need to establish a state level repository.

### **Promote agroforestry to meet the fodder and fuel wood needs of rural and urban communities**

Forest of Madhya Pradesh come under the category of "Tropical dry and moist deciduous types" with the productivity of 1.05 cum/hectare which is almost double the country's average (0.7) as compared to the world's average of 2.1 cu.m./ hectare. There is tremendous potential to increase the forest productivity per hectare by conserving the existing flora *in situ* and shifting the fuel, fodder and NTMFP needs to different agroforestry systems in waste land and revenue area around the villages as well as tribal villages within forests.

### **Strategies for enhancing transfer of proven technologies and feed back on different agroforestry systems**

Multi Purpose Tree Species (MPTS) for different end uses are well defined for different eco-zones. Agroforestry systems depending upon the kind of components involved are also formulated. There is a need to translate, modify and transfer the aforesaid technologies based on location specific demands in different sectors of each agro-climatic zone of Madhya Pradesh. Chronological steps are suggested as follows -

- Pilot scale demonstration on different agroforestry systems and watershed in collaboration with different state departments and NGO's.
- Post harvest management of agroforestry products along with post harvest value addition for improved economic advantage.
- Identification, selection, screening and multiplication of germplasm of over exploited/ under exploited and non-exploited aromatic, medicinal, dye and industrial herbs, shrubs and tree species existing in each agro-climatic zones.

- Establishment of seed orchards of promising species and standardization of techniques for their multiplication.
- Performance evaluation in terms of productivity, quality and credit worthiness of these species in unified agroforestry systems.
- Identification and selection of suitable plant species for afforestation in mining areas have already been done. There is need to evaluate and modify the list in view of the existing floristic composition of locations of mines, so as to re-establish flora already existed prior to the mining areas of Balaghat, Panna, Baster and Katni etc.

Some vital issues that need to be addressed to empower the personnel and communities handling the sustainable use of Biodiversity are :

- Human resource development issues be identified in selected areas of importance for capacity building. Training may be given both at the national and International level.
- The state may establish regulatory mechanisms to implement the proposals contained in this strategy paper
- The state may address legal issues involved in the sustainable use of biodiversity.
- The state may establish mechanisms of biodiversity conservation and utilisation through state level education system.
- The state government may undertake a programme for educating panchayat level, block level and district level functionaries on the various provisions of the National Biodiversity Legislation in the interest of promoting enlightened 'decision making'.

## PROPOSED GRID FOR SUSTAINABLE USE OF BIO-DIVERSITY

It is proposed that the Agro Climatic Zones of Madhya Pradesh shall be the basis for implementation of the strategy for the sustainable use of biodiversity. The proposed **Biodiversity Grid** will be a four-tier structure with a state level Technical Committee, an Agro climatic zone level implementation committee, the District level committees and the Block level committees.

The various committees will be constituted as under

### State Level Technical Committee

The head quarters of the State level technical committee is proposed at Bhopal . It will have the following members. The State Government should nominate an eminent person in the field of biodiversity to chair the Grid. The member secretary would be The Chief Wild Life Warden , Madhya Pradesh. The members are the Principal Chief Conservator Of Forests, Madhya Pradesh, Directors, Agriculture/ Horticulture/ Veterinary/ Fisheries/Tribal Welfare/ISM and the Department of women and child welfare, Managing Director, MPMFP Federation, The Vice-Chancellors of the A.P.S. V.V. Rewa, M.G.G.V.V., Chitrakoot, J.N.K.V.V., Jabalpur, R.D.V.V. Jabalpur , I.G.K.V.V., Raipur and D.A.V.V., Indore, Director, N.R.C., Indore Directors of the Regional Stations of the Z.S.I., B.S.I., S.I., Jabalpur, Directors of the S.F.R.I., T.F.R.I., Jabalpur, I.I.F.M., RRL and National Law College, Bhopal and Principal, Indore School of Social Work, Director General, MAPCOST, EPCO, Bhopal, Director, IGRMS, DISM, Bhopal, Member Secretary of the Biodiversity Board in Madhya Pradesh, Two representatives from Pharmaceuticals/Traders actively engaged in trading medicinal and aromatic plants nominated by the government, Two representatives of the local Tribal communities/JFM committees, one of them to be a woman, Two representatives of eminent NGOs engaged in environmental development issues and working in the conservation of Biodiversity, One Social Worker, one Ethno-botanist and a practitioner of Traditional medicines.



The Forest Department shall be the nodal agency for the grid. It will endeavour to establish an independent wing to look after the work of the Grid under the Chief Wild Life Warden.

A sub-committee of the State level Grid will be formed with SFRI, TFRI and centres of JNKVV, IGKVV working on medicinal and aromatic plants along with the representatives of leading pharmaceutical houses/companies. This sub-committee will also have the local healers chosen from amongst the ethno-medicinal knowledge rich tribal/local societies. This committee will suggest ways and means to harness the herbal wealth for health care at grass root level.

It is also proposed to establish a IPR cell at the State level to ensure equitable sharing of benefits. The IPR cell will be formed under the aegis of the grid and can be located at the MAPCOST, Bhopal who have the necessary facilities. The IPR cell will organise Workshops and seminars at the local level to educate the masses and the members of the various committees. It will also have a right to get information from all levels of the grid directly and initiate action.

### **Zonal Committees**

The Committee will be constituted in each agro-climatic zone with following set up

The committee will be chair by conservator of forest, and member secretary would be Divisional Forest Officer , Territorial , members of the committee are Dean Agriculture College/Associate Director Research, One representative each of the Agriculture/Horticulture/ Veterinary/ Fisheries/Tribal/Women and Child welfare and the department of the Indian system of medicine nominated by the government, One representative from Pharmaceuticals/Traders actively engaged in trading medicinal and aromatic plants nominated by the government, Two representative of the local Tribal communities/JFM committees, one of them to be a woman, One representative of NGOs engaged in environmental development issues and working in the conservation and use of biodiversity, One Social Worker, one Ethnobotanist and a practitioner of Traditional medicines.

### **District Level Committees**

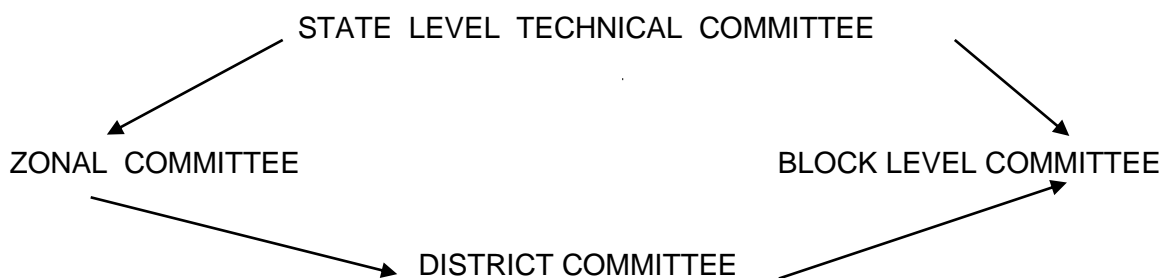
1. **Chairman** : Divisional Forest Officer, (other than the member secretary of the zonal committee)
2. **Member Secretary** : Sub-divisional Forest officer
3. Deputy Directors - Agriculture, Horticulture, Veterinary, Fisheries, Tribal and representative of the department of the Indian system of medicine,
4. One representatives from Pharmaceuticals/Traders actively engaged in trading of medicinal and aromatic plants nominated by the government.
5. Two representatives of the local Tribal communities/JFM committees, one of them to be a woman
6. One representative of NGOs engaged in environmental development issues and working in the conservation and use of Biodiversity
7. One Social Workers, one Ethnobotanist, one Parataxonomist and a practitioner of Traditional medicines.

### **Block Level Committee**

1. **Chairman** : Range Forest Officer (territorial)
2. **Member Secretary** : deputy ranger
3. Agriculture Extension Officer, Horticulture Officer, Veterinary Officer, Fisheries Officer, Tribal Officer, Revenue Officer, representative of the department of the Indian system of medicine and the department of women and child welfare.

4. One representative from Pharmaceuticals/Traders actively engaged in trading of medicinal and aromatic plants nominated by the government.
5. Two representatives of the local Tribal communities/JFM committees, one of them to be a women
6. One representative of NGOs engaged in environmental development issues and working in the area of conservation and use of Biodiversity
7. One Social Worker, one Ethnobotanist, one Parataxonomist and a practitioner of Traditional medicines.

The committees will be structured as under and will co-ordinate the functions of the Grid. The member secretary and/or his nominee will be the ex-officio member of the next higher committee of the grid. He/she will also co-ordinate between the two committees. The state level committee will strive to link all agricultural and other universities and research institutions and make efforts to initiate the coordination of research and conservation efforts for the overall conservation, utilisation and improvement of Biodiversity. The state level committee will also act as a link for smooth transfer of technology and its implementation at the grass root level through the various committees and also receive proposals from the local level



19.

## WILDLIFE CONSERVATION VERSUS HUMAN POPULACE: THE LEGAL CHALLENGES IN PROTECTED AREA MANAGEMENT IN ORISSA

A. K. Bhattacharya and Samir Stephan Kujur

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### **Abstract**

*The need for conservation of rapidly depleting forest wealth has been a subject of worldwide debate for the last few decades. The ongoing debate on conservation is an important issue for conservationists, Non-Governmental Organisations, Government and the people in general. The crux of the debate is "Can wildlife conservation be justified at the cost of human populace?" This paper is an attempt to examine the extent of legal challenges in Protected Area Management in Orissa. Based on the field observations of six Protected Areas of the State, the past and the present scenario of the management interventions and the conflicts have been analysed in the light of the legal provisions. The efforts being made by the State for the wildlife conservation have been examined, conclusions drawn and suggestions made.*

### **BACKGROUND**

India has a long tradition of wildlife and forest conservation. The ancient Hindu scriptures or *Vedas* directed people to protect their environment and wildlife. In about 242 B.C. the emperor Ashoka's fifth pillar edict gave protection to fish, animals and forests. And before that, in the treatise on Statecraft called the *Arthashastra* (attributed to Kautilya in 300 B.C.), there is clear reference to the establishment of *Abhayaranayas*, or forest sanctuaries (Gee, 1962<sup>1</sup>; Rao, 1988<sup>2</sup>; Singh et al., 1990<sup>3</sup>). The early conservation concept was primarily based on recreation and entertainment of the ruling class, however the later one aims at sustainable development of natural resources for the well being of human society.

The Orissa is located of 17<sup>0</sup>41' to 22<sup>0</sup>34' (N) latitudes and 81<sup>0</sup>29' to 87<sup>0</sup>29' (E) longitudes. Once upon a time Orissa was famous for its rich and diverse flora and fauna. Commercialisation, expansion of agriculture land, biotic pressure and above all, multifarious use of forests has led to severe degradation and decline of forest and wildlife population considerably. At the time of independence it had over 40 per cent of its geographical area under forest. At present the actual forest cover is about 30.3 per cent (about 47,205 sq. km.) of the States geographical area (FSI, 1991)<sup>4</sup>. There are two National Parks and 18 Sanctuaries with the total area of 9174.25 sq km including water body of 1408 sq km. This is about 5.9 per cent and 19.47 per cent of the State's geographical area and the estimated forest cover respectively (OFD, 1997)<sup>5</sup>.

According to conservationists the wildlife, like the human beings, has also a right to live. The Protected Areas should be devoid of human habitation and wildlife have to be kept in

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<sup>1</sup> Gee EP, 1962. "National Parks in India", in V.H. Cahalane's (ed.), *National parks- A World Need*, Special Publication M- 14, American Committee for International Wildlife Protection; New York.

<sup>2</sup> Rao K, 1988. *Management Planning for Protected Areas in Developing Countries*, Wildlife Institute of India; Dehra Dun.

<sup>3</sup> Singh S & WA Rodgers, 1990. "India: National Parks and Natural Reserves", in C.W. Allen's, (ed). *International Handbook of National Parks and Natural Reserves*, Greenwood Press; New York.

<sup>4</sup> Forest Survey of India (FSI), 1991. *The State of Forest Report*, FSI; Dehra Dun.

<sup>5</sup> Orissa Forest Department (OFD), 1997. *Wildlife Orissa at a glance*, Nature and Wildlife Conservation Society of Orissa; Bhubaneswar.

a natural environment without or minimum human interference (Karanth et al, 1998)<sup>6</sup>. The conservation of wildlife and their habitat is an important goal for Wildlife Department, and a mechanism has to be evolved in which the relative strengths of all sections, especially of local communities, government agencies and conservation groups, can be put together (Kothari and Pathak, 1998)<sup>7</sup>. People in general perceive that the authorities are mainly concerned with the well being of wildlife and their habitat only and they feel that the authorities are not interested in the villagers' point of view and concerns (John et al, 1986)<sup>8</sup>. Therefore, the question of co-existence and continuation of rights within the limits and effective management of the Protected Area is the ongoing debate between the Conservationists, Non-Governmental Organisations, Governments and people in general.

There is no doubt that the State has taken some concrete steps for protection, conservation and enhancement of fauna to ensure a natural habitat for them, however the attempts are yet to make the satisfactory interpretations. The reasons are discussed in the findings of the study.

### Historical Management Regime

During medieval period the *Zamindars* and feudatory kings had their game shooting reserves for hunting wild animals. The tribal communities had the practice of *Akhandparidhi* (indiscriminate mass hunting of wild animals within a time span). To regulate shooting wild animals the rules were framed. As per rule during April to September the shooting of wildlife was prohibited. In 1907, the Lt. Governor of Bengal had formed the rule to prohibit shooting of Bison, hornless male deer, deer with horn in velvet and the females of all deer species in the districts of Angul and Puri. This rule was also applicable in the Protected Areas. During 1930s, Badrama, Raigoda, Chandka and Balukhand Sanctuaries were created to protect wildlife. At critical points anti poaching check gates were set up. The reward system was started to encourage the staff for protection works. The Orissa Reserve Forest Shooting Rule, 1938 was enacted after the formation of Orissa as a separate State and wildlife protection activities were managed under Indian Forest Act, 1927.

After independence, only Chilka (Nalaban) was the rich estuarine/ Marine fauna in the State and the largest brackish wetland in the country. This was first Sanctuary to be declared under Orissa Forest (Shooting) Rule, 1972 because of an ideal habitat for more than 94 species of migratory birds and endangered Irrawady *Delphinus delphis*. A new era started in the history of wildlife protection and conservation under a joint venture of Orissa Forest Act, 1972, Wildlife (Protection) Act, 1972, Orissa Forest (Shooting) Rule, 1972 and Orissa Wildlife (Protection) Rule, 1974. The Wildlife (Protection) Act, 1972 was promulgated on 19<sup>th</sup> September 1972. As amended up to 1991, it has seven chapters. Chapter I deals with definitions and explanations of the terms used in the Act. The appointments of authorities are covered in Chapter II. The Chapter III spells the prohibition of hunting animals mentioned in schedules I, II, III and IV. It also deals with grant of hunting permits under special circumstances. Chapter III-A talks about the protection of specified plants (i.e. prohibition of picking, uprooting, cultivation, etc.) and permission for special purposes and dealing of specified plants without license. Chapter IV articulates the process of declaration of Sanctuary, National Parks and Closed Areas, settlement of rights inside the Sanctuary, restrictions on entry in the Sanctuary and other controls. Chapter IV-A paves the way for formulation of Central Zoo Authority and includes the guidelines and standards to be followed for management of Zoos in the

<sup>6</sup> Karanth KU, Sunquest M & Chinnappa K M, 1998. "Long-term Monitoring of Tigers: Lessons from Nagarhole" in J Seidensticker, S Christie and P Jackson (eds), *Riding the Tiger: Tiger Conservation in Human Dominated Landscapes*, Cambridge University Press; Cambridge.

<sup>7</sup> Kothari A & Pathak N, 1998. "Sharing Benefits of Wildlife Conservation with Local Communities: Legal Implications", *Economic and Political Weekly*, October 3: 3603-10.

<sup>8</sup> John Kathy, 1986. *Managing Protected Areas in the Tropics*, Natraj Publishers; Dehra Dun.

country. Chapter V deals with trade or commerce in wild animals, animal articles and trophies and includes guideline for trade in certain wildlife articles. The prohibition of trade or commerce in trophies, animal articles, etc. derived from certain animals is covered in Chapter V A. The crime control and investigation are defined in Chapter VI. The Chapter VII is miscellaneous, and deals with power of Central and State Government to make rules, declaration of certain wild animals to be vermin, etc.

The Wildlife (Protection) Rule, 1974 came into action after adoption of the said Act by the State Government in 1974.

In 1976, an independent Wildlife wing was framed under the leadership of Chief Wildlife Warden. Under the Chairmanship of the Forest Minister a State Wildlife advisory Board was constituted. Initially two Wildlife Conservators (based at Bhubaneswar and Chandbali) and respective Territorial Divisional Forest Officers were operating as Wildlife Wardens. Presently, under the Wildlife Wing there are five Wildlife Divisions and one Manager Forest Division respectively. The Simlipal National Park, Sanctuary, Tiger Reserve and Nandan Kanan Zoological Park and Sanctuary have one Conservator of Forest each. The National Park and Tiger Reserve in Simlipal are managed by DFOs (Divisional Forest Officers) and ACFs (Assistant Conservator of Forests) of Baripada and Karanjia Territorial Forest Divisions.

The Gharial Research and Conservation Project (Tikarpada), Saltwater Crocodile Research and Conservation Project (Bhitarkanika), Nandan Kanan Crocodile captive Breeding Project (Nandan Kanan) and Mugger Crocodile Research and Conservation Project (Ramtirtha, Jashipur) are the research stations, which were established to study the crocodile with the support of FAO (Food and Agricultural Organisation) and UNDP (United Nation's Development Programme). Apart from that the sea turtle research and conservation project, Black buck research projects, wildlife in Simlipal and Elephant Management projects are going on with the support of MoFE (Ministry of Forest and Environment), Govt. of India. The Wildlife wing has collaborated with Wildlife Institute of India, M.S. Swami Nathan Research Foundation, Nature and Wildlife Conservation Society of Orissa, Indian Statistical Institute, Calcutta, Orissa University of Agriculture and Technology, Utkal University, Regional Research Laboratory and Zoological Survey of India for doing scientific studies.

During 1973 and 1979, six Sanctuaries were declared with an area comprising 3214.27 sq km, where as eight Sanctuaries and one National Park (proposed) with an area of 2582.59 sq km were notified between 1980 and 1985. Two sanctuaries and one proposed National Parks were brought under Protected Area Network between 1987 and 1988 with an area of 1279.03 sq km. The Gahirmatha Marine Sanctuary was notified on 27<sup>th</sup> September 1997 having 27sq km of landmass including Reserve Forest (RF), Mangrove, mud flats and accreted sandbars. This comprises an area of 1435 sq km including 1408 sq km water body. Thus in the 90s only two Protected Areas have been notified including the Marine Sanctuary. Besides Protected Areas, there is one game reserve for Black buck, one closed area, one Zoological Park and 14 deer parks and zoos. Not only that, excluding the Sanctuary Area the Chilka Lake has been notified as a closed area from 16<sup>th</sup> December 1997 for a period of five years.

## **METHODOLOGY**

The study was taken up at RCDC (Regional Centre for Development Cooperation), Bhubaneswar during May-July 2002 for partial fulfillment of Post Graduate Diploma in Forestry Management course at Indian Institute of Forest Management, Bhopal.

A sample of six Protected Areas (Lakheri-Valley Wildlife Sanctuary, Kotagarh Wildlife Sanctuary, Gahirmatha Wildlife Marine Sanctuary, Bhitarkanika Wildlife Sanctuary and National Park and Balukhand-Konark Wildlife Sanctuary) in Orissa were selected for the

study. The selection was based on their difficult accessibility in comparison to others, representative samples of almost all type of wildlife and their habitat and no significant research work has been carried out till date in these Protected Areas. Orissa. The accessibility of Gahirmatha Wildlife Marine Sanctuary, Lakheri-Valley Wildlife Sanctuary and Kotagarh Wildlife Sanctuary were quite difficult due to poor infrastructure and inadequate as well as availability of minimum transportation facilities. Gahirmatha Wildlife Marine Sanctuary and Bhitarkanika Wildlife Sanctuary and National Park represented the Marine and Mangrove wildlife habitat respectively, whereas Lakheri-Valley Wildlife Sanctuary and Balukhand-Konark Wildlife Sanctuary were selected for the representation of Elephant and Black buck population respectively. Kotagarh Wildlife Sanctuary represented the mix population of carnivore and herbivore like Tiger, Leopard, Sambhar, etc.

The survey was conducted in two steps. First, an interactive discussion was held with local level conservationists, Non-Governmental Organisations and Government officials and then a survey was administered open as well as close-ended questionnaires to know their perception about existing legal challenges in Protected Areas management in Orissa. Besides interviewing and the administration of questionnaires, the Focus Group Discussions were also conducted with people living in and around the Protected Areas. It is well known that a structured survey, when completed with the alternative approaches such as Focus Group Discussions, can provide many useful insights into the motivations, beliefs and values, which influence behaviour (Campbell, et al 1999)<sup>9</sup>. This provided valuable information in developing better understanding of the respondents' perception about legal challenges in Protected Areas management in Orissa.

## RESULTS AND OBSERVATIONS

### (A) Procedure under Section 19 to 25 of Wildlife (Protection) Act, 1972

Till now, the procedure under Sections 19 to 25 of Wildlife (Protection) Act, 1972 has been completed by the Government of Orissa only for the Bhitarkanika National Park, Baisipali, Badrama, Khalasini, Debrigarh, Kuldia and Hadgarh (Keonjhar) Wildlife Sanctuary. Almost one decade ago, the Sanctuaries in Orissa had been declared but the procedure under Section 19-25 for the final notification under Section 26A of Wildlife (Protection) Act, 1972 is yet to complete. According to a writ petition by Centre for Environmental Law and WWF-I versus Union of India and others, the Hon'ble Supreme Court had asked all the State Governments to complete the necessary procedure for the final notification on or before 21.08.1998. Since in most of the Sanctuaries the required procedure has not been completed, the Government of Orissa had sought for extension of one more year from the date of hearing to complete all procedures leading to final notification. Technically, six finally notified sanctuaries don't need any procedure under Section 19-25 of the said Act. Four of them (i.e. Badrama, Baisipali, Kulasini and Debrigarh) are completely inside reserve forests. Gahirmatha Marine Sanctuary is the Government land because it is partly in the territorial water in Nalabana, an island inside Chilka. All such Sanctuaries are deemed Sanctuaries under Section 66 (4) of the said Act. Therefore, in response to the writ petition was the completion of the procedure under Section 19-25 in Lakhari-Valley, Kotagarh, Sunabeda, Kuldiha, Balukhand-Konark and Keonjhar portion of Hadgarh Wildlife Sanctuary. Tables 1, 2, 3 and 4 show the present status of the Kotagarh Wildlife Sanctuary, Lakheri-Valley Wildlife Sanctuary, Balukhand-Konark Wildlife Sanctuary and Bhitarkanika Wildlife Sanctuary respectively.

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<sup>9</sup> Campbell Oona, John Cleland, Martin Collumbien & Southwick Karen, 1999. *Social Science Methods for Research on Reproductive Health*, WHO; Switzerland.

**Table 1 - Brief of Kotagarh Wildlife Sanctuary**

Particulars	Kotagarh Wildlife Sanctuary
Area (in Sq km)	399.05
Notification No. and Date	30253 dt. 03/12/1981
Location	Between longitude 83 <sup>0</sup> 12' to 84 <sup>0</sup> 0' (E) and latitude 19 <sup>0</sup> 0' to 19 <sup>0</sup> 56' (N)
Climate	Northern tropical moist deciduous zone
Boundary Demarcation (Core and Buffer zone)	Not yet completed.
Forest type and Nos of Reserve Forest, Proposed Reserve Forest, Demarcated Protected Forest, Un-Demarcated Protected Forest, etc.	5 Reserve Forests: (i) Madagoda-36.02 sq. km (ii) Haripur- 42.66 sq.km (iii) Lassery- 72.96 sq. km (iv) Bonduru- 3.67 sq. km (v) Supamaha- 7.55 sq. km. 3 Proposed Reserve Forests: (i) Killangi- 6.073 sq. km (ii) Subarnagiri- 30.04 sq. km. (iii) Guma (S) – 14.04sq km 2 Demarcated Protected Forests: (i) Sri Rampur 'B' block –45.8544 sq km (ii) Guma (N)- 10.644 sq. km
Procedure of Sections 19-25 of WPA, 1972 (as amended up to 1991)	Collector Kandhamal has forwarded the revised proposal for final notification of Kotagarh Wildlife Sanctuary to Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden, Bhubaneswar Letter No. 1092/ dated 20.08.1998
Revenue villages and their areas	Belgarh Police Station – 15 villages with 16.444 sq. km, Kotagarh Police Station- 44 villages with 88.72 sq. km, Baringawadi Police Station- 6 villages with 24.83 sq. km
Final declaration No. and date	Not yet completed the procedure.

Source: DFO Office, Balliguda.

**Table 2 - Brief of Lakheri-Valley Wildlife Sanctuary**

Particulars	Lakheri-Valley Wildlife Sanctuary
Area (in Sq km)	185.87
Notification No. and Date	2333 dt. 08/02/1985
Location	Between longitude 84 <sup>0</sup> 15' to 84 <sup>0</sup> 25' (E) and latitude 19 <sup>0</sup> 15' to 19 <sup>0</sup> 25' (N)
Climate	Sub tropical non monsoon type
Boundary Demarcation (Core and Buffer zone)	Core zone: 64.14 sq. km. Buffer zone: 121.72 sq. km.
Forest type and Nos of Reserve Forest, Proposed Reserve Forest, Demarcated Protected Forest, Un-Demarcated Protected Forest, etc.	1 Reserve Forest: Chandragiri Reserve Forest- 111.775 sq. km 2 Proposed Reserve Forests: (i) Alara Ramaguda- 59.453 sq. km (ii) Dhobabhobani- 14.64 sq. km <b>Total</b> -185.88 sq. km
Procedure of Section 19-25 of WPA, 1972 (as amended up to 1991)	Not completed.
Final declaration No. and date	Not yet completed the procedure.

Source: DFO Office, Paralakhemundi

**Table 3 - Brief of Balukhand-Konark Wildlife Sanctuary**

Particulars	Balukhand-Konark Wildlife Sanctuary
Area (in Sq km)	71.72
Notification No. and Date	9013 dt. 23/04/1984 and 15216 dt. 01/09/1987
Location	Between longitude 85 <sup>0</sup> 52' to 86 <sup>0</sup> 14' (E) and latitude 19 <sup>0</sup> 48' to 19 <sup>0</sup> 54' (N)
Climate	Winter temperature is approx. 10 <sup>0</sup> C and Summer

	temperature above 40 <sup>o</sup> C
Boundary Demarcation (Core and Buffer zone)	No work has been carried out after notified as a Sanctuary.
Forest type and Nos of Reserve Forest, Proposed Reserve Forest, Demarcated Protected Forest, Un-Demarcated Protected Forest, etc.	1 Reserve Forest: Balukhanda- 15.667 sq. km. 7 Proposed Reserve Forests: (i) Balighai- 11.713 sq. km. (ii) Liakhia- 5.197 sq. km. (iii) Konark West- 13.196 sq. km. (iv) Konark East- 15.23 sq. km. (v) Golar- 6.80 sq. km. (vi) Nadiamath- 3.32 sq. km (vii) Sarlakecut- 0.604 sq. km <b>Total-71.72 sq. km.</b>
Procedure of Section 19-25 of WPA, 1972 (as amended up to 1991)	Not completed.
Final declaration No. and date	Not yet completed the procedure.

Source: RO Office, Balukhand and Konark

**Table 4 - Brief of Bhitarkanika Wildlife Sanctuary**

Particulars	Bhitarkanika Wildlife Sanctuary
Area (in Sq km)	672.00
Notification No. and Date	6958 dt. 22/04/1975
Location	Between longitude 86 <sup>o</sup> 30' to 87 <sup>o</sup> 60' (E) and latitude 20 <sup>o</sup> 30' to 20 <sup>o</sup> 50' (N)
Climate	Winter temperature is approx. 10 <sup>o</sup> C and Summer temperature above 40 <sup>o</sup> C
Forest type and Nos of Reserve Forest, Proposed Reserve Forest, Demarcated Protected Forest, Un-Demarcated Protected Forest, etc.	10 Proposed Reserve Forests: 25 Forest Blocks Bhitarkanika (N)- 70.99 sq. km Bhitarkanika (S) - 88.56 sq. km
Procedure of Section 19-25 of WPA, 1972 (as amended up to 1991)	Not completed.
Final declaration No. and date	Not yet completed the procedure.

Source: DFO Office, Rajnagar

### Final publication and disposal of ROR (Record of Rights) in Protected Areas

The Hon'ble Chief Minister of Orissa had given a public statement on 1<sup>st</sup> April 2000 (on the occasion of Utkal Dibasa) that all pre-1980 Forest villages could be regularized within six (6) months. This statement was regularized by Revenue Department of Orissa under no. GE (GL)-S-17/ 2000-21060/ R dt. 04.05.2000 to take a decision to regularize such hamlets who have not any claims in the revenue record of rights (also known as encroachments), which have certain eligibility criteria before 25.10.1980 (Govt. of Orissa, 2000)<sup>10</sup>. The pre-1980 procedure has not been completed which was supposed to be regularized before 01.08.2000. The concerned department has made the joint verification report for regularization of encroachment 'Jakesi' inside the Sanctuary, which was already declared as revenue village by the Revenue Department in May 1995. The Committee has regularized another encroached habitat 'Srambi' inside the Sanctuary with the total no. of 44 encroachers, however there is no final publication and disposal of ROR (Record of Rights) made by them for these 44 encroachers (ref. Table 5 and Table 6).

<sup>10</sup> Government of Orissa, 2000. *Pre-80s Settlement letters and Guidelines*, DFO Rayagada  
Website IDO - Book - Forestry for Next Decade 20-03-24



**Table 5 - Pre-1980 encroachments inside Kotagarh Wildlife Sanctuary**

<b>District</b>	Kandhamal	
<b>Tahsil</b>	Balliguda	
<b>Name of the encroached habitat</b>	Srambhi	
<b>Name of the forest with legal status</b>	Srirampur 'B-block' Proposed Reserve Forest	
<b>No. of encroachers</b>	44	
<b>Category</b>	Schedule Caste (SC)	1
	Schedule Tribe (ST)	42
	Others	1
<b>Population</b>	Male	117
	Female	117
	<b>Total</b>	<b>234</b>
<b>Land encroached prior to 25.10.1980 (in ha).</b>	Homestead	0.704
	Agricultural	68.122
	<b>Total</b>	<b>68.826</b>
<b>Year and Evidence of encroachment</b>	OR No. 8 of 1979-1980 of Kotagarh Range	
<b>Category of encroachers</b>	Both landless and home stead less	
<b>Area recommended to be regularized (in ha).</b>	Homestead	0.704
	Agricultural	61.600
	Communal	6.522
	<b>Total</b>	<b>68.826</b>

Source: DFO Office, Balliguda.

**Table 6 - Some Pre-1980 encroachers of the encroached habitat, 'Srambi'**

<b>Name of the encroacher</b>	Dalapa Pat Majhi	Gomesh Singh	Dera Pat Majhi	Tamaku Pat Majhi	Daud Pat Majhi	Arsin Pat Majhi	
<b>Father's Name</b>	Pingo Pat Majhi	Michael Singh	Pasora Pat Majhi	Daboca Pat Majhi	-	Sakad hara Pat Majhi	
<b>Category</b>	ST	SC	ST	ST	ST	ST	
<b>Area (in acres)</b>	<b>Agriculture</b>	1.03	3.74	5.17	2.58	1.56	7.05
	<b>Vegetable</b>	0.6	2.84	2.575	5.11	2.95	2.15
	<b>Homestead</b>	0.8	0.3	0.11	0.06	0.16	0.21
<b>Population</b>	<b>Male</b>	1	1	1	1	1	1
	<b>Female</b>	1	1	1	1	1	1
	<b>Child</b>	1	10	3	1	2	6
<b>Settlement (in years from 25.10.980)</b>	>15	>15	>15	>15	>13	>13	
<b>Land detail</b>	It is only the prior approval made by the Joint Verification Committee						

Source: Focus Group Discussion with encroachers of Srambi.

### Inter-departmental conflicts

The lack of inter-departmental coordination in the State is one of the major confusion and fear within the forest dwellers residing within the limits of the Sanctuaries. If we take a case of Kotagarh Wildlife Sanctuary, in 1995, the Revenue Department had expressed its

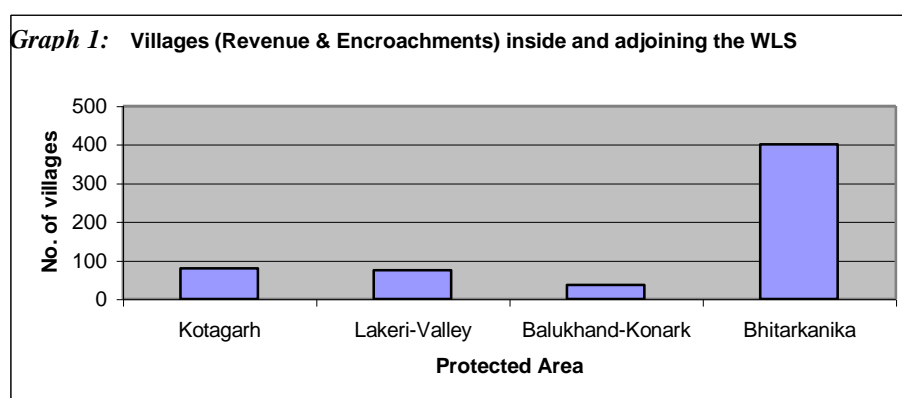
desire on the basis of '17 point Programme' to give status of revenue village to the 23 hamlets who had records of revenue offences much before commencement of the Forest Conservation Act, 1980. But the area was within the limits of the Sanctuary. So as per the joint verification of Forest Department and Revenue Department, only those encroachment habitats were given the status of a revenue village, against whom there were evidences of revenue as well as forest offences before the said dead line. According to the joint verification on the 16<sup>th</sup> May 1995, the Revenue Department shows the total area of the four villages (i.e. Jakesi, Bandeka, Bandapipili and Srambi) including homestead and agricultural 1050 acres, whereas it is only 339 acres according to the Forest Department.

In Lakhari-valley Wildlife Sanctuary, the 'Olanda' villagers are unsure of their tomorrow due to the strategies developed by the Forest Department and Revenue Department but are flooded with permanent structures by the Block authorities (DFO Paralakhemundi, 2000)<sup>11</sup>. Similarly in Kotagarh Wildlife Sanctuary, the Ora panchayat is getting a huge amount of support for infrastructure development (e.g. Anganbari, roads, schools, etc.). The poverty alleviation programmes like Jawahar Rojgar Yojana (JRY), Integrated Rural Development Programme (IRDP) and Indira Awas Yojana (IAY) are also continuing to provide development extension facilities to allow them a stronger root.

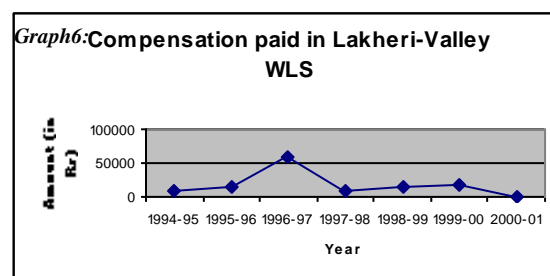
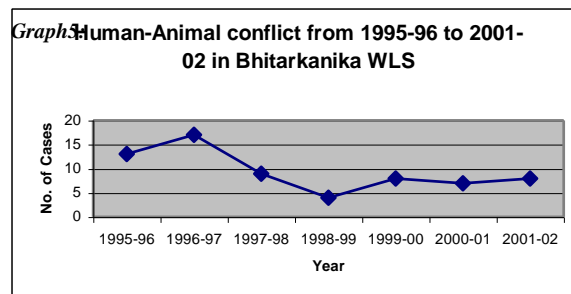
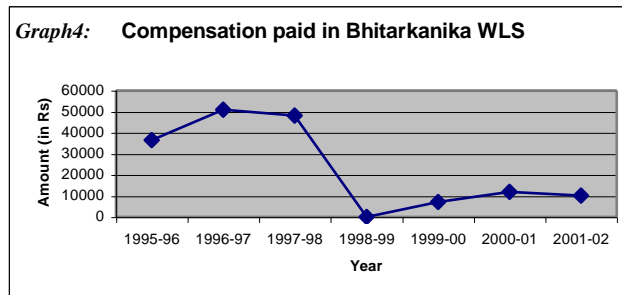
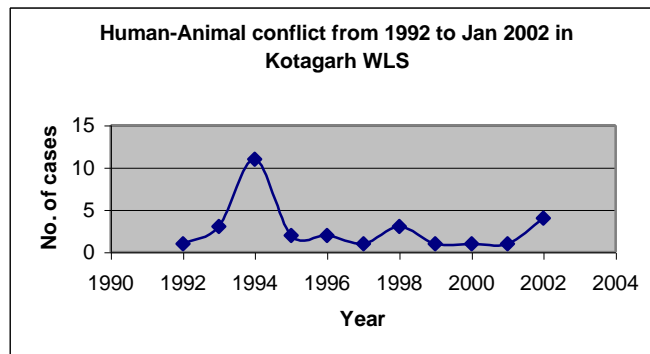
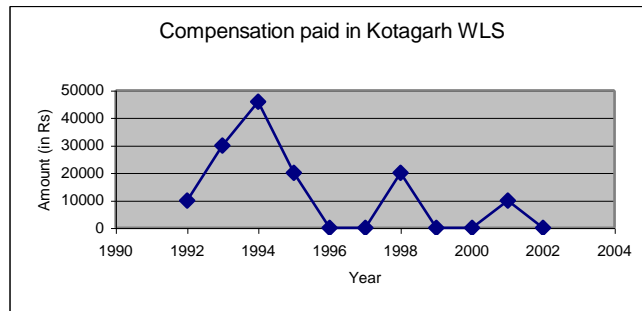
### Human-Animal Interface

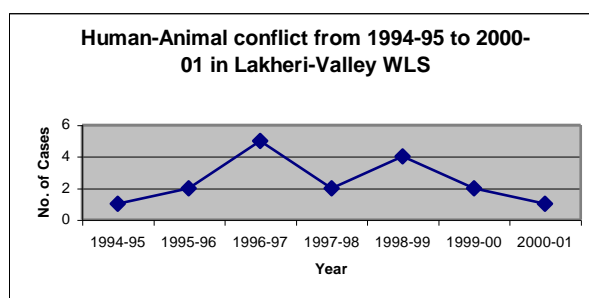
As per said Act, there is apparently no bar on the continuation of revenue villages in the 'buffer' zone. But it is very difficult task for the Protected Area managers, especially in Sanctuaries like Kotagarh and Balukhand-Konark Wildlife Sanctuary, where the 'Core' and 'Buffer' zones are yet to be demarcated.

Due to high human population and livestock in and around the PAs, there is frequent interface with the wild animals and their habitats. Generally it is seen that the attack on human beings have always occurred whenever they entered into territories of wild animals. However, during the summers wild animals enter into villages to get drinking water and fodder and create problems for the local communities. Some degree of antagonism between Sanctuary authorities and people exists due to crop damage by wild animals, felling of trees and offences.



<sup>11</sup> DFO Paralakhemundi, 2000. *Pre-80s Settlement letters and list of Villages*, DFO Paralakhemundi. Website IDO - Book - Forestry for Next Decade 20-03-24





The livestock of villages are dependent on the forest in absence of worthwhile pasturelands. While grazing they enter into the territories of carnivores and are attacked by them. Thus a number of livestock are injured or killed. If the compensation is not paid immediately who lose their livestock, turn hostile to the wildlife and the Sanctuary authorities. This can be seen in graphs of the respective years of the Human-Animal conflict versus Compensation paid (Graphs 2-7).

## CONCLUSION

(1) Theoretically, the Wildlife (Protection) Act, 1972 is well documented to protect the fundamental rights of lives and homes of the wildlife, however there are many ground difficulties and challenges to implement it effectively in its true essence. The awareness among the people about their roles towards conservation of wildlife and need of their protection are the major challenges for managers of the Protected Areas.

(2) Under Sub-section (1), Section 18 of Wildlife (Protection) Act, 1972 the State Government can notify any area as a Sanctuary, this may include any part of territorial waters or reserved forests, which are suitable for wildlife and their habitats. Thus there should be wider scope for public consultation before notifying the area as a Sanctuary. The forest dwellers, which have been living there for age old and dependent on existing natural resources for their sustenance, feel estranged from their rights over the surrounding natural resources.

(3) In most of the cases after the first notification as Wildlife Sanctuary, the Forest Department has started imposing various restrictions and prohibition on the people like Non-Timber Forest Produce / Minor Forest Produce collection. If we examine the clause (a), Sub-section (1), Section 26A of WPA, 1972 minutely, the Government cannot impose restrictions on the people unless all the claims are settled down and the final notification is issued in black and white.

(4) The aim of Government's Protected Area Network Plan for wildlife is to save around four per cent of India's geographical area. However, in India it is very difficult to find this chunk of land, which devoid of human existence. Therefore, it would be a large-scale human displacement to exclude the forest dwellers from Protected Areas. The rehabilitation and resettlement process for exclusion of the forest dwellers may contribute to marginalize these vulnerable people.

(5) Conservation of wildlife and their habitat is an important goal for Wildlife Department of Orissa. The basic need of Protected Area management in Orissa will be for planning and the management of Protected Areas based on a healthy interaction between man and nature, especially from traditional practices, which have helped to conserve and sustainable use of natural resources. They will have to consider ways in which the relative strengths of all sections, especially of politicians, bureaucrats, resource

managers, developmental agencies, resource users and local communities can be put together.

(6) The management of Protected Areas covers a wide range of activities, which is impossible for the management authorities to carry out all conservation related functions by themselves. It must delegate some duties and coordinate closely with other agencies. Thus the interests of two or more stakeholders are in line and these agencies can benefit from an alliance to promote their joint efforts.

20.

## A STUDY ON SOCIO-ECONOMIC ASPECTS OF WILDLIFE OFFENCES IN FEW DISTRICTS OF MADHYA PRADESH (INDIA)

Suchitra Banerjee and A K Bhattacharya

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### Abstract

*The socio-economic aspects of the wildlife offences were studied and analysed through the secondary data from Forest Department and village level forest committees and the primary data from field surveys in four districts of Madhya Pradesh. A participatory approach has been adopted involving the people in the data generation process through individual and focus group discussions and scheduling using PRA and RRA techniques. The study indicated that socio-economic reasons play an important role in the wildlife offences. Traditional systems and practices and also the livelihood needs contribute towards the wildlife offences. The legal and the institutional framework although regulate the occurrence and intensity of the offences but the effectiveness of the laws need to be more meticulously scrutinized in the light of the socio-economic set up of the communities. The indigenous communities can play an important role in the wildlife management and regulation and control of the wildlife offences. The capacity building of the communities, ensuring the suitable alternatives to the dependence of communities on wildlife through their involvement at all levels of management and suitable changes in the laws and acts are some of the areas which need special attention for effective management of the wildlife and wildlife offences.*

### INTRODUCTION

The socio-economic dimensions of the wildlife offences have hardly been paid any attention in the wildlife management. Subsistence hunting is considered less serious because it is normally for the common animals (Eltringham, 1988)<sup>1</sup>. In tribal dominated forest areas, specially in Madhya Pradesh, wildlife hunting on certain occasions like festivals and marriages have traditionally been considered as their rights (Banerjee, 2002)<sup>2</sup>. The wildlife offences committed by the communities because of their traditions of the wildlife dependent food habit and the hunting practices are difficult to control unless the related livelihood issues and the socio-economic dimensions are addressed.

The following five phases are clearly discernible, so far as the past management of wildlife is concerned (Kiss, 1993<sup>3</sup>; Banerjee, 2002<sup>2</sup>):

- (a) The period of abundance and plenty (up to 1910).
- (b) Wild animals and Man coexisting in a happy balance (between 1910 to 1945).
- (c) Exploitation or over - exploitation of resources (After II world war to 1970).
- (d) Protection and conservation (1970 to 1990).
- (e) Community linked wildlife management (eco-development approach) – to-date.

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<sup>1</sup> Eltringham SK, 1988. Wildlife resources and economic development. International Book Distributors.

<sup>2</sup> Banerjee S, 2002. Studies on socio-economic and legal aspects of wildlife Offences. Minor Research Report, University Grants Commission, March 2002.

<sup>3</sup> Kiss Agnes, 1993. Living with Wildlife - Wildlife Resource Management with local participation in Africa, The World bank, Washington DC.

The literature survey (Banerjee, 2002<sup>2</sup>; Mathur *et al*, 1999<sup>4</sup>) indicates that no exclusive study has so far been made to analyse the socio-economic dimensions of the wildlife offences. Through the present study an attempt has been made to examine the socio-economic aspects of the wildlife offences.

The study deals with the socio-economic factors responsible for poaching and trade, the strengths and weaknesses of the existing rules, regulations and acts pertaining to wildlife poaching and trade, recommendations for improvement in wildlife management with respect to poaching and trade, possible remedies for wildlife offences and wildlife management conflicts.

## STUDY AREA

The study was carried out in four districts of Madhya Pradesh, viz Betul, Bhopal, Hoshangabad and Vidisha, which are rich in biodiversity, forests dependent tribal population and also have potential threat of forest offences. The details of the geographical area, forest area (FSI, 1999)<sup>5</sup> and the wildlife census and the wildlife offences of these districts are given in the table below –

S No	District	Geographical Area (Sq km)	Forest Area (Sq km)	Wildlife species* number	Registered Wildlife offences Number (Period)
1	Betul	10,043	3,600	**	**
2	Bhopal	2,772	285	56	15 (1978 – 2001)
3	Hoshangabad	10,037	3,311	104	52 (1995 – 2001)
4	Vidisha	7,371	776	57	37 (1995 – 2001)

Source : Working Plans of respective Forest Divisions

\* Mammals, birds and reptiles

\*\* Field data were collected from three districts viz. Bhopal, Hoshangabad and Vidisha, whereas focus group discussions were conducted in Betul and Hoshangabad.

## METHODOLOGY

The methodology included participatory methods, tools and techniques including collection of secondary and primary data through structured questionnaire survey, focus group discussions and field surveys. Secondary data were procured from the Forest Department at Division and Range levels followed by discussions with the forest officials. Questionnaire survey was done for the collection of information from the forest officials and villagers through prescribed scheduled forms.

Focus group discussions with Forest officials and village level communities were organised through workshops. After briefing the objectives of the study, discussions were conducted one to one as well as groups. Attempt was made to arrive at some unanimous opinion about the information furnished. The focus groups consisted of all stakeholders including forest officials of all levels, representatives of village level forest committees and representatives of PRIs.

Random field surveys were made in the study area. PRA and RRA techniques were adopted to obtain the information from the target groups formally and informally, specially to involve the villagers to know their viewpoints.

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<sup>4</sup> Mathur PK, Mukherjee SK, Sankar K, Badola Ruchi, Hussain S, Rana MS, Sardar AK, Agrawal S, Verma YS, 1999. Bibliography – Wildlife and protected area management in Madhya Pradesh, Wildlife Institute of India, Dehradun.

<sup>5</sup> FSI, 1999. State of Forest Report 1999. Forest Survey of India, Dehradun.

## RESULTS AND OBSERVATIONS

The observations and the results are confined to faunal species and based on the information collected from various circulars, documents and records of the Forest Department regarding the wildlife offences / protection and first hand information collected through the individual and focus groups discussions with the communities / villagers and the staff of the Forest Department (Banerjee, 2002)<sup>2</sup>

### **MODUS OPERANDI (METHODS ADOPTED IN WILDLIFE OFFENCES):**

The experience in Madhya Pradesh shows that the methods are area specific (Menon & Kumar, 1998<sup>6</sup> and 1999<sup>7</sup>). The reported methods are listed below (Murthy, 1999)<sup>8</sup> :

S No	DISTRICTS	POACHING METHODS
1.	Seoni and Chindwara	Run down the animal by dogs then kill. Electrocutation.
2.	Balaghat and Mandla	Telephone wire nooses. Poisoning with Potassium cyanide.
3.	Raipur	Gill traps. Poisoning.
4.	Sagar and Damoh	Small explosives. Gunning down. Animal traps. Snares and nets. Chasing the animal by the dogs.
5.	Shivpuri	Poisoning waters for fishes. Gunning down.
6.	Bastar	Hunting with bows.
7.	Shahdol and Umaria	Small explosives. Gunning down. Animal traps. Snares and nets.
8.	Jabalpur, Dindori and Katni	Small explosives. Gunning down. Animal traps. Snares and nets. Chasing the animal by the dogs. Poisoning with Potassium cyanide.

### **OBSERVATIONS OF THE FOCUS GROUP DISCUSSIONS**

#### **Kamti Eco-development Committee (EDC)**

Along the northern bank of the Tawa is Kamti, the core of Satpuda, which is very rich in bio-diversity. The discussions with the forest staff and the villagers in groups and individually revealed following information -

- Apart from routine wildlife there are “Pangolin” (seen in Satpuda range in year 2000 first time after for 20 years) and Blackbuck population, which is a sure sign of habitat improvement (White, 2000)<sup>9</sup>.
- No preliminary offence report about killing or poaching of any animal by the villagers in the National Park has been recorded (FOCR, 2001)<sup>10</sup>.

<sup>6</sup> Menon Vivek & Ashok Kumar, 1998. Wildlife Crime - An enforcement Guide First Edition, Natraj Publishers, Dehradun

<sup>7</sup> Menon Vivek & Ashok Kumar, 1999. Wildlife Crime - An Enforcement Guide, Second updated edition, Wildlife Protection Society of India, Near Delhi, Natraj Publishers, Dehradun.

<sup>8</sup> Murthy RS, 1999. Hand Book of Wildlife Crime. Prevention, Detection, Investigation and case processing (A field guide to Frontline Staff – private circulation).

<sup>9</sup> White GD, 2000. Surprises in Satpura. Sanctuary Asia, Vol XX.

<sup>10</sup> FOCR, 2001. Forest Offence Case Register, Matkuli Range Office, Satpuda National Park.



- The EDC is very active and effective with lots of voluntary services extended by the villagers. From the funds allotted by the Forest Department, it extends loans to the villagers at low rates of interest (2 or 4%) for the acquisition of materials and resources such as irrigation equipments, tube-wells, biogas plants, sewing machines etc. The scheme was to provide an alternative source of income to villagers and promoting self-sufficiency to reduce their dependence on the forest and wildlife offences.

*The success of the Kamti EDC is a noticeable exception. Before the formation of the EDC, villagers resented restrictions and Forest Development upheld the law, resulting into conflicts between villagers and Forest department. After the constitution of the EDC, the staff went to the villagers, sat with them and asked how best they could help and what kind of resources were most needed. These are the evidence of the vastly improved working relationship between villager and Forest Department. The villagers protect forests and wildlife from fire and poaching (White, 2000)<sup>9</sup>.*

- Some particular plant species have been raised by EDC for wild boars and foxes so that they need not destroy fields and became eco-friendly with human beings.
- With a positive view it could be possible to manage the wildlife through community based wildlife management. The lessons are as follows -
  - Local commuters should be involved in wildlife management.
  - Villagers should be made aware of the strictness of the laws.
  - The success of community based wildlife programmes will ultimately depend on the viability of wildlife utilization as an economic enterprise, specifically on a demonstration that it is more profitable and beneficial to landholders (whether individual or communities).

### **Interaction with village level forest committees of Betul District**

In order to have first hand information, a workshop was organised at Shahpur, Betul, which was participated by members of eight village level forest committees including Vikrampur, Moorah, Katawadi, Lonia, Bhowra Dhana, Bichhua, Dhar and Sarni. All these villages have tribal population mainly belonging to the Gond tribe.

### **The results of the discussions are as follows -**

- Villagers of Katawadi village reported that there was no poaching case in this village. People occasionally eat wild animals like Hare, Wild boar, Deer and Sambhar as food. One of the major factors of killing animals for food is that there is no agriculture activity in the area. Villagers relish country liquor and boar meat. They trap Hares, Boars and Jungle Fowl using indigenous trap called 'Phanda'. During tribal festivals only the community is observed, killing Teetar, Hare etc.
- Wild boars reportedly destroy the agricultural crops repeatedly. The boars are driven away from the fields using sound bombs and air gases etc.
- There are poaching activities in certain areas of North Sarni. The people involved are reportedly the employees of MPEB. However big mammals like Sambhar, Cheetal, Sonkutta are available in the area, but they kill some small mammals like hares.
- Villagers of Pathai recall a case that took place in 1995. 35 peoples were arrested on trapping a 'Sambhar'. Since then there is no case of poaching being registered.

- Members of Moorah Committee as well as forest staff reported that 95% of poaching activities had been controlled. There are no P.O.R. in the jungles of Moorah Kota.
- In Bhowra Dhana-Sarni, wild animals have run away because of construction of powerhouse.
- The villagers of Vikrampur village have adopted an indigenous method for controlling Boars. They make rope barricades with nails and Palash (*Butea*) leaves and coat them by lime.
- A small group of Muslim population, most of them being MPEB employees, are fond of shooting water birds and other small animals frequently using air guns.
- The interrogation revealed following facts -
  - In some areas there are no wild animals left hence there is no poaching.
  - Wild animals that are poached for eating include Sambhar, Wild Boar, Cheetal, Jungle fowl and Teetar, Bater.
  - Animals that harm their poultry and crop are Son Kutta (wild dog), Hyena, Fox and wild boars.
  - It seems that the centuries old culture and traditions of the tribals are not commercialized. They are unaware of the demands of the wildlife commodities in the trade.
  - The villagers do not know methods of smuggling and special smuggling techniques.
  - Almost every villager of Gond tribe is a flesh eater.
  - Methods of poaching like Pit poaching, Electrocution, Poisoning, Harpooning etc. are not known to them.
  - Instead, they practice certain methods to protect their crops and field without causing any harm to the wild animals.

### Statistics of wildlife offence cases in the study area

The details of district wise and year wise number of wildlife offence cases are as follows:

Year	District wise number of cases			
	Vidisha	Bhopal	Hoshangabad	Total
1978 - 1994	29			29
1995	02		04	06
1996	03		04	07
1997	02	06	05	13
1998		06	06	12
1999	01	03	10	14
2000	-	-	11	11
2001	-	-	12	12
	37	15	52	104

The details of month wise registration of cases are as follows:-

Month	Mon	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Cases	13	08	07	08	05	17	10	06	04	05	09	10	104

Wildlife wise numbers of cases are as follows:

Se	Wildlife	District wise number of Cases			
		Hoshangabad	Vidisha	Bhopal	Total
1	Barking Deer (Bhedki)	1	1	-	2
2	Bear	4	-	-	4
3	Black buck	3	-	-	3
4	Cheetal	18	12	3	33
5	Chinkara	1	3	-	4
6	Lion cubs	2	-	-	2
7	Neel gai	-	5	3	8
8	Panther	2	3	-	5
9	Peacock	2	9	4	15
10	Pheasants	-	-	6 – Teetar 2 - Bater	8
11	Porcupine	-	-	1	1
12	Python	1	-	-	1
13	Rabbit	2	1	1	4
14	Sambhar	17		1	18
15	Tiger	-	2	-	2
16	Tortoise	1	-	-	1
17	Whistling Teel	-	-	5	5
18	Wild boar	3	1	2	6

The District wise, wildlife wise and parts wise cases are as follows:

District	Wildlife	Parts	No of Cases
Hoshangabad	Tortoise	Entire	1
	Sambhar	Genitals	1
		Ovaries	1
		Meat	6
		Bones	5
		Skin	10
		Gorus	1
	Panther	Skin	1
	Chinkara	Antler	1
	Cheetal	Skin	4
		Antler	3
		Meat	2
	Bear	Paws	1
	Blackbuck	Skin	1
		Antler	1
	Sanda	Entire	1
	Peacock	Meat	1
	Bhedki	Skin	1
		Meat	1
	Boar	Meat	1
	Rabbit	Skin	1
		Meat	1

Bhopal	Rabbit	Meat	1
	Neelgai	Meat	1
	Teetar / Bater	Entire	2
	Wild boar	Meat	2
	Porcupine	Entire	1
	Sambhar	Antler	1
	Peacock	Legs	1
	Whistling Teel	Entire	1
Vidisha	Cheetal	Skin	4
		Skull	1
		Meat	4
	Tiger	Skin	1
	Peacock	Feathers	2
	Neelgai	Meat	4
	Boar	Meat	1
	Rabbit	Meat	1

The reasons wise numbers of cases are as follows:

Reasons	No. of Cases
Livelihood	62
Food	29
Rituals and others	12

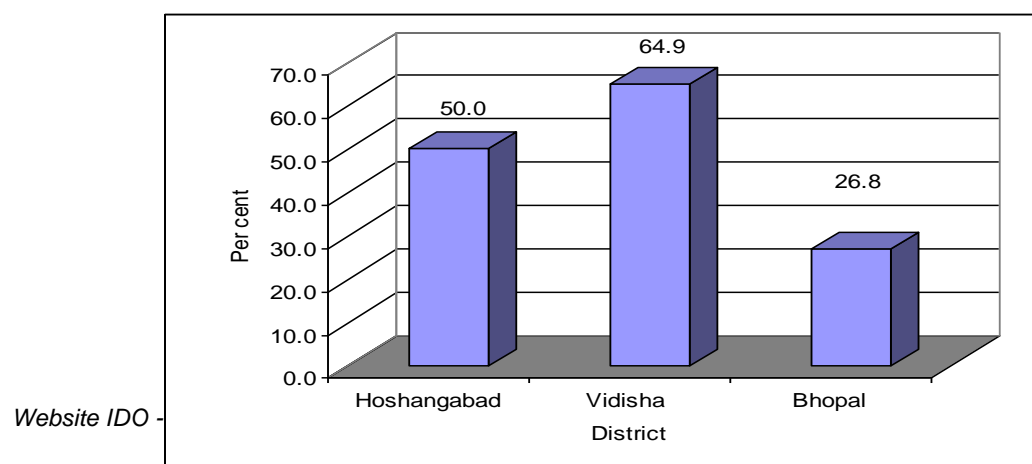
## DISCUSSION

104 cases were recorded and analysed from three Districts namely Bhopal, Hoshangabad, and Vidisha.

This majority (71.4%) of cases pertain to the period of six years, i.e. from 1995 to 2001; only few cases belong to the period between 1978 and 1994.

The number of cases of wildlife offences is maximum in Hoshangabad (50%) followed by Vidisha (35.6%) and Bhopal (14.4%). This pattern manifests the richness in the biodiversity in the districts. Hoshangabad has got the maximum biodiversity and number of wildlife species is maximum (48%) in this district. But the ratio of the offences to the total number of wildlife species in the respective district is maximum in Vidisha District (Fig 1).

Figure 1 - Ratio of Wildlife offences to total Wildlife species



This trend is substantiated by the inventories of the wildlife reported in the Working Plans of the respective Districts. As per the Working Plans the number of the major faunal species reported from these districts are 56 (25.8%), 104 (47.9%) and 57 (26.3%) respectively from Bhopal, Hoshangabad, and Vidisha.

The reports of wildlife offences indicate that maximum cases have been reported in June (16.3%) and then in January (12.5%) and December (9.6%).

Wildlife for which cases have been registered mainly included eighteen species. The study indicates (Fig 2) that most of the offences for wildlife have been committed for Cheetal (31.7%), followed by Sambhar (17.3%) and Peacock (14.4%) and parts for which the offences have been committed are meat (35%) followed by skin (31%) and antlers (8%).

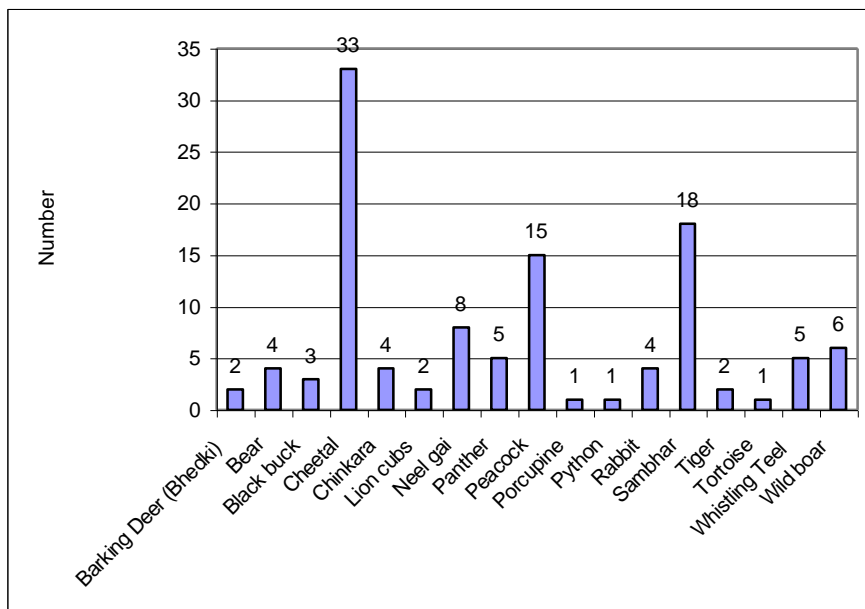


Figure 2 – Number of offences as per the wildlife species

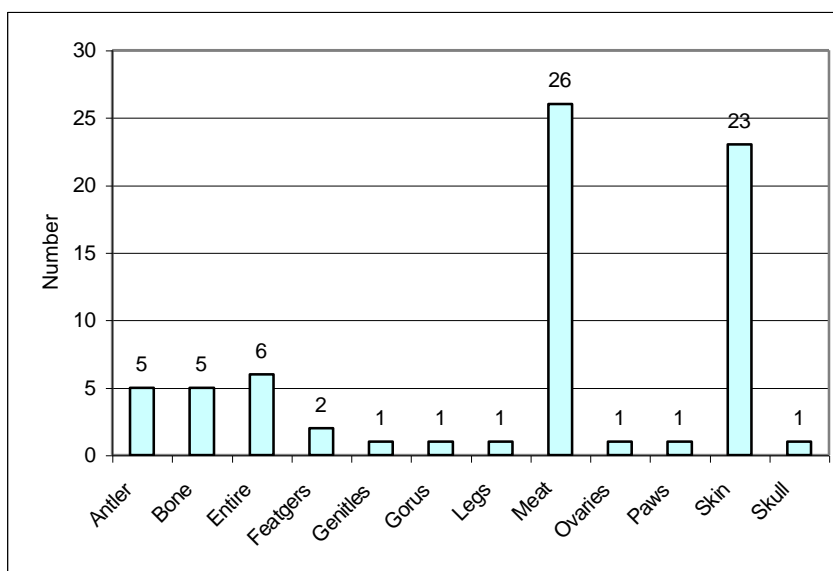


Fig 3 – Number of offences as per the wildlife parts seized

From the analysis of cases (Fig 3), it may be concluded that most of the offences have been committed for personal consumption. These cases of poaching can be said to have been committed for livelihood or economic reasons. However, killings have been done for other social reasons like festival and marriage.

The reasons for which the offences have been committed include livelihood, which may be by selling the wildlife material (60%) or by direct consumption of the animal as food (28%) followed by rituals and other reasons (12%).

Livelihood poaching may have some direct or indirect influence of the commercial wildlife crimes, as it might form a forward linkage for the poaching and encourage the villagers to commit the wildlife offence.

Out of total registered offence cases, 27 cases are pending with the Department for inquiry, whereas 67 cases are pending with the court for decisions. Only eight cases have been finalized, out of which in three cases offenders were released on benefit of doubt, whereas in five cases fines were imposed for Rs 3500/-.

The individual and the focus group discussions with the members of the village forest committees indicate that

- The hunting and the poaching of the local animals have been a deep-rooted traditional practice. Although restricted by the acts, rules and regulations killing of the animals cannot be stopped completely.
- Wildlife plays an important role in the livelihoods (including the food value) of the local people.
- There is significant lack of awareness about the importance of the wildlife in the ecosystem and the damage being caused by the hunting or poaching.
- Even the commercial traders may use them sometimes, but they are not aware about the organized illicit trade of the wildlife articles.
- Although they have not expressed openly about the wildlife killing and trade practices, but there are indications that hunting and poaching are a continuous process, sometimes need based and sometimes for change of taste.
- The experience of Kamti EDC of Hoshangabad is a positive indication that local people can be the best custodians for the wildlife and forest protection.

## CONCLUSIONS

- During the study period twenty varieties are reported to have poached, out of which Cheetal and Sambhar are the most hunted species. The species are hunted mainly for their meat and skin.
- Out of 104 cases, maximum numbers of cases recorded are 17 in the month of June and next in the month of January.
- Maximum cases recorded are from the District Hoshangabad followed by Vidisha.
- Rise in the population of the Black Bucks in Kamti is a sign of habitat improvement.
- Maximum number of cases seem to be pending in the court. Only in five cases fines have been imposed.
- Villagers do not seem to be aware of the stringentness of the laws. They need to be made aware of the laws and the legislation.
- Most of the cases have been committed for the meat for personal consumption, for livelihood and economic reasons. Killings have been done for other social reasons like festivals, marriages as local traditions and religions, as apart of their culture.

- Some communities depend heavily on wildlife as a source of meat and other products. They hunt only ritualistically. In many communities hunting is a part of the local culture. Whenever hunting is a part of culture community cohesion, hunters often enjoy high social status.
- Different wildlife species play different and important role in local tradition and religions. People's attitudes towards wildlife are not based solely on economics even though the wildlife in the local economics is an important factor that is often overlooked or undervalued.
- Management and conservation of wildlife can improve the livelihood of the rural communities without contributing to environmental degradation (Kiss, 1993)<sup>3</sup>. Kamti is a good example of wildlife resource management with local participation. In order to minimise man – wildlife conflict the community people have raised some food species for large ungulates, so that they may not damage their crops. The success of community based wildlife programmes will certainly lead to reduction in wildlife crimes.

## **RECOMMENDATIONS**

- A new approach is to be adopted towards the problem of destruction through poaching with indigenous methods like snares, traps and poison of wildlife. The demand for meat protein for communities who depend heavily on wildlife as a source of meat and other products has to be satisfied, and in these areas adequate stock will have to be first built up by restocking with animals brought elsewhere or bred in captivity. Based on demand it may be examined to harvest annual surplus of the meat in the shape of a fixed number of buffalo, antelope, Nilgai, Sambahar and to supply it to the local population provided they agreed to stop their illegal killing, which in many cases destroys more than what can be eaten.
- A sense to initiate a community-based wildlife management should be developed. Training and education are essential elements in the community based wildlife management. Wildlife officials must be sensitized to the sociological aspects and be trained to communicate to work with local communities. Local people must be educated about the present and potential value of the wildlife and the natural habitat and be trained in the technical, financial organisational and management skills needed to secure these benefits for themselves and their communities.
- The traditional and the need based practices of the hunting and the poaching need to be examined under the existing acts, laws, rules and regulations and provisions for acceptable alternatives need to be seriously worked out and properly implemented. Commercial wildlife used can be replaced by livestock husbandry and examination of trends of ecological and economic data can reveal that wildlife systems have significant advantages in ecosystems in both earning capacity and sustainability. In Zimbabwe and African countries these measures have already been implemented (Kiss, 1993)<sup>3</sup>. The idea of livestock development is worth considering in Madhya Pradesh where large tribal groups exist in or near forests and consider the wildlife as their traditional rights
- Capacity building through training and extension should be of the priority areas. An effective education programme must promote traditional attitude and initiate actions to cause changes in attitudes where needed. This is a difficult and challenging task, which is too often overlooked. It is essential and specialised function requiring trained and dedicated staff.

21.

## THE ILLEGAL FISHERIES CASE IN THE TOTLADOH DAM IN PENCH TIGER RESERVE, SEONI, MADHYA PRADESH - A CASE STUDY

A.K.Bhattacharya, Shobna Boyle and Samita Vasudevan

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### **Abstract**

*The following case study attempts to analyse the various aspects of the illegal fishing activities carried out in the Totladoh dam situated inside the Pench National Park. These aspects range from the ecological and the socio-economic to the legal. The various management interventions undertaken to combat these activities and the level of success achieved in the same have also been discussed. The study is based on information collected through interviews with the Forest Department officials and interaction with the concerned fishermen.*

### **BACKGROUND**

The Pench Tiger Reserve (PTR) is located in the Southern Slopes of the Satpura ranges in the Seoni and Chhindwara districts of Madhya Pradesh. The Reserve was created in 1992 with an area of 757.89 sq. km, making it the 19<sup>th</sup> Tiger reserve of the country. PTR comprises the Pench National Park (area-292.85 sq. km.), the Mowgli Pench Sanctuary (area- 118.31-sq. km.) and a buffer division (area- 346.73-sq. km.). To the south of the tiger reserve lies the Pench Tiger Reserve of Maharashtra. The river Pench, which splits the Park area into two running from the north of the Park to the south, forms the lifeline of the Park.

The Pench hydroelectric dam on the river Pench, straddling the Maharashtra-Madhya Pradesh boundary was constructed between 1973 and 1988. The Totladoh dam and reservoir, built as part of the hydel power project is situated inside the National Park and comprises a total area of 72 sq. km. Out of this 54 sq. km. falls under the Madhya Pradesh reserve while 18 sq. km is under the Maharashtra tiger reserve.

### **THE CASE**

Construction of the Totladoh dam was completed in 1990, but, the Madhya Pradesh Fisheries Development Corporation (MPFDC) was involved in the culture and trade of fish in the reservoir since 1981 itself. The location of the dam inside the National Park made this activity illegal as per the Wildlife Protection and Forest Conservation acts. Because of the abundance of fish in the area and the huge amount involved in the illegal trade, a fish-mafia was active in the area. The mafia network had developed due to the connivance of a number of traders, politicians and top officials in the Forest Department. Instead of the usual system wherein the fishermen paid a royalty of Rs.12 directly to the MPFDC<sup>1</sup>, a network of traders set up a system where they paid the royalty and gave the fishermen Rs.10 alongwith a supply of boats and nets. The traders would then supply the fish to the local markets and to the markets of Nagpur, Bhopal, Seoni and Chhindwara at a market rate of around Rs.50 per kg thereby earning themselves huge profits. <sup>4</sup>At the peak of illegal fishing in 1994 the annual recorded catch was 700 tonnes of fish which represents US\$240000 in royalties and a market value of US\$1million. The Forest Department staff however believed that this was just about half the total catch and that the profit from the unrecorded catches was split between the politicians, administrators and the local police.

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<sup>1</sup> Source : Primary data

<sup>2</sup> EIA Report: Fish Mafia in PTR

Website IDO - Book - Forestry for Next Decade 20-03-24



## **The Impact of illegal fishing**

The practice of illegal fishing inside the Park area was the cause of immense disturbance to the wildlife inside the Park and their habitat. Official records show that between 1992-96 eight tigers and sixteen leopards had been poached in the reservoir. Large numbers of poaching cases were also reported on the prey species like Chital and Sambhar during the same period. Apart from the aquatic life, the variety of amphibians like crocodiles and turtles found in the reservoir also faced the threat of being wiped out from the area due to the massive indiscriminate fishing activity.

The disturbance to the Park and its inhabitants was caused by various factors. Access to the reservoir was sought through a number of illegal routes to the Park. The fishermen would then spread their nets in the reservoir in the evenings and late at night to collect the catch early in the mornings. Having collected the catch in the mornings the fishermen would then use cycles and motorbikes to transport the same to the distribution centres using various routes through the Park. The fishermen used to set up temporary tents on the islands in the reservoir where they cooked their meals and littered the area with garbage and polythene bags. Their activity along the peripheral shallow areas also prevented vegetation along the coastline. Fishermen also illegally extracted timber from the Park area. There were even cases of areas of the forest being set on fire by these very fishermen and poachers in retaliation against action taken by the department. The water birds as well as the birds which used dead and dying trees and small islands in the reservoir as their roosting and resting sites were disturbed as the fishermen uprooted such dead and dying trees to clear their path for movement of their boats. (Personal communication, DD, PTR, SDO Chhindwara district, PTR). The activities associated with illegal fishing thus had a negative impact on the feeding and migratory habits of the Park wildlife causing serious degradation of their habitat. The cause of conservation began facing a serious threat.

## **Legal Aspect**

Indian legislation protects its Tiger reserves and National Parks under its Wildlife Protection Act and Forest Conservation Act. Despite this the traders, politicians and Forest Department officials had colluded to allow commercial fishing inside PTR.

In 1995 the then collector of Chhindwara district in his letter of 7<sup>th</sup> June 1995 addressed to the Secretary Forest Department, Government of Madhya Pradesh, in connection with the issuing of a final notification for the establishment of Pench National Park had asserted that displaced persons from the four villages namely, Palaspani, Umarighat, Chhindewani and Chhedia had traditional fishing rights in the Pench river. The letter reiterated that after displacement these people had not been rehabilitated systematically. No agricultural land had been made available to them, and they did not have any other means of livelihood except catching fish, which was their traditional occupation. He therefore recommended recognition of traditional rights of 332 families of these four villages. In view of these reports, the state government stated on affidavit that it was satisfied that the traditional rights of the fishermen had not been settled. Instructions were accordingly given to the chief wildlife warden for issuing permission for fishing to 305 local fishermen, the number being derived from the electoral list of the above four villages.

In the same year the Animal and Environment legal defence fund filed a writ petition in the Supreme Court challenging this decision.

## **Obstacles faced by the Forest Department in its combat against illegal fishing**

As the case was fought in the court, the conflict between the forest department and the fish mafia snowballed. There were incidents of transfer cases of officials who tried and opposed the political maneuvers of the illegal fishing network. There were also incidences of violence against the department staff on patrolling duty. The department faced

numerous problems in checking the illegal fishing activity. The reservoir area is large and has common inter-state boundary with Maharashtra. The fishermen hailed from the local villages and possessed considerable knowledge of the different routes for accessing the reservoir in the Park. The long coastline of the Pench river made it easy for them to access the reservoir and difficult for the department with its small manpower to monitor and control the illegal activities. The limited resources and manpower of the department put a further constraint on their ability to discharge their duties. The involvement of big traders and unsocial elements in the fishing and trade activities also posed major problems.

### **Supreme Court Judgement**

In its judgement of March 1997<sup>3</sup> the Supreme Court banned all fishing activities in the Totladoh reservoir. The decision however allowed the 305 fishing permits to be issued to the affected families as pleaded by the defendant, under tight restrictions, contingent upon settlement of the rights of the families through compensation.

### **Management Intervention**

Despite the Supreme Court decision the illegal fishing in the reservoir continued unabated. The fish Mafia continued to use violence and the 305 permit holders as a screen for their illegal activities. Many permit holders were forced to sell their permits to middlemen. It was manually becoming increasingly difficult for the staff to check the illegal activities.

In the year 2001, with the new field director and Assistant Conservator of Forests Chhindwara division assuming office, efforts to solve the problem of illegal fishing were undertaken with renewed vigour. The collector Chhindwara district with the help of a committee set up for identifying the actual right holders finally identified 145 families as having traditional rights to fishing. Accordingly a compensation of Rs 72 lakhs was decided upon to be divided among these 145 families, the division of which was made on the basis of the fish catch they had over the last four months. By 2001-02 the respective amounts were paid to the various families and their rights thus settled.

Thereafter the management began intensive efforts with careful planning and formulation of an action plan to check the illegal fishing. Detailed information of the illegal fishing and trade was obtained. The cooperation of the department staff at all levels was obtained through regular meetings and discussions. As per the action plan patrolling was intensified. A contour road to make access to the reservoir coast easier, was also constructed. As a step towards rehabilitating the affected families and gaining their cooperation a few of the fishermen were now employed for patrolling or as watchmen. These people helped the department track the route the fishermen used for accessing the reservoir and for leaving after having collected their catch. The vehicles like used in fishing were now caught and confiscated. Boats and nets were seized. In the year 2001-2002, a total of 6 jeeps, 7 motorcycles, 60 cycles, 7 boats, 103 nets and a record catch of 38.16 quintal fish was seized.

A World Bank project was already underway in the 99 villages surrounding the tiger reserve. The development activities under this project were carried out through the village Eco-Development Committees (EDCs). The activities focussed on empowering the socio-economic status of the local communities and reducing the biotic pressure on the environment. Accordingly the activities undertaken included distribution of pressure cookers, establishment of biogas plants, provision of LPGs at nominal rates, formation of grain banks etc. The landless were provided credit for taking up income generating activities like rope making and establishing tea stalls, small shops etc. These development activities helped the department in securing the goodwill and support of the villagers in combatting the illegal fishing and trade.

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<sup>3</sup> Supreme Court Judgement, 1997, Writ Petition (Civil) No. 785 of 1995.

## **CONCLUSION**

Continuance of the planned efforts and intensive patrolling beyond March 2002 helped the department gain significant control over the illegal fishing and trade. The department through its efforts has been able to achieve a complete cessation of the illegal fishing activities. The rehabilitation efforts for the fishermen have seen the employment of some of them with the F.D for patrolling along the river side, or as watchmen in the guest houses.. Those owning land have been encouraged to take up agricultural activities and the landless have been given money under the respective EDC to set up their own small business. Still others have been provided training in alternate employment activities like rope making. There has also been a suggestion for giving the genuine fishermen rights to fish in the ponds being constructed in the villages. Future proposals for the Park Management also include providing employment to these fishermen as boatmen and guides in the watersports activities planned for the Park.

In view of the commendable efforts in checking the illegal fishing activities the S.D.O Chhindwara division, was awarded the Amritadevi award which carries with it a medal and cash prize.

The results of the efforts directed towards controlling the illegal fishing activity is evident in an improvement in the bio-diversity status of the area. Villagers now admit to being able to see herds of Chital, Sambhar and Gaur collecting at the reservoir coast in the evenings and at dawn. Census records show an increase in the wildlife count. Furthermore there have been no reports of fire, illegal felling and poaching in the past one year. At the same time management plans to continue with its patrolling and rehabilitation efforts with the same dedication as shown in the last two years.

22.

## ECOTOURISM AS A MANAGEMENT TOOL IN PENCH TIGER RESERVE, SEONI, MADHYA PRADESH - A CASE STUDY

A.K.Bhattacharya, Shobna Boyle and Samita Vasudevan

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### **Abstract**

*The following case study attempts to analyse the use of ecotourism strategies for Park Management in PTR. The outcome of the implementation is also discussed. The study was initiated by identifying the various stakeholders, namely the Forest Department, the local people, the private groups and the tourists. Information was then collected from each group through various tools like interviews, questionnaires and focussed group discussions.*

### **THE PARK**

Pench Tiger Reserve named after the Pench river, which flows from north to south, through the Reserve is located in the southern reaches of the Satpura hill range in the Seoni and Chhindwara districts of Madhya Pradesh. The terrain is undulating, with most of the area covered by small hills, steeply sloping on the sides. An extensive forest belt extends in three directions, north, east and south, covering forest tracts of Seoni, Balaghat and Nagpur districts.

The Reserve was created in 1992, becoming the 19<sup>th</sup> Reserve in the Project Tiger Network. The core zone of the Reserve, Pench National Park was created in 1983. This was carved out of the Pench Sanctuary created in 1977 with an area of 449.39 sq. km. The area of the Park is 292.85 sq. km., which divided almost equally in two districts – 145.36 sq. km. in Seoni is all Reserve Forest whereas the area in Chhindwara includes 138.24 sq. km. Reserve forests, 6.26 sq. km. Protected Forests and 2.78 sq. km. revenue land. The buffer zone, 465 sq. km., comprises 333.05 sq. km. of R.F., 102.36 sq. km. of P.F. and 29.59 sq. km. of revenue land. The total area of the reserve is 757.86 sq. km. A dam has been constructed on the Pench river on the southeastern boundary of the Reserve.

### **Management Challenges**

The Park was opened to tourists in 1983, but the number of tourists coming for recreation and other purposes inside the park was initially very meager. This situation changed gradually and it was not until the late 90's that tourism started picking up. However the influx was still miniscule compared to the tourism in other major national parks and tiger reserves. Insufficient availability of tourism infrastructure and other tourist facilities, non implementation of interpretation programme and the absence of adequate publicity were some of the reasons for the dismal growth of tourism in the Park.

The park also faced challenges like grazing by cattle from surrounding villages. Grazing posed problems of adverse effect on regeneration, and the threat of disease spreading from domesticated cattle to then wild ungulates. The menace of illicit felling mainly for fuel wood also loomed large. The villagers on the other hand faced the problem of their crops being destroyed by the ungulates from the Park.

Another serious challenge was that of illegal fishing in the Totladoh reservoir on the Pench river. Construction of the dam was completed in 1990, but the fishing activity had begun since 1981 itself. The location of the reservoir inside the National park prompted a Supreme Court decision banning further fishing in the area on the basis of writ petition. In spite of this the illegal trade continued with the connivance of the traders, top officials and politicians. The adverse impact of fishing inside the park was reflected in an increase in the incidence of poaching and littering in the area with polythene bags left by the fishermen. Efforts to check the illegal fishing caused conflict between the department staff and the fishermen which sometimes escalated into violence. The Park also faced the threat of fires caused by angry villagers or the fishermen. A holistic approach with coordination of efforts of the concerned departments was necessary to create the optimum set of inputs required to ensure the success of ecotourism.

## **Management Interventions**

### **Efforts towards park promotion**

In June 2001, with the new field director of the park assuming office, efforts to promote the Park as a prime tourist destination were undertaken with renewed vigour. A brief research into the history of the area and perusal of books and pamphlets available on the region revealed that the Seoni region is the original setting of the famous work of Rudyard Kipling '*Jungle Book*'. Rudyard Kipling borrowed heavily from Robert Armitage Strendale's books – '*Seonee*', '*Mammalia of India and Ceylon*' and '*Denizens of the Jungle*' for descriptions of the topography, the wildlife, and its ways. Mowgli was inspired by Sir William Henry Sleeman's pamphlet, '*An account of wolves nuturing Children in ther Dens*' which describes a wolf-boy captured in Seoni district near the village of Sant Bori in 1831. Many of Jungle Book's locations are actual locations in Seoni District like Waingunga river, Kanhiwara village and the Seonee hills. The mass popularity of the character of 'Mowgli' was consequently sought to be used to the advantage of the Park. PTR has since been promoted as 'Mowgli Land' not only through hoardings and advertisements in travelogues but also in various articles in leading magazines like 'India Today' and T.V. channels like 'Aaj Tak' that have featured PTR. The result is evident in the increase in tourists from 5,288 in 2000-01 to 10,488 in 2001-02. The rise in tourist numbers can be attributed to permission of access to diesel vehicles, publicity by the media and the improved infrastructure.

### **Involvement of the Private Sector**

The increase in tourists visiting the Park prompted improvement in facilities and development of new facilities. Roads, guest house, dormitories were maintained in good condition to cater to the demands of the tourists. With the increased publicity, the Park attracted the attention of private hoteliers and resort owners who soon set up their establishments near the Park entrance. There are at present three such tourist complexes operating in the area, one of these owned by the M.P. Tourism Board, and a few more proposed to be set up. These private hoteliers brought with them their contracts with travel agents and tour operators in major tourist units like Delhi and Mumbai. So far the tourists visiting the Park had been mainly from the nearby areas especially Nagpur and Jabalpur. The involvement of the private sector, could lead to an increase in the promotion of tourists from the rest of India and abroad and a subsequent increase in the Park income. Another pertinent aspect of the involvement of the private sector was the generation of income for the local people. The presence of the tourist complexes also has encouraged income generating activities like poultry farming and cultivation of vegetables on substantial scale in the nearby villages by ensuring a ready market for the produce of the same.

## **Interventions for park improvement**

To maintain and improve upon the tourist situation special attention has been focussed on the needs of the Park and the tourists. For better Park management various management interventions have been undertaken. Considerable planning and resources has been devoted to water management inside the park. This is in the interests of the animals as well as for better opportunities for animal sightings for the tourists. In addition to waterholes the park earlier had a system of bore wells, whereby water would be pumped out manually and filed in the surrounding trench for animals to drink from. The Park also had concrete saucers, in which water would be filled from tankers. One of the main objectives of ecotourism is conservation of biodiversity in its natural state. Efforts are therefore concentrated on providing a natural habitat for the animals to as great an extent as is possible. It was perceived that the system of handpumps and concrete saucers was incongruous with the surrounding wilderness and aesthetics of the forests. Moreover with rising temperatures the water stored in the concrete saucers used to become too hot for consumption by the animals. The management therefore decided to gradually phase out the system and replace it by constructing earthen ponds (talab) and shallow wells (jhiriya). A number of these facilities have been provided after careful selection of the site taking into account aspects like slope of the area, access for animals, proximity of the area to some natural source of water, etc. The construction was undertaken by employing the services of labourers from the nearby vilalges. The result is evident in lesser reports of migration of animals from their areas and increase sightings of animals. The Park is now constructing an interpretation centre in collaboration with the Centre for Environment (CEE) to spread awareness and sensitise the people towards conservation. To cater to the demands of the higher income segment the Park has also constructed new accommodations designed to blend with the surrounding wilderness.

## **Combating the challenges**

The problem of illegal fishing was solved to a significant extent when the management undertook intensive efforts at all levels to combat the threat posed by the fish mafia. Comprehensive data on the system of illegal fishing and trade was obtained. The cooperation of the department staff and personnel at all levels was sought through meetings and discussions. The cooperation of the village ecodevelopment committees was also solicited. After complying with the Supreme Court Order of compensating the families affected by the ban, patrolling along the reservoir was intensified and the motor boats, cycles, motorcycles and other vehicles used in the trade were confiscated. Efforts towards rehabilitation of the affected families saw 25 of the fishermen being employed in patrolling activities, and as watchmen. The impact of the resultant cease in illegal fishing was reflected in an increase in the flora and fauna count, which had seen considerable disturbance due to the fishing activities. The vacated areas are now covered with grasses improving the aesthetics of the area and attracting large herds of herbivores.

## **Community participation and development activities**

An essential component of ecotourism is the participation and socio-economic development of the local communities. Efforts towards Park development and conservation cannot be successfully undertaken without soliciting their participation, since they are one of the main stakeholders. EDCs in Pench had been formed way back in 1997-98 but not much activity had been undertaken by them. The department still lacked support from the local people. Gradually however the situation began changing as development activities began to be implemented. The management undertook activities like distribution of pressure cookers to all households under EDC, distribution of LPG at nominal rates (25% of the actual rate), setting up of biogas plants, introduction of training centres for women which trained them in sewing and making papads agarbatti, etc. The EDCs further led to the formation of SelfHelp Group (SHGs) which has undertaken

activities like formation of grain bank, Dairy Cooperative, etc. There is also a scheme whereby the landless are given money and training to take up activities like rope making, setting up of tea stalls, etc. These activities provided the people with income generating sources thus reducing the biotic pressure on the forests. The introduction of bio-gas facilities and LPG saw the fuelwood demand fall drastically (65-70%)<sup>1</sup>. The EDCs also undertook construction of ponds and game proof walls to prevent the Park animals from crossing over and destroying their fields. The construction was undertaken by employing labourers from the villages on a rotation basis. The youth from the villages adjoining THE Park have been engaged as guides to benefit from their knowledge of the area while generating employment. The official canteen and the guest houses inside the Park also provide employment to the local people. The EDCs in some villages have undertaken pasture development for grazing and ponds for providing water for their livestock. This has considerably reduced the grazing pressure inside the Park and dissuaded the cattle from entering the Park in search of water. The success of these activities can in part be attributed to the cooperation and coordination achieved between the various government departments which was in itself a result of the convergence of their schemes.

Encouraged by these development activities people now are forthcoming to provide cooperation to the department in its conservation efforts. To give due recognition to the efforts made towards conservation and park maintenance, rewards have been given to the concerned department employees and villagers. This has boosted their morale and secured their commitment to conservation.

Apart from the activities undertaken through the EDCs, the Park management has also involved itself in health care activities. The villagers are given basic information on nutrition and hygiene. Medicinal plants with instructions on its dosage and effects, are provided to the villagers. Most instance the herb Chiraita is distributed among the villagers during outbreak of malaria. Diseases like rheumatism and jaundice are also sought to be similarly contained. This has resulted in a significant control of the disease in the area. The provision of such health care has also helped reduce the expenditure of the households on medicines.

### **Future proposals**

Attempting to further explore the untapped potential of the Park the future proposals for the Park envisage a number of activities. The increased tourist influx to the region has made crowd management a crucial aspect of the overall Park management. Diversification of activities is perceived to be one of the effective tools for this purpose. Introduction of activities like boating, rafting, trekking through Nature trails developed in the buffer zone are part of the future proposals. The proposed natural trail would give an opportunity to the tourists to get a feel of the jungle and educate and sensitize them towards the concerns of the Park. Development of eco-camps would provide a platform for showcasing and marketing the local arts and handicraft. Tourists would also be witness to the local culture and folk songs and dances of a few selected villages. This centre would provide an opportunity for the local people to share and earn from their indigenous knowledge, while allowing the tourists to gain an insight into the same.

It is believed that the introduction of these activities would increase tourist satisfaction thereby leading to extension of their stay, generate local employment and subsequently increase the income of the Park and the private sector. Ecotourism, as it has developed in PTR in the recent years, has been able to conserve and enhance the bio-diversity of the area while also generating local participation in conservation efforts. The economic incentives created from tourism have helped decrease the biotic pressure on the Park. The future proposals seek to maintain and improve upon the current situation.

<sup>1</sup> Source - primary data



23.

## ENVIRONMENTAL AUDITING IN ECOTOURISM: A STUDY ON VISITORS' MANAGEMENT IN VAN VIHAR NATIONAL PARK, BHOPAL, MP (INDIA)

A K Bhattacharya, Vandana Saksena and Suchitra Banerjee

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### Abstract

*This paper is based on a study carried out in Van Vihar National Park, Bhopal, and M.P. for the assessment of the awareness about and implementation of the rules, regulations and guidelines with respect to the impacts of the ecotourism in the Park. The paper analyses primary and secondary data on the socio-economic visitations and ecological parameters collected through the "Ecotourism Auditing Survey". The data concerning environmental standards in respect of ambient air quality and noise observed and collected by using High Volume Sampler and Noise Meter with the help of Madhya Pradesh Pollution Control Board, Bhopal have been analysed and discussed. Information relating to tourist demographics and perception collected through a bilingual survey format and information related to the perception of forest staff about the ecotourism collected through structured schedule and personal discussions were triangulated. This study assesses the impacts of the implementation of the operational guidelines and suggests measures for better visitors' management in Van Vihar National Park, which may be replicated in other ecotourism areas also.*

### INTRODUCTION

Tourism can bring both benefits and problems to an area. If well planned, developed and managed, tourism generates local jobs and income and provides opportunities to local entrepreneurs to establish tourism enterprises, all of which lead to improved living standards of residents. Tax revenue generated by tourism can be used to improve community facilities and services.

Tourism requires improved infrastructure, which can be used by residents. Tourism can stimulate the expansion of other economic activities such as agriculture, fisheries, manufacturing and craft production.

Tourism can provide the justification and help, pay for conservation of local natural areas, archeological and historic sites, arts, crafts, and cultural tradition and overall improvement of environmental quality because these are attractions for the tourists. However, if not well planned, developed and managed properly, tourism can result in congestion, pollution and other environmental problems (Bramwell, 1990<sup>1</sup>; Buhalis & Fletcher, 1995<sup>2</sup>).

Uncontrolled use by the tourists of nature areas and historic sites may lead to their deterioration. Over commercialization of cultural traditions can result in degradation of the areas cultural heritage (Bhattacharya & Banerjee, 2003)<sup>3</sup>.

Tourism and environment are closely interrelated. The natural and built environmental

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<sup>1</sup> Bramwell B, 1990. Green Tourism in countryside. *Tourism Management*, 11 (4) : 358 - 360.

<sup>2</sup> Buhalis D & Fletcher J, 1995. Environmental impacts on tourist destinations. In : *Sustainable Tourism Development*, Eds Coccosis H & Nijkamp P, Avebury, Sydney. pp 3-24.

<sup>3</sup> Bhattacharya, AK & Banerjee S, 2003. Relevance of CC and Eco-development linkages for SET. *Indian forester*, 129 (3), 332-340.

provides many of the attractions for the tourists and tourism development can have both negative and positive impacts on the environment. Sustainable tourism development depends on protecting the environmental resources for tourism (Boo, 1991<sup>4</sup>; Butler, 1991<sup>5</sup>).

The partners for sustainable tourism development are the tourism industry, owners and managers of tourism commercial enterprises, the environmental supporters, advocates for environmental conservation and the community residents, community groups and leaders and the local authority.

The interaction among these partners are necessary to achieve improved quality of life for the community while still achieving conservation of environmental resources for tourism and reasonable profits for the tourism industry.

Keeping these points in view, a new kind of tourism has come into being and is known as Ecotourism. Thus, Ecotourism is a responsible travel to natural areas that conserves the environment and sustains the well being of local people.

### **Ecotourism**

The term Ecotourism was coined by Hector Ceballos Lascurain in 1983. The term was used to describe the nature-based travel with emphasis on education, management and development of sustainable tourism product and activity.

World Tourism Organisation has defined Ecotourism as "*tourism that involves travelling to relatively undisturbed natural areas with specified object of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural aspects (both of past and present) found in these areas*".

The Ecotourism Society (TES) defined Ecotourism as "responsible travel to natural areas that conserves the environment and sustains the well-being of the local people". Its main aims are ecological and socio-cultural integrity, responsibility and sustainability (Cater, 1994)<sup>6</sup>. Ecotourism has developed from the traditional nature tourism and sustainable development concepts.

#### *Principles and characteristics*

- ◆ It should be small scaled, locally controlled, land sensitive and ecologically oriented.
- ◆ It should be based on environmental ethics with a concept of small is beautiful, doing more with less and treated with fostering resource integrity.
- ◆ It should be sustainable environmentally, socially, culturally and economically.
- ◆ It should enrich experience and should be educational.
- ◆ It should have the participation of the local communities.
- ◆ It is bio-centric rather than homocentric in philosophy. In fact Ecotourism should accept nature largely on its terms and not trying to significantly transform nature for personal convenience.

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<sup>4</sup> Boo E, 1991. Making Ecotourism Sustainable: Recommendations for Planning, Development and Management. In : Nature Tourism: Managing for the Environment, Ed. Whelan T, Island Press, Washington, D C. pp 187-199.

<sup>5</sup> Butler RW, 1991. Tourism, environment and sustainable development. Environmental Conservation, 18 (3) : 201-209.

<sup>6</sup> Cater E, 1994. Introduction. In E. Cater and G. Lowman (Eds.) *Ecotourism: A sustainable option?* (pp. 3-17). Chichester: John Wiley.

Ecotourism is emerging as an important component of the Indian tourist industry in general and the Madhya Pradesh tourism in particular. The significant growth in nature tourism and the numerous tourist operators bear adequate testimony to this. Though the term "Ecotourism" is popular, many rather loosely use it. Hence, it is imperative to distinguish this from general mass tourism (.

Ecotourism has been considered here as sustainable, equitable, community based endeavor for improving the living standards of indigenous host communities. Marketed as a form of nature based tourism. It also serves as a sustainable development tool. Ecotourism or nature tourism is distinguished from resort tourism or mass tourism by requiring lesser infrastructure development and a low impact on the environment (Bhattacharya *et al*, 2003)<sup>7</sup>.

### **Environmental Auditing**

Concern Regarding Environmental risk has led to the development of the field of Environmental Auditing. Environmental auditing is a way of checking whether a multitude of new environmental laws and regulations are being complied by the organisation, company or protected areas. More recently, it is used as a tool for assessing environmental management systems, policy, and equipment.

The International Chamber of Commerce defines an environmental audit as "a systematic, objective method of identifying and verifying the laws, regulating procedures and guidelines for protection and conservation of environment, health, occupational hygiene, safety, and emergency preparedness standards being followed."

The International Organisation for standardization (ISO) defines environmental audit as "a systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process to the concerned party."

Environmental Audit does not stop at compliance with legislation. Nor is it a green washing public relations. Rather, it is a total strategic approach to the organization activities

Environment auditing is a management tool comprising a systematic documented, periodic and objective evaluation of how well the management systems are performing with the aim of waste prevention and reduction, assessing the compliance with regulatory requirements, facilitating control of environmental practices by a Company's Management, and placing environment information in the public domain.

Environmental Auditing is which is described as "means to an end by which environmental considerations are integrated into tourism business decisions, and, is therefore highly suited to ecotourism (Brown, 1994<sup>8</sup>; Buckley, 1990a<sup>9</sup>).

### **Relevance of Environmental Audit**

Environmental audits are excellent indicators of performance, allowing companies to assess performance and its impact on the environment and identify ways to increase

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<sup>7</sup> Bhattacharya AK, Banerjee S & Saksena V, 2003. "Local initiatives to localize Ecotourism - An Exploratory study in Kerwa - Van Vihar National Park Catchments. *Tourism Recreation Research*, Vol 28(1) 2003.

<sup>8</sup> Brown G, 1994. *Environmental Audit Guidebook*. Centre for Professional Development, Kew, Victoria.

<sup>9</sup> Buckley RC, 1990a. Environmental Audit: What Directors and Managers need to know? Environmental Auditing. International Business communications, Sydney.

efficiency in environmental performance (Goodall, 1995<sup>10</sup>; Wells, 1995<sup>11</sup>). Audits also verify compliance with relevant environmental legislation and corporate policy and minimise human exposure to risk (Goodall, 1995)<sup>10</sup>. They can be used as benchmarks of management systems, such as the Environmental Self Assessment Program (ESAP) developed by the Global Environmental Management Initiative (GEMI), which provides a structured format for an organisation to compare its management with the principles of sustainable development established by the International Chamber of Commerce (ICC) (Cahill, 1995<sup>12</sup>; Fitzgerald, 1995<sup>13</sup>; Wells, 1995<sup>11</sup>).

Furthermore, the existence of an environmental auditing program not only boosts consumer and investor confidence, but can also help reduce insurance premiums and provides evidence of due diligence. For the Environmental Impact Assessments (EIA) required in projects of environmental significance monitoring should be conducted in order to assess the impact of developments on the environment. Monitoring of this type may be conducted within the framework of an environmental audit which would not only ensure that monitoring is being conducted, but also recognise if any limits were being exceeded (Brown, 1994<sup>8</sup>; Buhalis, 1995<sup>2</sup>).

### **Integration of Environmental Auditing into Ecotourism**

The World Travel and Tourism Council regard on-going environmental audits of tourism activities as an integral management tool. The concept of sustainable tourism implies sustainable practices at two levels. First, there is the need to secure the sustainability of tourism's primary resources at the destination level, and secondly, in a wider global context, the need to ensure the practice of environmentally sustainable tourism (Goodall, 1995)<sup>10</sup>.

Tourism is generally perceived as a private sector activity, so environmentally sustainable practices are viewed as the responsibility of individual firms or departments. Moreover, there are increasing pressures upon companies to act in an ethical and responsible manner towards the environment.

Environmental auditing has also been recognised for providing the means to assess and identify areas where compliance and efficiency could be increased and ensuring sustainable practices. Sustainable tourism and in particular the tourism industry must take action in order to embody the tenets of sustainable development. Environmental auditing is a pragmatic tool for tourist operations to use with the goal of attaining sustainable development (Stabler 1995)<sup>14</sup>.

Despite the benefits of applying environmental auditing to tourism having being recognised, there has been no recognition of the potential benefits that environmental auditing may bring to ecotourism. The only exception to this is Best Practice Ecotourism, produced by the Australian Commonwealth Department of Tourism in 1995.

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<sup>10</sup> Goodall B, 1995. Environmental Auditing: a tool for assessing the environmental performance of tourism firms. *The Geographical Journal*, 161 (1) : 29 - 37

<sup>11</sup> Wells RP, 1995. Auditing for Compliance is Only the Beginning: Lessons from Leading Companies. In : *Auditing for Environmental Quality Leadership*, Ed Willig J T, John Wiley and Sons, Brisbane. pp 11 - 21.

<sup>12</sup> Cahill L, 1995. Evaluating Management Systems as Part of Environmental Audits. In : *Auditing for Environmental Quality Leadership*, Ed Willig J T, John Wiley and Sons, Brisbane. pp 23-30.

<sup>13</sup> Fitzgerald C, 1995. GEMI's Environmental Self-Assessment Program (ESAP). In: *Auditing for Environmental Quality Leadership*, John Wiley and Sons, Brisbane. Ed Willig J. pp 41 - 50.

<sup>14</sup> Stabler M, 1994. An economic critique of tourism environmental auditing. *Tourism Research and Education in Australia: Proceedings from the Tourism Research and Education Conferences*, Eds Faulkner B, Fagence M, Davidson M & Craig Smith S. Bureau of Tourism Research, Canberra.

Integration of environmental auditing into ecotourism is a significant and necessary step that needs to be taken by operators in reaction to both internal and external forces. Internal forces include corporate policy, staff influence, community concern for the environment, marketing advantages and the prospect of financial savings resulting from environmental auditing programs. External reasons why environmental auditing should be incorporated into ecotourism include codes of conduct set by industry associations, accreditation schemes and government rules, regulations and legislations (Cater 1996<sup>6</sup>).

The use of environmental auditing in the ecotourism industry was also being recognised as important as it allows ecotourist operations to reduce environmental impacts, compare environmental performance whilst at the same time providing clients with a better understanding of an operation's commitment to the environment. This may in turn result in marketing advantage. Other benefits of applying it to ecotourism included the fact that environmental auditing is cost efficient and provides suggestions for how to improve environmental management (Buckley, 1990a<sup>9</sup>, 1990b<sup>15</sup>, 2001<sup>16</sup>).

The incorporation of environmental auditing into the ecotourism industry, particularly through environmental management standards such as ISO 14000 is important as it allows the cumulative and long-term aspects of environmental impacts that may be incurred by ecotourism to be addressed. The ISO 14000 series is one of several industry responses to the increasing public interest in sustainable development that came in the wake of 1992 RIO Earth Summit. While ISO 14000 is a family of standards, ISO 14001 contains an EMS standard against which a business, regardless of its size, product, service or sector, is certified. Certification to ISO 14001 means that a company's environmental management system (EMS) confirms the specifications of the standard, as verified by an environmental audit process.

It may be noted that ISO does not do auditing: it simply facilitates the development of EMS standards. It includes requirement for public participation, corporate disclosure of its environmental statements, and compliance with government laws and regulations (Krut & Gleckman, 1998)<sup>17</sup>

Environmental auditing may play an important role in determining whether operations are bona fide ecotourism. According to the Ecotourism Strategy the three key elements of ecotourism are that it is nature-based, involves education and is operated on a sustainable basis. Environmental auditing plays an important role in determining whether the third key element of ecotourism, sustainable practice, is being applied and therefore whether or not the operation may be labelled as ecotourism (Blamey, 1996)<sup>18</sup>.

Based on the above definitions and taking into account the impact of environment, Van Vihar National Park has lot of potential for Ecotourism development which has yet to be realized in its right perspective. This unique and smallest national Park with its richness in fauna and flora and near pollution free environment has provided an excellent opportunity to travel loving people a wonderful destination for Ecotourism to enjoy experience, understand and appreciate nature and the need to conserve wild life (Bhattacharya & Saksena, 2003)<sup>19</sup>.

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<sup>15</sup> Buckley RC, 1990b. Environmental Audits. In : Pollution Law, Calcutt Watson and Associates and Blake Dawson, Waldron, Sydney.

<sup>16</sup> Buckley Ralf, 2001. "Ecotourism Accreditation in Australia", in *Tourism Ecolabeling : Certification and Promotion of Sustainable Management*, edited by X.Font and R.C.Buckley (Oxon, UK: CABI Publishing 2001)

<sup>17</sup> Krut & Gleckman, 1998. Pacific Institute, Managing a Better Environment: Opportunities and Obstacles for ISO 14001 in Public Policy and Commerce (Oakland, CA: Pacific Institute, 2000).

<sup>18</sup> Blamey RK, 1996. The Nature of Ecotourism. Occasional Paper no 21, Bureau of Tourism Research, Canberra, Commonwealth of Australia.

<sup>19</sup> Bhattacharya A K & Saksena Vandana, 2003. Ecotourism auditing - A study for visitors' management In Van Vihar National Park, Bhopal. Project Report. Madhya Pradesh Forest Department, Bhopal.

### **Objectives of the study**

For the present study environmental auditing has been used as a potential tool in ecotourism with special reference to assess the visitors' management in Van Vihar National Park, Bhopal (Bhattacharya and Saksena, 2003) <sup>19</sup>.

This study for Visitors management in Van Vihar is relatively a new concept of Ecotourism in the light of the assessment whether various indicators stand the test of codes of conduct of Ecotourism, environmental standards pertaining to air, water, noise and solid waste pollution (Jim, 1989)<sup>20</sup>.

The specific objectives were to:

- examine the existing codes of conduct, rules and regulations, acts, circulars guidelines for ecotourism in the Park.
- evaluate the strengths and weaknesses of these regulations/ legislations
- assess the awareness of visitors about these regulations/ legislations
- assess the expectations of visitors for the Park.

### **Methodology**

- Collection of primary data in a structured questionnaire format.
- Collection of secondary data from records available for the purpose of verification.
- Survey– focus group discussion and individual with the visitors and other stakeholders.
- Monitoring of ambient air quality and noise pollution using HVS and Noise meter.
- Quantification and Qualification of Solid waste.
- Analysis of data to examine the impact of Ecotourism in the Park.

The data regarding the visitors' response have been collected through a questionnaire survey format. The information were collected through

- Questionnaires directly supplied to visitors.
- Direct observations of the visitors' activities (spot survey).
- Questionnaire survey in individual and in-group.
- Questionnaires supplied to the forest staff.

### **Study Area**

Van Vihar, the smallest National Park of the country is situated in Bhopal, the capital of Madhya Pradesh which lies in the eastern edge of Malwa Plateau and situated in the central part of state. The name "Bhopal" has been derived from "Bhojpal" or Bhoja's dam" the great dam which now holds up the famous Bhopal city lakes, and is said to have been built by a minister of Raja Bhoj, the Parmara ruler of Dhar. Initially the lake was quite big but as time elapsed only a small portion of it has remained to be seen as the upper lake popularly called "*Bada Talab*", which is now used as one of the main sources of drinking water to the urban population. On the other side, there is the lower lake popularly called "*Chhota Talab*" which is used for bathing, washing and other miscellaneous purposes. Bhopal enjoyed a status of capital till the state was merged in Indian Union in November, 1956 to form the new State of Madhya Pradesh.

Established in the year 1983, Van Vihar National Park is not only the smallest National Park but is also a unique one in the world as it is spread over a small area of only 445 hectares of degraded and denuded hillock enclosed with fencing adjoining the populous

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<sup>20</sup> Jim CY, 1989. Visitor's management in recreation areas. *Environmental Conservation* 16 (1), 19- 32 and 40.

city of Bhopal. Most of the Park area is hilly and undulated varying from gentle to steep slopes. Around 65-75 % of the Park area is covered by hills and plateau; rest of the terrain is plain.

Though provided with legal protection of a National Park, the area has been developed on the line of a modern Zoological Park, where wild animals have been kept in near natural condition of space and habitat setting to serve as a repository of genes. The landscape of the area has led to the designing of enclosures in a fashion that serves the objective of fostering a positive man-animal relationship.

Van Vihar National Park, a fertile place of greenery, is a living example that reflects this capacity of Nature. The nature has risen to live for another cycle. It has tremendous capacity to bring itself back into use. The adjoining upper lake adds immense beauty to its landscape. The lake enlivens particularly when thousands of migratory birds land in the lake at the onset of winter providing tremendous joy of the glories of nature to the visiting tourists and visitors.

## **RESULTS AND DISCUSSION**

In all 175 questionnaires were supplied to the visitors entering to the Park. They were requested to co-operate in giving proper replies to the questions.

The demographic information about the visitors such as their age, sex, education, profession, occupation, place of origin and their income profile have been presented.

### **Age and sex ratio**

75% of the visitors to the Park are in the age group of 18 -30, followed by 62% in the age group of 35-50. 32% visitors in the age group of 50 and above come to the Park. The minimum arrivals is of the visitors below 18 years. Seventy two percent of males and nearly 30% females visit the national Park.

### **Occupation**

The result of visitors' survey indicates that 20% of them are government employees belonging to teaching, LIC, Banking sectors. Twenty four percent are from the private sector companies, while 16% are businessmen who are involved in export and in travel business. Remaining 40% are students, housewives and retired persons who are frequent visitors to the Park as told by them personally.

### **Qualifications**

Of the total visitors coming to the Park eleven are educated below 12<sup>th</sup> standard, most of them are students, and forty three percent are graduates and postgraduates. Thirty five percent visitors were found to be technically and professionally qualified including engineers, diploma holders, doctors, lawyers, chartered accountants etc.

### **Income**

While 71% visitors responded to the queries of income, 29% were reluctant to respond. Of the 71%, 56% come from income group of more than Rs.1 lakh annually, while 11% come from the income group of Rs 50000 - 100000 per year. A very small section of visitors (four percent) belong to the income group of less than 50,000.

### **Mode of Transport:**

The survey indicates that 46% people visit Van Vihar in two wheelers, i.e. scooters, motorbikes and mopeds, thirty percent visit in four-wheelers, while about 12% visitors

come in three wheelers (auto-rickshaws). Of the remaining 12%, 8% enjoy the visit inside the Park in Van Vihar owned battery operated bus and only 4% see the Park walking without using any vehicle. The battery-operated bus provides an environmental friendly atmosphere to the visitors.

### **Visitors' Perception:**

The visitor's perception was obtained on the basis of their interest towards ecotourism.

### ***Purpose of Visit***

Response to the purpose of visit was based on ranking system. The result indicates that 88% people come to Van Vihar to view wild life. Eighty percent gave priority to love for nature. Rest go to Van vihar for scenic beauty followed by outing and close by picnic spot. The local residents of Bhopal specifically bring their guests, relatives and friends to the Park for showing wild animals, birds, reptiles and the scenic beauty of hills and the lake. This occupies the last rank of the purpose of visit under tourist perception.

### ***Number of visits per year***

The sample data indicate that 42% of the people visit Van Vihar once in a year, followed by 22% twice a year, 6% thrice a year, and 4% four to six times per year. Ten percent local people visit this place more than 10 times a year. Only 2% visitors could not respond properly.

### ***What fascinates the visitors most?***

On the question of liking raised to the visitors, they gave priority to wild life, followed by natural beauty, lake view, surroundings of the area etc. The need of a well equipped interpretation center was felt by most of the visitors in view of getting proper information about Van Vihar and the wild life.

### ***Awareness about ecotourism***

Only 48% visitors responded in positive about awareness towards Ecotourism. According to them "Ecotourism is traveling to nature, tour to ecology, visiting natural places having beautiful landscape, helps awareness about ecotourism in developing human concern to protect nature and ecosystem, love towards nature and nearness to its surroundings which includes the attraction of wildlife". For some it may be a good source of earning foreign exchange by attracting tourists from abroad. Significantly 44% of the visitors had no idea of ecotourism, while remaining 8% did not show any interest in responding to this question.

### ***Awareness about the codes of conduct of Ecotourism:***

From the survey it was clear that very few people had knowledge of codes of conduct of ecotourism. According to them codes of conduct comprise the rules and regulations of Wildlife Protection Act, Environment Protection Act pertaining to air, water, noise and solid waste, non-disposal of plastics and polythene bags, littering, noise free environment, and promotion of plantation. Majority (60%) of the people do not have any idea about such codes. Only 10 % visitors are aware about the codes of conduct of ecotourism. 30 % did not respond to the question.

### ***Guidelines and instruction by the Park staff:***

Forty eight percent visitors confirmed of having received the guidelines / instructions regarding tourism in the Park, while 26% people strongly denied. Remaining 26 % did not respond.

### ***Food brought by visitors in the Park:***

In reply to the question "what do you bring to eat during your visit?" Forty six per cent replied they bring fast food. Eight per cent people bring cooked food while 43% visitors use containers to bring eatables.





**Use of wrappers /carry bags/ polythenes**

46% visitors who bring cooked and fast food said that they put the left over food and used paper, polythene etc. into the dustbins. 6% throw these waste material by the side of the lake, 12% carry them back. The remaining 34% throw them here and there or anywhere.

**Facilities in Van Vihar**

Sixty six per cent visitors feel that the facilities inside the Van Vihar are inadequate, 26% are satisfied with the adequacy of facilities and rest 8% did not respond.

**Guide**

Ninety percent visitors say that they do not /get any guide who could guide or instruct them properly about the Park, ecotourism and wild animals. Only 5% visitors told that some Park staff did guide them a little bit about the wild animals and natural surroundings. Five per cent did not respond.

**Willingness to pay for the guides**

The survey indicated that the visitors felt great need of guides in the Park. 75% visitors were willing to pay any fee that may be charged by the Park management for making the guides available during their visit. Only 22% visitors showed reluctance for payment to guides. Three percent did not respond.

**Awareness Generation**

According to 78% visitors, Van Vihar is a proper site of awareness generation as well as getting education about wild life conservation. Of the remaining people about 18% do not think so. They come only for recreation purpose or just for outing. Rest of the people did not respond.

**Information from the interpretation center**

Of the total people visiting the Park 18% visitors get adequate information from the interpretation center known as "Vihar Vithika"; 54% get partially adequate information, while 24% are totally unsatisfied from it. They complained that there was none to either welcome or guide them or provide useful and interesting information about the Park.

**Involvement of public in Park management**

Most of the visitors (about 80%) showed their interest in Park management if they were given chance to do so. Some people did not show any willingness to involve themselves in Park management. Only 10% did not respond.

**Merits and Demerits of the Park**

Merits	Demerits
Hilly and undulated natural beauty	Ticket cost is high
Good wildlife	Inadequate drinking water kiosk
Near to Lakeview	Absence of guide
Close by picnic spot	Absence of a canteen
Water beauty - an additional attraction	Poor maintenance of wild life
Calm and quite atmosphere	Air and Noise pollution due to entry of vehicle inside the Park.
Neat and clean roads	Very shabby and dirty toilets
	No proper resting and sitting places

**Facilities:** The visitors suggested the following facilities in ranking order in the Park:

S No	Facilities in order of ranking
1.	Trained guide

2.	Proper drinking water facility at short distances
3.	Need of eco-friendly canteen in the Park.
4.	Camera should be allowed inside the Park free of cost
5.	Battery operated bus fare should be reduced
6.	A cyber café and telephone booths should be introduced
7.	Pictures of wild life should be put on sale.

## SUGGESTIONS

Suggestions and opinions of the visitors towards conservation values and improvements in the Park are mentioned below in following table:

S No	Suggestions by the visitors for better management of the Park
1.	A money collection box should be kept in the Park for collection of the wildlife fund so as to enable the visitors to donate or contribute generously towards it.
2.	Nature camps for awareness generation should be organized on a regular basis.
3.	In order to earn foreign exchange proper publicity be made to attract foreign tourists towards ecotourism attraction in the Park.
4.	The permission fee to carry cameras should not be charged.
5.	Signboards and hoardings should be put up at prominent places inside the Park carrying useful instructions and messages displayed properly in Hindi and English for the visitors.
6.	An officer of a senior rank from the Forest Department should keep regular vigil over the activities and quality of food supplied to the wild animals.
7.	Fare of the battery operated bus should be reduced by 50%.
8.	The present visiting time to the Park should be increased by an hour in the afternoon.
9.	Educated trained guides should be appointed in the Park.
10.	Forest staff should take daily action for progress and maintenance of Park and up keeping of wild life.
11.	A flower garden should be developed by the side of the lake.
12.	Diesel vehicles should be strictly prohibited to enter the Park.
13.	The number of dustbins should be increased and distance between two bins should be conveniently close.
14.	The toilets of the Park should be cleaned daily and properly.
15.	There should be resting huts for visiting public.
16.	The Park should remain open for visitors through out the day.
17.	There is need of a canteen in the Park.
18.	There should be audio-video film shows on wildlife nature attractions including the lakeside beauty.

## Perception of the Park staff

### **Ecotourism codes of conduct**

Only 25% staff have some idea about the codes of conduct pertaining to Ecotourism but their understanding only confines up to “do’s and don’t do’s” about the wild animals and vegetation.

### **Departmental Circulars and Guidelines**

Regarding the departmental circulars and guidelines and Park management, 62% have no idea about any circulars and guidelines concerning ecotourism management. Only

38% have some idea about them. When asked about attending the workshops and seminars on ecotourism most of the staff members replied in negative. A very small section of senior staff members attended some or the other sort of training and seminars related to ecotourism

### **Expectations from the visitors**

About 62% staff expect the visitors to follow rules and regulations as well as instructions about Van Vihar besides keeping the Park clean and green without spreading dirt here and there. Responsible staff (37.5%) wants visitors to co-operate with them with decency and decorum without creating scenes by entering into avoidable discussions. About 12% expect that people visiting the Park should not make loud noise and avoid littering while moving. They also expect that the visitors should not approach nearer to the animals or tease them. Instead, they should help conserving the wild life besides promoting tourism.

### **Potential threats to the environment of Van Vihar**

According to the Park staff the potential threats of environment are polythene bags, police firing range near the Park, horn blowing and noise pollution, diesel vehicles, smoking inside the Park, *Gutka* pouch, intoxication, growing of *Parthenium* and *Lantana*, animal abuse by the visitors, littering and rash driving.

### **Suggestions to promote ecotourism in Van Vihar**

The forest staff suggest that ecotourism can be promoted in Van Vihar national Park by plantation, resting place, safe drinking water, slide show, up to date website of Van Vihar National Park, special tourist buses, co-ordination with state tourism corporation for the promotion of ecotourism, creation of ecotypes, trained guides, advertisement through TV, newspapers and hoardings.

## **POLLUTION - AMBIENT AIR AND NOISE MONITORING**

- A. Location – White tiger enclosure  
Date – 07/10/02 : Time (03: pm to 07:15 pm)  
Peak time (Open to visitors)

	5.25 pm	5:30 pm	5:35 pm	5:40 pm	5:45 pm
Noise level (dB)	78.3	92.5	88.5	77.3	94.9
SPM ( $\mu\text{g}/\text{m}^3$ )		74.2			
SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )		7.0			
NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ )		13.7			

- B. Location – Yellow tiger enclosure  
Date 07/10/02 : Time (03: pm to 07:15 pm)  
Peak time (Open to visitors)

	6:07 pm	6:10 pm	6:13 pm	6:15 pm	6:17 pm
Noise level (dB)	72.6	87.8	90.8	89.9	87.5
SPM ( $\mu\text{g}/\text{m}^3$ )		80.2			
SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )		7.0			
Nox ( $\mu\text{g}/\text{m}^3$ )		13.7			

- C. Location – Yellow tiger enclosure  
Date 13/10/02 : Time (03: pm to 07:15 pm)  
Peak time (Open to visitors)

	4:35 pm	4:37 pm	4:40 pm	4:42 pm
Noise level (dB)	61.4	54.6	74.2	57.1
SPM ( $\mu\text{g}/\text{m}^3$ )		101.2		
SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )		7.0		
Nox ( $\mu\text{g}/\text{m}^3$ )		15.5		

- D. Location – White tiger enclosure  
Date 13/10/02 : Time (03: pm to 07:15 pm)  
Peak time (Open to visitors)

	5:47 pm	5:50 pm	5:52 pm	5:55 pm	5:57 pm
Noise level (dB)	62.7	62.2	62.8	60.6	62.4
SPM ( $\mu\text{g}/\text{m}^3$ )		101.2			
SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )		7.0			
NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ )		15.5			

### Interpretation of pollution analysis results

On the basis of the readings obtained in pollution monitoring as shown in the tables above the following interpretations can be drawn:

- Noise level exceeds the prescribed limits as per above tables. Higher level of noise pollution may affect the behaviour of the animals.
- SPM level marginally exceeded the prescribed limits as shown in table of location B on 13/10/02, due to the influence of the visitors on holiday. Number of vehicles was also comparatively high.
- Excessive dust in the environment may affect the photosynthesis of the macro-vegetation.
- Dust in the environment and exhaust from the vehicle may affect the respiratory system of the visitors as well as the inhabitants.
- Concentration of gases viz. SO<sub>2</sub> and NO<sub>x</sub> was observed within the prescribed limits.

### CONCLUSION

Although a small National Park in size, Van Vihar has quite a good potential for Ecotourism development no matter it be on a small-scale level. It has been observed that the pollution level inside the Park and immediate adjoining areas is well within the prescribed limits. However, for the purpose of waste disposal there is need of environment friendly energy and waste management technologies for which a small incinerator in accordance with CZA guidelines should be installed. An Ecotourism Management Plan involving the public in Park management including indigenous people, women, youth, businesses, scientific communities and NGOs at all level of decision-making should be prepared. Management strategies within the framework of National and State Wildlife Action Plans and Tourism Policies of the Central and State Governments should also be formulated. Besides, it will be worthwhile to set up a snake Park and a flower garden near the lakeside. An effective interpretation center should be developed and supported by knowledgeable persons to provide appropriate information to visitors in English as well as in Hindi on “what to see and where to see”, “dos and don’t dos” and ecotourism codes of conduct.

24.

## LOCAL PERCEPTION OF ENVIRONMENTAL IMPACTS DUE TO TOURISM ACTIVITIES AT BHOJPUR, INDIA

A.K. Bhattacharya, Ravi Sharma, and Kiran Sharma

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### **Abstract**

*Tourism causes direct and indirect impacts on environment. For effective management of tourism and environment, it is necessary to understand the impacts of tourism on environment. The paper discusses the findings of the study on tourism impacts at Bhojpur, one of the popular destination area near the capital of Madhya Pradesh. The study attempts to capture various issues about the local perception related to the environmental impacts of tourism, which need to be addressed for the tourism-linked development of the area. This study is based on direct interaction and queries with local residents concerning their personal activities with regard to tourism and their perceptions of environmental impacts generated due to tourism activities at Bhojpur or potential threats in the near future.*

### **INTRODUCTION**

In the last decade of the 20<sup>th</sup> Century, it was noted that tourism depends ultimately upon the environment, as it is a major tourism attraction itself, or is the context in which tourism activity takes place (Holden, 2000)<sup>1</sup>. As visitor's number increases in any destination area, impacts tend to become more prevalent. Single activities cause multiple impacts and each impact tends to exacerbate or compensate for other changes caused by recreation (Hammit and Cole, 1998)<sup>2</sup>. The nature of the activities tourists are engaged in will greatly influence the impacts they have. McKercher (1993)<sup>3</sup> argued that tourism tends to overcome resources. The nature of the infrastructure that exists for tourism is significant in relation to impacts. The dynamics of the relationship between 'hosts and guests' (Smith, 1977)<sup>4</sup> in tourism, and the 'impacts' and consequences of tourists visits to 'host communities', are issues which preoccupied the study of tourism from its very inception (Cohen 2003)<sup>5</sup>.

Tourism has become a major source of foreign exchange for India, and the historic places in central part of India are the major tourists centres of attractions. In the recent years scholars have attached much importance to residents' attitudes and perceptions on tourist and tourism, and have emphasized the need of including their well-found views in

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<sup>1</sup> Holden A, 2000. Future of Tourism's Relationship with Environment. Environment and Tourism. London, Routledge.

<sup>2</sup> Hammit W & Cole D, 1998. Wildland recreation: ecology and management, 2nd edition. New York, NY: John Wiley. 361p.

<sup>3</sup> McKercher B, 1993. Some fundamental truths about tourism: Understanding tourism's social and environmental impacts. *Journal of Sustainable Tourism*, 1: 6- 16.

<sup>4</sup> Smith V, 1977. Hosts and guests: The anthropology of tourism. Philadelphia: Univ. of Pennsylvania Press, pp. 1- 14.

<sup>5</sup> Cohen E, 2003. Contemporary tourism and the host community in less developed areas. *Tourism Recreation Research*, Vol. 28, No. 2: 1-9.

<sup>6</sup> Liu JC, Sheldon PJ & Var T, 1987. Resident Perception of the Environmental Impacts of Tourism. *Annals of Tourism Research*, 14: 17 - 37.

7 Singh TV, 1989. *The Kullu Valley- Impacts of tourism development in the mountain areas*. Himalayan Books, New Delhi.

planning and development of resorts (Liu, Sheldon and Var 1987)<sup>6</sup>. The perceptions of the local people is also important as they are the real witness of the tourism scene, both as a spectator and as an actor, and eventually they are the one who are directly (or indirectly) affected by tourism (Singh 1989)<sup>7</sup>. So, their views should be more realistic than the observers subjective observations collected from a few visits of the area.

### **Historical Background**

Raisen district is situated in the central part of Madhya Pradesh lying between the northern latitudes 22° 47' and 23° 33' and eastern longitudes 77° 21' and 79° 49'. The tropic of cancer (23° 30') passes through the northern part of the District. The Vindhya which separate the northern malwa plateau from the valley of the Narmada, almost standing like a wall, sending numerous spurs mostly in the Northern plateau. In Raisen Tehsil, one system of hills is a continuation of the northern arm of Bhojpur hill, which reaches as far north as the Bhopal-Raisen near village *Mana*.

Founded by the legendary Parmar King of Dhar, Raja Bhoj (1010-1053), and named after him, Bhojpur, 28 Km from Bhopal, is renowned for the remains of its magnificent Shiva Temple and cyclopean dam. The temple, which has earned the nomenclature of the Somnath of the east, is known as the Bhojeshwar temple. In plan a simple square, with an exterior dimensions of 66 feet, it is devoid of the re-entrant angles usual in such buildings, the richly carved dome, though incomplete, has a magnificent, soaring strength of line and is supported by four pillars, the *Lingam* in the sanctum, rises to an awe-inspiring height of 7.5 feet with a circumference of 17.8 ft. Set upon a massive platform 21.5 ft. square, and composed of three superimposed limestone blocks, the architectural harmony of *Lingam* and platform creates a superb synthesis of solidity and lightness. Even with the ravage of time, it remains one of the best examples of temple architecture of the 12<sup>th</sup> and 13<sup>th</sup> centuries.

Also, incomplete, and with a similar stone- raising ramp, is a Jain Shrine that stands close to the Bhojeshwar temple. Rectangular in plan, this temple probably belongs to the same period as the Bhojeshwar. West of the Bhojpur once lay a vast lake, but nothing remains except the ruins of the magnificent old dams by which its waters were contained.

### **STUDY AREA**

Bhojpur, Hindu pilgrimage tourist centre near Bhopal is renowned for its magnificent Lord Shiva temple, Jain Shrine and cyclopean dam. In spite of these attractions a water body (Canal of river Betwa) near the temple and various other small temples of goddess near the water body is a major point of attraction and recreation all over the year. Tourism is in its infancy and few attractions in the region provide basic visitors facilities. Hence, the majority of visitors are engaged in self-organized activities. Whether the state of the regions natural tourism resources can be maintained over time will become a growing challenge.

Among one of these historic place, Bhojpur is one of the place of tourists' attraction. Bhojpur is endowed with scenic and aesthetic values that attract approximately much more than hundred thousand visitors annually and deemed to possess tremendous tourism potential. Though Bhojpur attracts visitors mostly for religious purpose; it also attracts attention for the following reasons:

- Location- Scarcely 25 Km from the main centres of the capital.
- Topography- Interesting and aesthetic landscapes.
- Water Resources- Including a cyclopean dam and a canal which has arrangements of boating and also many small temples of the Goddess near the bank of the canal.



## METHODOLOGY

The study was accomplished through participatory approach. Perceptions of the local people were measured through the structured surveys of local people, which were administered in the May to June of 2004. Three villages were selected for conducting the survey to know the perceptions of the locals of the area. Schedules were completed for a total of 55 households (25 from Bhojpur, 20 from Keerat Nagar and 5 from Gokulakundi village). Households were selected through the random selection and an attempt was made to include 20% households in the villages. The survey included questions based on socio-economic parameters, physical environment, economy and on socio-cultural domain, soliciting residents perceptions on tourism's negative / positive impacts. Answers were ascertained and validated through the interview method from the sampled local villagers regarding their assessment of changes that have taken place or might take place in future. Most of their observations were based on subjective analysis, as it was difficult for them to measure the impacts objectively.

Responses to each questions was rated on a scale of 4 to 0. A score of 4 marks was awarded for major impact, 3 for moderate impact, 2 for marginal impact, 1 for negligible impact and 0 for no impact. Those who did not register responses or did not know how to answer the questions were ignored. Thus, most of the negative and positive effects were ranked in order (Singh 1989)<sup>7</sup>.

It must be noted that though the questions were addressed to the heads of the groups / households, conscious efforts were made to obtain responses from all group members, to ensure a participatory approach. Also, the basic schedule was designed in English and the investigators were trained to translate and make the respondents understand the questions in their language / local dialect to elicit the correct information from them. The study also used the secondary data, but in many cases the reliability of secondary sources is not very high.

The details of the listed households (HHs) and sampled households in surveyed villages are as follows

S. No.	Name of Village	No. of listed HHs	No. of sampled HHs
1.	Bhojpur	72	25
2.	Keerat Nagar	123	25
3.	Gokulakundi	23	05
TOTAL		208	55 (26.44%)

Source: Census of India.

The general socio-economic facts about the selected villages are given in the following table

S. No.	Description	Bhojpur	Keerat Nagar	Gokulakundi
1.	No. of families	72	123	23
2.	Population	345	665	149
3.	Village area (Hectares)	556.29	610.64	271.21
4.	Total agricultural land (acres)	47.54	112.84	52.16
5.	Forest (hectares)	215.71	186.18	36.14
6.	Unirrigated (hectares)	189.89	235.14	127.86
7.	Distance from tourism spot (Km)	0	1	3

Source: Summary of data collected from Census of India.

**RESULTS AND DISCUSSION**

**Distribution of residents by education:** The average level of education in the

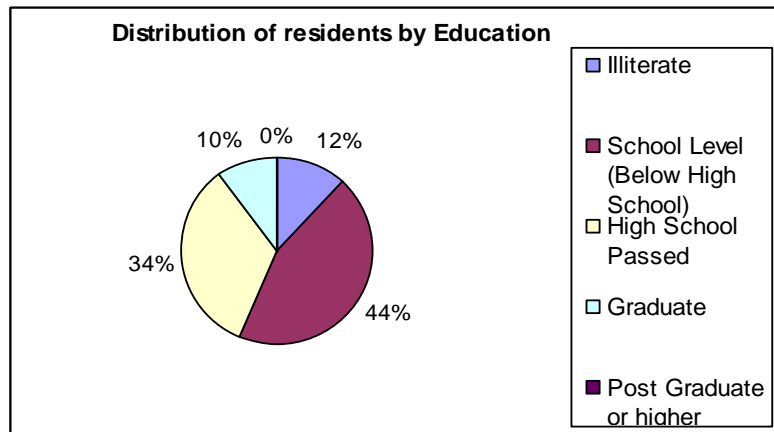


Fig 1 - Distribution of residents by education

sample group surveyed was of moderate level with most of the respondents belonging to the school level (44%) and high school level (34%) of education, while no one is belongs to the post graduation level of education. The distribution of respondents by the education level is shown by the figure 1.

**Distribution of residents by Age:** In the sampled survey of locals, most of the residents were in the age group of 30-39 years followed by 40-49 years. The distribution of age groups is shown in figure 2.

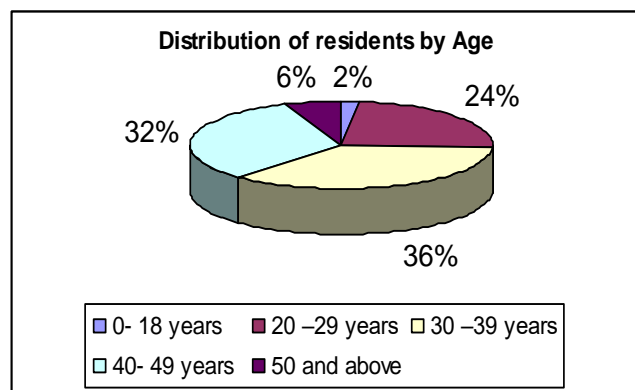


Fig 2. Distribution of respondents by age.

**Distribution of residents by family annual income:** Majority of the respondents among surveyed were having the annual family income of more than Rs. 25,000 and above (30%) followed by annual income of Rs. 10,000 – 15,000 (26%). The figure 3 shows the distribution of residents by the family annual income.

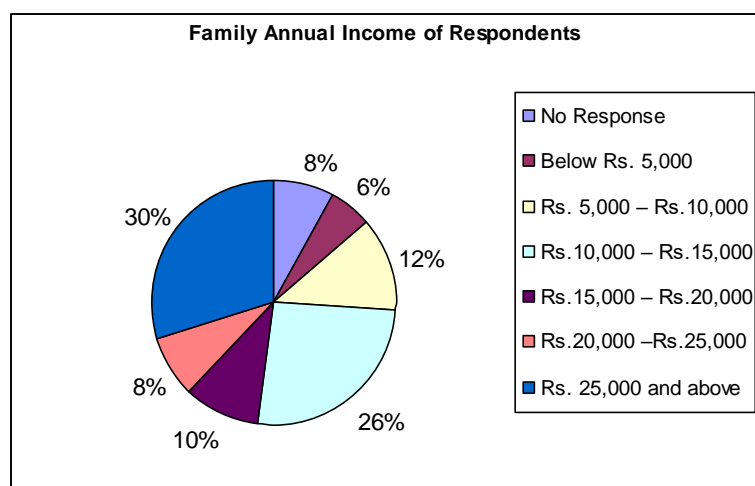


Fig 3 - Distribution of residents by family annual income.

**Distribution of residents by Occupation:** Most of the respondents surveyed were engaged in agriculture (38%) and as laborers (38%). The others includes 18% which involves shopkeepers, students etc. The distribution of residents by their occupation is shown by figure 4.

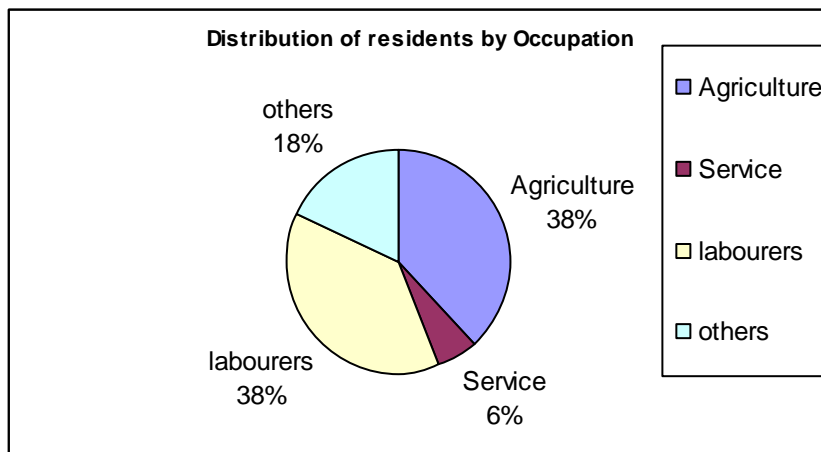


Fig 4 - Distribution of residents by Occupation

**Residents engaged in tourism activities:** From the sampled surveyed it was found that only 20% residents were engaged in tourism activities like shop- keeping, parking etc., while 74 % of people were not engaged in tourism activities. This has also been shown in Fig. 5.

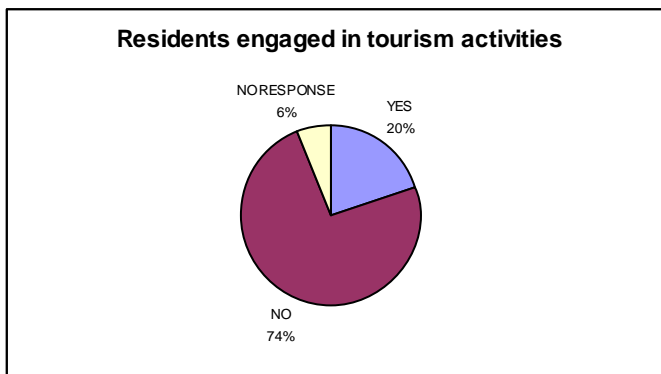


Fig 5 - Percentage of Residents engaged in tourism activities

**Residents benefiting from tourism activities:** from the survey it has been found that 26 % of respondents are benefiting from the tourism, while 68% responded in negative (Fig 6).

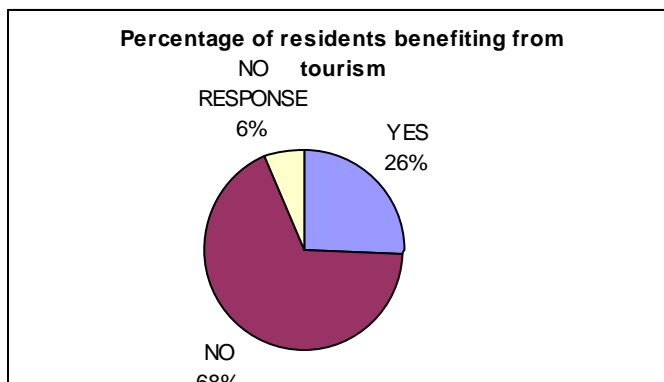


Fig 6 - Percentage of residents benefiting from the tourism in the area

**Awareness about tourism:** Most of the residents are aware about purpose of visit to the area by the visitors. Thus, they are aware of tourism in their own perceptions.

**Perception of Visitation:** Through the perceptions of their interaction with the visitors, the villagers consider that people normally visit the place for religious purpose followed by outdoor picnic and due to natural beauty of the area, while the visitation for the purpose like visit for educative purpose and adventure sports were ranked very low. The perception of visitation by the residents has been depicted below in table 1.

**Table 1 - Perception of visitation:**  
**RANK**

Reason for Visitation	Response	1	2	3	4	5	SCORE
Pilgrimage/ religious purpose	50	40	10	*	*	*	280 (37.33)
Outdoor picnic	50	9	28	13	*	*	196 (26.13)
To enjoy natural beauty	43	1	12	28	1	1	140 (18.66)
Educative purpose	29	*	*	2	21	6	54(7.2)
For adventure sports	10	*	*	1	5	4	17 (2.26)

*Note: The figures in the parentheses indicate percentage  
Scores for Ranks - 1= 5; 2= 4; 3= 3; 4= 2; 5= 1.*

#### **Perception about impacts on the physical environment**

The villagers have assigned higher ranks to the solid waste accumulation and littering, the noise generation and air, water pollution, site congestion thus causing loss of aesthetic value or loss of access (especially during the peak periods). The impacts like excess pressure on energy resources due to tourism activities, road degradation and soil erosion were ranked in middle order and damage to flora, fauna, vegetation and increased risk of ecological imbalance in near future were ranked very low in order. The ranking and percentage of respondents given for the impact are shown in the table 2 and figure 7.

**Table 2 - Residents response to the impacts on physical environment (percentage)**

Impacts on Physical Environment	Major (4)	Moderate (3)	Marginal (2)	Negligible (1)	No Impact (0)	RANK
Solid Waste accumulation and littering	31 (62.0)	11 (22.0)	4 (8.0)	*	3 (6.0)	165
Noise generation and air, water pollution	8 (16.0)	14 (28%)	13 (26.0)	5 (10.0)	8 (16.0)	105
Site congestion and loss of access	8 (16.0)	12 (24.0)	16 (32.0)	3 (6.0)	10 (20.0)	103
Tourism has destroyed energy resources	6 (12.0)	5 (10.0)	13 (26.0)	12 (24.0)	13 (26.0)	77
Road degradation and soil erosion	5 (10.0)	5 (10.0)	17 (34.0)	5 (10.0)	17 (34.0)	74

Increase the risk of endangered ecological balance of nutrients	1 (2.0)	8 (16.0)	13 (26.0)	17 (34.0)	2 (4.0)	71
Damage to wildlife and vegetation 'or' encroached upon flora and fauna	2 (4.0)	6 (12.0)	8 (16.0)	18 (36.0)	15 (30.0)	60
Deforestation due to construction of roads and hotels through the forests for tourists	1 (2.0)	4 (8.0)	5 (10.0)	11 (22.0)	28 (56.0)	37

Note: The figures in the parentheses indicate percentage

### Perception about positive impacts on the physical environment:

The resident's response about the positive impacts on the physical environment has been shown below in the table 3 and figure 8.

**Table 3. Residents' response- positive impacts on physical environment (Percentage/ Rank)**

Positive Impacts on physical environment	Major (4)	Moderate (3)	Marginal (2)	Negligible (1)	No Impacts(0)	RANK
Tourism has enhanced scenic beauty.	14 (28.0)	17 (34.0)	3 (6.0)	4 (8.0)	10 (20.0)	117
Promoted cleanliness and hygiene.	8 (16.0)	10 (20.0)	2 (4.0)	18 (36.0)	9 (18.0)	84
Brought in ecological awareness.	2 (4.0)	7 (14.0)	2 (4.0)	15 (30.0)	20 (40.0)	48
Encourages measures for the conservation of woodlands and wilderness areas.	1 (2.0)	3 (6.0)	4 (8.0)	15 (30.0)	20 (40.0)	36
Promoted more plantation and environmental awareness programs.	1 (2.0)	*	2 (4.0)	8 (16.0)	33 (66.0)	16

Note: The figures in the parentheses indicate percentage

### Perception about on the Socio- Cultural Impacts

The residents' response about the Socio- cultural impacts due to the tourism has been shown below in the table 4 and figure 9.

**Table 4 - Residents' response – Socio- Cultural impacts**

Socio- Cultural Impacts	Major (4)	Moderate (3)	Marginal (2)	Negligible (1)	No Impact (0)	RANK
Sufferance to local people due to crowding, pollution, rash driving etc.	22 (44.0)	13 (26.0)	5 (10.0)	6 (12.0)	2 (4.0)	143
Tourism has helped in preserving local art and culture.	9 (18.0)	16 (32.0)	9 (18.0)	11 (22.0)	3 (6.0)	113
Promoted crime, moral laxity/ drugs etc.	14 (28.0)	9 (18.0)	7 (14.0)	10 (20.0)	8 (16.0)	107
Produced frustrations as locals get ordinary and low paid jobs.	12 (24.0)	7 (14.0)	11 (22.0)	11 (22.0)	3 (6.0)	102
Locals are getting westernized in their lifestyle.	6 (12.0)	9 (18.0)	8 (16.0)	19 (38.0)	5 (10.0)	86

Tourist disturb the peace in public places	9 (18.0)	11 (22.0)	6 (12.0)	4 (8.0)	18 (36.0)	85
Locals are losing confidence and cultural identity	2 (4.0)	6 (12.0)	8 (16.0)	22 (44.0)	8 (16.0)	64
Facilitated contact with the outside world/ cultural sharing.	1 (2.0)	6 (12.0)	6 (12.0)	15 (30.0)	15 (30.0)	53
Transformed traditional occupational patterns (Farming etc.)	2 (4.0)	3 (6.0)	9 (18.0)	10 (20.0)	24 (48.0)	45

Note: The figures in the parentheses indicate percentage

### Perception of residents of impacts on economy:

The impacts on the economy due to tourism perceived by the locals have been elaborated in the table 5 and figure 10.

**Table 5 - Residents response- Impacts on Economy (Percentage/ Rank)**

Impacts on Economy	Major (4)	Moderate (3)	Marginal (2)	Negligible (1)	No Impact (0)	Rank
Has promoted seasonal dependency.	15 (30.0)	5 (10.0)	4 (8.0)	7 (14.0)	17 (34.0)	90
Responsible for additional income.	4 (8.0)	12 (24.0)	7 (14.0)	12 (24.0)	12 (24.0)	78
Land prices are rising beyond the resident's reach.	1 (2.0)	18 (36.0)	5 (10.0)	10 (20.0)	13 (26.0)	78
Has created low jobs for the residents and better jobs for non- locals.	7 (14.0)	5 (10.0)	2 (4.0)	9 (18.0)	22 (44.0)	56
Tourism has created more jobs for the local people.	3 (6.0)	2 (4.0)	6 (12.0)	21 (42.0)	15 (30.0)	51

Note: The figures in the parentheses indicate percentage

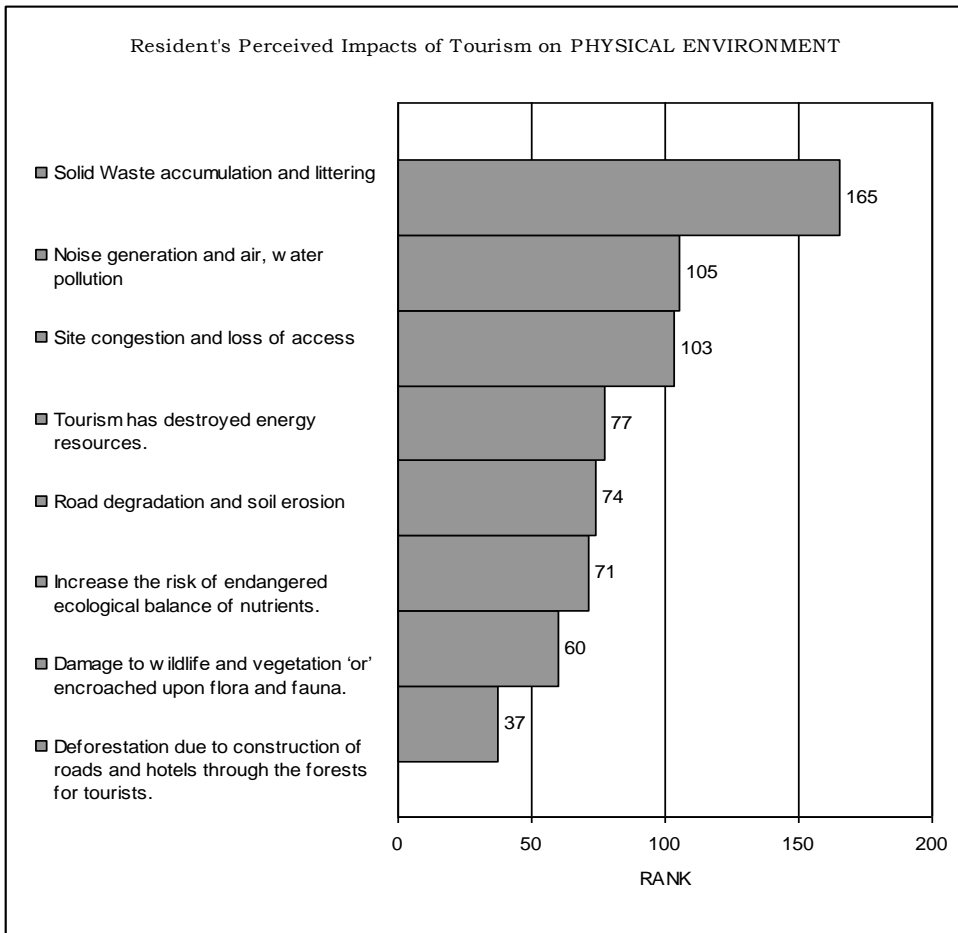


Figure - 7

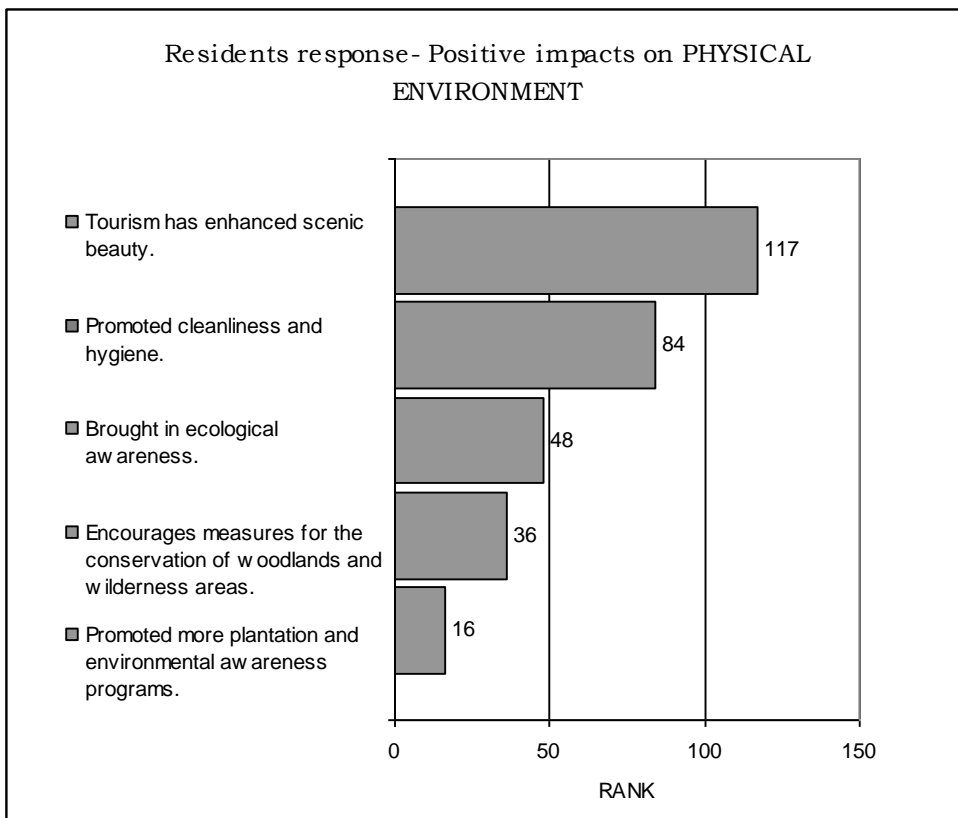


Figure - 8

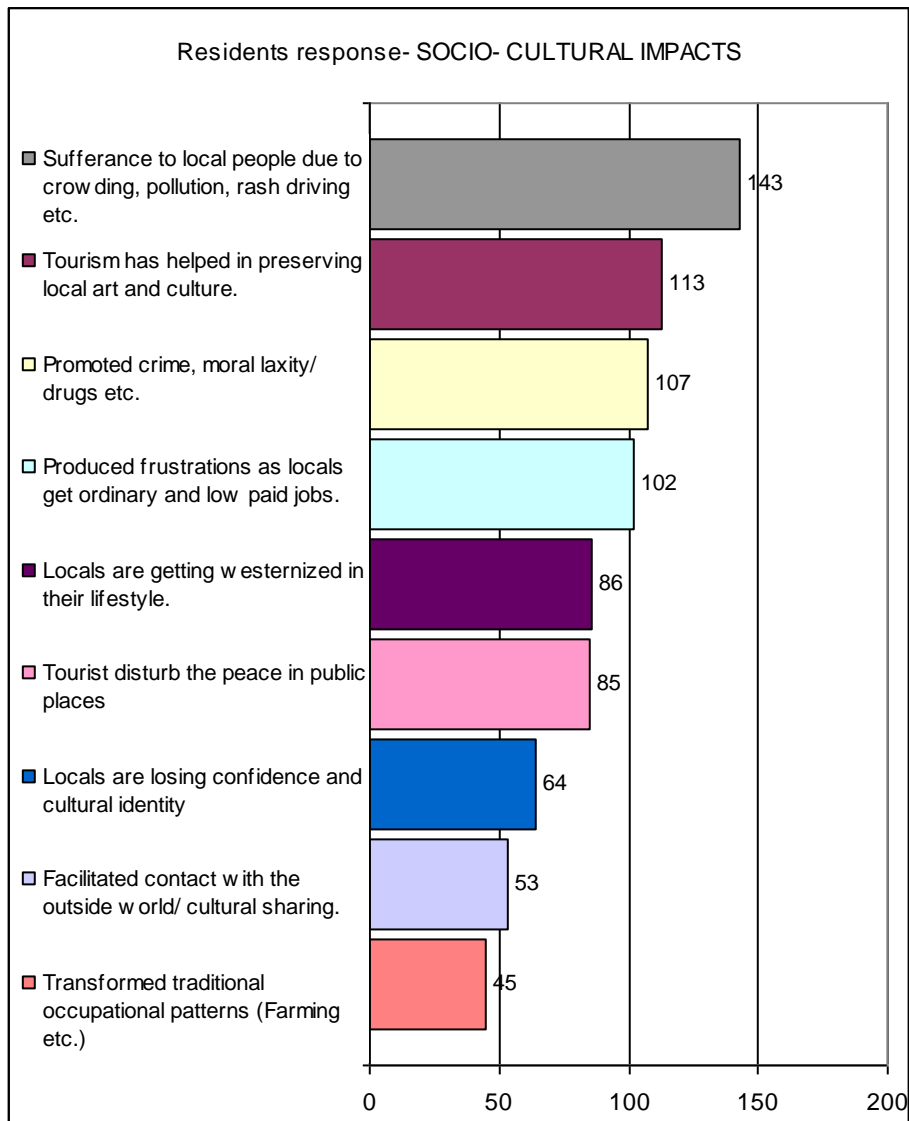


Figure - 9

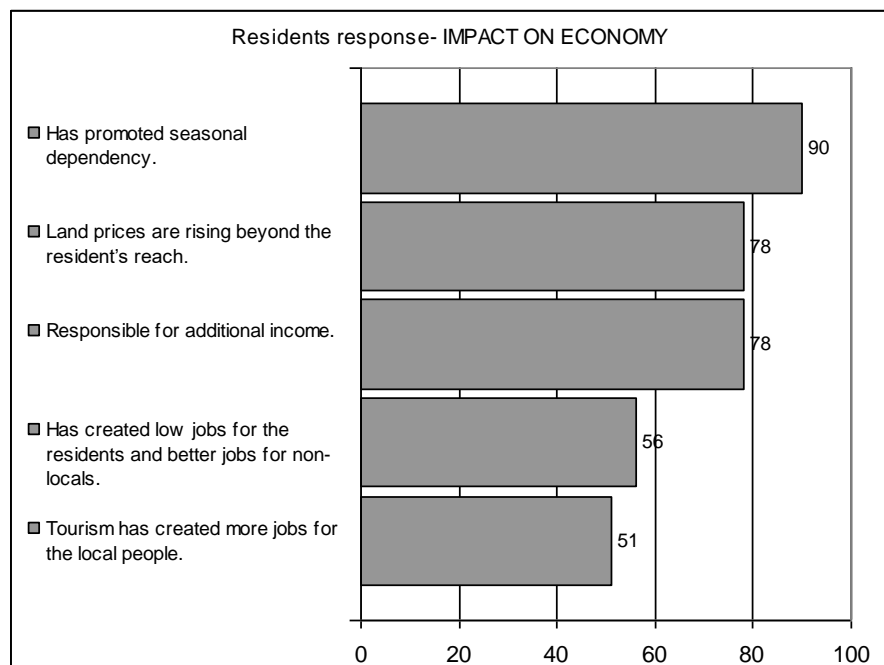




Figure - 10

**Residents interest for protection of forests and natural value of the place**

The locals are very much keen to protect the forests and the natural value of the place. Among surveyed locals, 50% of the locals are very much interested, 32% are somewhat interested and 8% were not interested. 10% of locals did not respond to the question. (Figure 11)

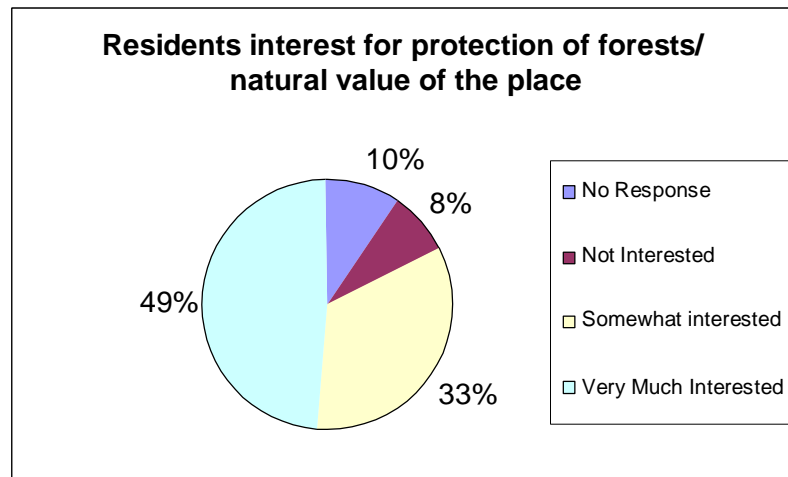


Figure - 11

**Residents interest for protection of cultural value of the place**

The locals are very much interested (62%) for the protection of cultural values of the place. The not interested group is 8%, while 6% gave no response to the question (Figure 12).

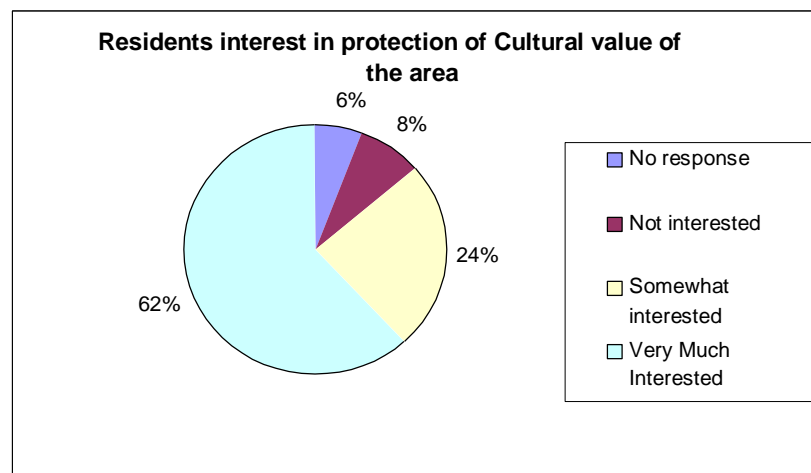


Figure - 12

**Suggestions of the locals to minimize the environmental damage in future due to development of tourism**

The ordinal ranking approach was followed for ordering the suggestions suggested by the locals to minimize the environmental damage due to tourism in the near future and the scores was assigned to each rank to rank the suggestions in order. It is significant that the sampled residents as a group valued that people’s participation to control the situation (16.39%) can help followed by Govt. short term/ long term planning can help (16.05%) and also to ban the use of plastics and other non- degradable wastes (14.16%) (Table 6).

**Table 6 - Steps suggested by the locals to minimize the environmental damages in near future due to development of tourism**

<b>Suggestions</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>Total Respo ndents</b>	<b>SCORE (%)*</b>
People action can control the situation.	16	10	9	1	4	6	1	2	49	295 (16.39)
Govt. short term/ long term planning can help.	17	10	6	4	2	3	3	4	49	289 (16.05)
To ban the use of plastics.	3	8	7	18	8	1	3	2	50	255 (14.16)
Construction of buildings/ facilities should be done under laws and regulations as fixed by the agencies	5	9	7	5	5	6	7	4	48	226 (12.55)
To regulate the number of tourists by the agencies/ Govt	4	4	10	7	6	1	6	6	44	200 (11.11)
To discourage the mass tourism	2	1	6	8	8	8	6	5	44	172 (9.55)
To provide the alternative source of energy at hotels and for transportations	3	1	3	4	5	13	9	6	44	152 (8.44)
Use of eco- friendly substances and behaviour both by tourists and locals	1	3	2	2	9	7	9	13	46	139 (7.72)

*\*The figures in the parentheses indicate percentage*

*Scores for Ranks- 1= 8; 2= 7; 3= 6; 4= 5; 5= 4; 6= 3; 7= 2; 8= 1.*

## **DISCUSSION**

The results of the survey indicate that the locals are aware about the purpose of the visit to the area by the visitors and thus, they are also aware of the tourism activities going on in the area. While commenting on the perceived impacts caused by the tourism or might occur in near future on the physical environment, there were mixed opinions on issues of ecology, ecological imbalance, damage to vegetation and fauna. The major issues of concern include solid waste accumulation and littering, loss of access during peak seasons and noise generations (during peak seasons). Many of them have expressed strongly that people's participation along with the governments short and long term planning can help to control the situation in the near future. It is very significant that they realize that people's participation is important for controlling any kind of externalities in the near future. Besides, regarding the positive impacts due to tourism on the environment, they perceived that the scenic beauty and cleanliness of the area have enhanced due to the tourism. But it is also important to mention here that the locals have no or very less knowledge of any plantation or conservation awareness programs going on in the area, thus have given low ranking to such issues. Hence, measures for the conservation and environmental programs along with the people participation should be implemented in the

area so as to avoid the impacts that might take place in the near future as perceived by the residents.

Regarding the socio- cultural impacts, it is well identified that tourism effects marked changes in the socio- cultural environment of the destination communities, particularly when the guests and the hosts have contrasting socio-economic background (Singh, 1989)<sup>8</sup>. Bhojpur's residents perceived by giving higher rank that there is strong disliking for the visitors' behaviour to spread dirt and waste, rash driving and careless drinking etc., which has also promoted the crime and alcoholism in the area. On the other positive side regarding the preservation of cultural monuments and cultural assets, they consider that tourism in the area has helped in preservation of local art and culture; this has been assigned high rank on the positive side. From the overall results on the socio-cultural impacts, it can be concluded that the major impacts like transformation of traditional occupational patterns (like farming etc.), elements of westernization in the life style and loss of confidence and cultural identity were ranked very low in order. The perception of residents that tourism is not disruptive to their traditional way of life or culture, a fact that could probably be partially explained at least on the basis that the tourists stay is usually for the day only, and their time is almost completely absorbed in visits to the sites. The residents have strongly perceived that tourism in the area has promoted the seasonal dependency in the area as most of the residents in the area are laborers and agriculturists, and they are dependent on the peak seasons of visitors for the additional income from tourism (especially during the peak seasons), also the jobs created so far are semi- skilled and low paid jobs and thus very few residents (26%) are benefiting from the tourism activities in the area.

## CONCLUSION

The study on tourism at Bhojpur attempts to capture various issues about the local perception related to the environmental impacts of tourism, which need to be addressed for the tourism-linked development of the area. The area has adequate potential for small-scale, local level tourism development and with appropriate and organized planning and implementation, conservation and economic development of the area is possible, and thus tourism can be used as a developmental tool for the area. The study also highlights the need for the implementation of conservation and environmental awareness programs, addressing the issues related to ecological imbalance and other impacts perceived by the residents, as otherwise these issues might assume an alarming proportion in the near future because the tourism in the area is likely to increase phenomenally in the near future. The environmental awareness programmes should be promoted especially when the level of education of majority of the residents have the is quite low (44% below high school). It is very significant that residents are able to realize that people's participation along with the government's action is important for controlling any kind of externalities in the near future. This has also been outlined by D' Amore (1983)<sup>9</sup>. Some of the actions suggested may be relevant for the tourism linked development of the area.

- Residents of the destination areas must be shown the socio-economic significance of the industry through promotional campaigns.
- Tourism planning should be based on overall development goals and priorities identified by the residents.
- Involve local residents in their development of tourism so that their traditions and lifestyles will be respected.
- Opportunities should be provided for broad-based community participation in tourism events and activities.
- Mitigation measures should be employed to resolve problems before any further increase occurs in tourist activity.

<sup>8</sup> D' Amore, 1983. Guidelines for planning harmony with the host community. In Murphy, P. (Ed.), *Tourism in Canada: Selected issues and options*. pp. 135- 59. Victoria BC: U. of Victoria, Western Geographical Series 21.

In addition to these guidelines, there is need for constant capacity building that will provide them opportunities for starting business at small-scale level. The youths of villages, in particular, are keen to be a part of the whole tourism venture.

However, because of the short-stay and low concentration of visitors in the core destination, the potential negative impacts from tourism in the area so far remains negligible, but the issues addressed as an outcome of the study are important for the planning sustainable tourism and sustainable development of the area.

25.

## FROM THE LANDS OF CAPTAIN FORSYTH Ecotourism bangs in Madhya Pradesh: Status report

A K Bhattacharya

### **Abstract**

*Quite remarkably Madhya Pradesh with 9.38% geographical area of the country accounts for 12.44% of the country's forests, and accounts for the largest Forest State. As the name indicates (Madhya in Hindi means 'middle') strategically, MP is located in the middle of the country and due to this often called as the 'Heart of the Country'. The State of MP covers its maximum area with a plateau streaked from the hill ranges, the Vindhya and the Satpuras. Adding to its natural beauty a range of natural rivers include Narmada, Chambal, Betwa, Mahanadi, to name a few. One-third of the State is forest land and thus offers unique and exciting panorama of wildlife, flora and related things. Various National Parks and Sanctuaries are spread over the State. Being a State of largest potential of tourism and its development, the State government is giving special emphasis on tourism. From the Tourism Policy of the State it can be interpreted that the Government gives prime importance to the infrastructure development for the development of tourism in the State. Apart from the large networks of roads, which connect the different tourism sites, various other facilities like transportation, hotels, etc. are being provided at different spots at the convenience of the tourists. Nevertheless, it would not be wrong in saying that, still after all these things, the State has not been able to exploit the tourism potential in a big way. Reasons may be manifold, but the time has ripened enough to set the direction and work on achieve the best tourism State status, as various other States in the country went far ahead in this. Here is an attempt made to peep inside this glorious State of splendour and grandeur. This paper argues that with the profound changes taking place in the recent past through various policy initiatives and others, the State has become a favourable destination worth investing in tourism and related sector.*

### **PROLOGUE**

India is one of the 12-mega diversity centres of the world and Madhya Pradesh (MP) with 9.38% geographical area of the country accounts for 12.44% of the country's magnificent forests. Within the State, 31% of the geographical area amounting to 95221 sq km is under forests. The Dry and Moist Deciduous Tropical Forests, which are abundant in the State, are extremely rich in terms of both floral and faunal biodiversity. Encompassing the rich biodiversity coupled with a range of colourful culture and heritage, the State celebrates intermittently one of the hotspots for Ecotourism as well. Arguably the State holds in its credit certain unique features in its biodiversity as well as cultural wealth, which make it a bounty of ecotourism potential territory.

MP accounts for 22% tiger population of the country. Barasingha (*Cervus duvancelli branderi*) is one species which is endemic to the State. Kanha holds the only remaining population of Barasingha in peninsular India. In 1970, these were down to only 66, but now after careful management, the population numbers about 400. These are found mainly on the meadows around Kanha village, but recently they seem to have been spreading to other areas of the Park.

As far as the floral diversity is concerned, Panchmarhi, well known hill station in the North East Provinces, from the British time onwards is virtually a junction of forest representative types prevailing in the State. It is natural junction of two most important timber species viz. Teak and Sal. The occurrence of relict population of Sal (*Shorea*

*robusta*) in the predominant teak bearing area is a unique ecological phenomenon in the biosphere reserve. Certain endemic plants like *Psilotum* are the treasures in the State. MP has the largest tribal population in India. The population of Scheduled Tribes alone accounts for about 20.27% of the total population of the State while the area covered is about 25,652 square miles, which is, approximately, 15% of the area of the State. It is said that the tribal people live in hills and forests, but the full implication of this statement is not generally understood. The coverage of forests varies from one area to the other, but it can be said that about half of the tribal area is covered with forests.

There are many important Non wood Forest Products (NWFP) found in the forests e.g. Tendu leaves or Bidi leaves (*Diospyros melanoxylon*), Sal Seed (*Shorea robusta*), Chebulic Myrobolan or Harra (*Terminalia chebula*), Gum, Chironji (*Buchanania lanzan*), flower and seeds of Mahua (*Madhuca indica*) and flowers, seeds, bark and roots of various plant species. The State is gifted with a wide variety of medicinal plants, which are sparsely distributed to the length, and breadth of the geographical area.

### THE HISTORY ECHOES

The vibrant and versatile MP has found a prominent place even in the colonial records. Captain Forsyth of the Bengal Lancers, who happened to visit the Satpura jungles of the State, found himself attracted to the unique magnetism of the area. In his own words, which later got published in a book titled, 'The highlands of the Central India', "...Altogether, the aspect of the plateau was much more that of a fine English park than of any scene I had before come across in India." Quite impressed was he after witnessing the rich natural and archaeological splendour of the State, he could not contain himself from writing a travelogue exclusively about the State. After he went back to the plains later as the deputy commissioner, Forsyth suggested that Pachmarhi be used as a sanatorium. And the Brit exodus began, a cantonment was created, churches and bungalows were built, a road network was laid, clubs came up and with them golf, horse racing, polo, tennis, snooker... , and a hill station was born.

The colonial flavour still remains in the churches and bungalows and Pachmarhi is as unspoilt as ever. There are bridle paths leading to tranquil forest glades, innumerable water falls, glens, brooks, natural pools (wonderful for an undisturbed swim), murmur of the flowing waters, groves of wild bamboo and *Jamun*, dense *Sal* forests and delicate bamboo thickets.

Interestingly the Nobel laureate Rudyard Kipling got his clue for the world famous fiction 'The Jungle Book' from an instance ostensibly taken place at Sant Bawadi village in Seoni district of MP. Beautiful geographical landscapes of the area and the behaviour of wild animals therein received a picturesque narration in R. A. Strandell's book 'Mammalia of India and Ceylon and Denizens', and this subsequently provided a strong background for Kipling's classical work. This boy, named Mogli, brought up by a herd of wolves was found in the Sant Bawadi village by Leut John Moor under the guidance of Col William Sleeman in 1831. Kipling got this flamboyant description of things both from the pamphlet titled, "An account of wolves nurturing children in their dens" by Sir. William Henry Sleeman and a book on "Camp life of Seoni" by R A Sterendale. The Jungle Book mentions a place where Sher Khan was killed. This place is in fact the Valley of Benganga River, near Kanhiwada village. At the present time, these places of historical significance are falling under the famous Pench National Park.

### THE HEART OF INDIA

MP as its name implies, lies in the heart of India. It covers an area of 3,08,000 sq. km, making it the second largest State in the country after Rajasthan, bordering seven other States - Uttar Pradesh, Bihar, Orissa, Andhra Pradesh, Maharashtra, Gujarat and

Rajasthan. MP consists largely of a plateau streaked with the hill ranges of the Vindhyas and the Satpuras with the Chhattisgarh plains to the east. The hills give rise to the main river systems - the Narmada and the Tapti, running from east to west, and the Chambal, Sone, Betwa, and Mahanadi, west to east. Intersected by these meandering rivers and dotted with hills and lakes, the State has a varied natural setting of great beauty. MP, as the Modern State, came into being in 1956; its cultural heritage is ancient and chequered.

The large State of MP is the geographical heartland of India. Most of the State is a high plateau and in summer it can be very hot and dry. Virtually all phases of Indian history have left their mark on MP, historically known as Malwa. There are still many pre-Aryan Gond and Bhil tribal people in the State, but MP is overwhelmingly Indo-Aryan with majority of the people speaking in Hindi and following Hinduism. Innumerable monuments, exquisitely carved temples, *Stupas*, forts and palaces on hilltops, raise in the visitor's mind visions of empires and kingdoms, of great warriors and builders, poets and musicians, saints and philosophers; of Hinduism, Buddhism, Jainism and Islam. India's immortal poet-dramatist **Kalidasa** and the great musician of the Mughal court, **Tansen**, were from these parts. One third of the State is forested and offers a unique and exciting panorama of wildlife. In the national parks of Kanha, Bandhavgarh, Shivpuri and many others one has the rare opportunity to see the tiger; as such, MP is often referred to as the **Tiger State** of India. A wide variety of deer, antelope and bison are also the attractions of these parks.

### THE CULTURAL HERITAGE

Customs and beliefs in each area have added colour to the fairs and festivals. Dussehra in Bastar; Shivratri in Khajuraho, Bhojpur, Pachmarhi and Ujjain; Ramnavami in Chitrakoot and Orchha, Bhagoriya in Jhabua and the annual festival of dances at Khajuraho are events for the tourists to remember. The Malwa Festival in Indore, Mandu and Ujjain, and the Pachmarhi Festival bring alive the rich folk and tribal culture of the State in colourful celebrations. Thus, MP represents a true spirit of Northern India in its colourful life and a true place to visit and to develop as an ecotourism destination State as it has all the spices of splendour visit in it.

MP is not called the 'heart of India' just because it is located in the centre of the country, but the State has also been home to the cultural heritage of four main religions viz Hinduism, Buddhism, Jainism and Islam. Innumerable monuments, exquisitely carved temples, *stupas*, forts and palaces are dotted all over the State. The natural beauty of MP is equally varied. Consisting largely of a plateau, the State has - spectacular mountain ranges, meandering rivers and an abundance of dense forests. In fact, one third of the State is forested, offering an incomparable and exhilarating panorama of wildlife in sylvan surroundings.

### THE PROLIFIC TOURISM PROFILE

The World Tourism Organisation, through the studies conducted at various levels, global, regional and national level has stated that the tourism flow globally generates a sum of Rs. 2310000 crores annually through a tourist influx of around 700 million people. The same figure for India is Rs. 13644 crores annually through the annual turn over of 2.64 million tourists. However projections for the next 2-3 years indicate that, the income generated from this will increase to a mammoth Rs. 50000 crores nationally and the employment it will create will be more than 57 million including the direct and indirect jobs, and there will be further phenomenal increase in the figures as a result of the prolific tourism growth to 1.50 billion people by the year 2020 with expected receipt of US \$ 2000 billion.

Madhya Pradesh with an annual tourism influx of around 0.11 million generates benefits equivalent to Rs 637 crores annually. Besides, the State also has special reason to cheer up, as the projection for the next 2-3 years will bring in the State of 2.69 employment

opportunities and a generated income which is quite equivalent to Rs. 2336.4 crores annually. Making an allowance for all the aforementioned facts, the State Government has already begun the work to make the most of these accruing benefits. Policy and administrative changes which have either taken place or are in the process are the cases in point.

### **DIVERSE TOURISM ZONES: A RIGHT MIX OF EVERYTHING**

A multitude of tourism activities are reportedly taking place in the State. From the world famous heritage sites to grandeur monumental structures, the State is enriched with a range of fairs and festivals. Added to its existing tourism activities are an annual pilgrimage, which is eagerly devoured by devotees largely from within and outside the State. Taking advantage to the country's largest forested areas, the State promotes the wildlife tourism as well in a bigger way. In all, approximately 20 destinations spread across the State are offered under the 'Temptation' tourist packages offered exclusively by the State tourism development corporation. The destinations are as follows:

- **Gwalior**  
A multitude of reigning dynasties, of the great Rajput clans of the Pratiharas, Kacchwahas and Tomars have left indelible etchings of their rule in this city of palaces, temples and monuments. Gwalior's tradition as a royal capital continued until the formation of present day India, with the Scindias having their dynastic seat here. The magnificent mementoes of a glorious past have been preserved with care, giving Gwalior an appeal unique and timeless.
- **Orchha**  
Its grandeur has been captured in stone, frozen in time, a rich legacy to the ages.
- **Khajuraho**  
Famed worldwide for the erotic sculptures on its temples. These breathtaking sculptures capture life in every form and mood.
- **Bhopal**  
Bhopal, the capital of MP, combines scenic beauty, historicity and modern urban planning. Bhopal today presents a multi-faceted profile; the old city with its teeming market places, fine old mosques and palaces still bear the aristocratic imprint of its former rulers.
- **Sanchi**  
The seat of Buddhist learning is famous for its stupas, monasteries, temples and pillars dating from the 3rd century BC to the 12th century AD.
- **Bhimbetka**  
Over 600 rock shelters belonging to the Neolithic age were recently discovered in this place of interest. Here, in vivid panoramic detail, paintings in over 500 caves depict the life of the pre-historic cave-dwellers making the Bhimbetka group an archeological treasure, an invaluable chronicle in the history of man.
- **Indore**  
The commercial centre of MP, this bustling city has rare monuments built by the Holkar dynasty.
- **Ujjain**  
Ujjain is the site of the Kumbh mela, the largest religious congregation in the world. It is also known as the temple city. Modern Ujjain is situated on the banks of the river Shipra, regarded since times immemorial as sacred.
- **Omkareshwar**  
This place is a sacred island at the confluence of two rivers, Narmada and Kaveri, shaped like the holiest of all Hindu symbols, Om. At the confluence of the rivers, the devout gather to kneel before the Jyotirlinga (one of the twelve throughout India) at the temple of Shri Omkar Mandhata.



- **Narmada**  
This ancient city is also mentioned in the epics Ramayana and Mahabharata. It is renowned for its bathing ghats and the famous Maheshwari sarees.
- **Mandu**  
Each of Mandu's structure is an architectural gem; some are outstanding like the massive Jama Masjid and Hoshang Shah's tomb, which provided inspiration to the master builders of the Taj Mahal centuries later.
- **Amarkantak**  
Amarkantak is a great pilgrim centre for the Hindus, and is the source of the rivers Narmada and Sone.
- **Bhojpur**  
Founded by the legendary Parmar King of Dhar, Raja Bhoj and named after him, Bhojpur, is renowned for the remains of its magnificent Shiva temple and Cyclopean dam.
- **Chanderi**  
A crafts centre famous for its sarees and boracades. Chanderi was an important military outpost, prized by rulers with power or ambition.
- **Chitrakoot**  
Chitrakoot's spiritual legacy stretches back to legendary ages: it was in these deep forests that Rama and Sita spent eleven of their fourteen years of exile; here that the great sage Atri and Sati Anusuya meditated. A place with tranquil forests, rivers and streams.
- **Pachmarhi**  
This city is MP's most verdant jewel, a place where nature has found exquisite expression in myriad enchanting ways. Pachmarhi is also an archeological treasure-trove. In cave shelters in the Mahadeo Hills is an astonishing richness of rock paintings.
- **Shivpuri**  
This city is steeped in the royal legacy of its past, when it was the summer capital of the Scindia rulers of Gwalior.

Thus, MP provides an ideal ecotourism destination site for the visitors to the State as it has all types of tourism blended in it, archaeological (Khajuraho), wildlife (NPs), adventure, etc. In addition to it, MP is culturally endowed with spectacular fairs and festivals on its land. Both the State government through its tourism department and various organisations as well as individuals of different walk of life are promoting the annual events of cultural importance. Indeed, this is been symbolises the rich cultural heritage of the State and the tradition is progressing.

### ***The treasure of festivals***

Festivals are the time that bring colour and add pleasure to one's life. The State of MP can be seen enjoying in the colours of the festivities that take place throughout the year in various parts. They are in the form of the traditional festivals as well as fairs that are organised by various bodies. Some of the festive attractions of the State are as follows :

- Festival of Dances, **Khajuraho** - *Indian Classical Dance Performances*
- Akhil Bhartiya Kalidas Samaroh, **Ujjain** - *Literary Presentations along with Dramas and Indian classical programmes.*
- Tansen Sangeet Samaroh, **Gwalior** - *Indian Classical Vocal and Musical performances*
- Dhruwad Samaroh, **Bhopal** - *Vocal performances of Dhruwad Style of Indian Classical Music*
- Chakradhar Samaroh, **Raigarh** - *Indian Classical Dance and Music*
- Ameer Khan Festival, **Indore** - *Indian Classical performances*

- Rashtriya Hindi Natya Samaroh, **Bhopal** - *Hindi's Best Dramas' Performances*
- Pachmarhi Utsava, **Pachmarhi** - *Indian Folk Arts' Performances*
- Mandu Utsava, **Mandu** - *Indian Classical Music Performances*
- Orchha Utsava, **Orchha** - *Indian Music Performances*
- Keshav Jayanti Samaroh, **Orchha** - *Literary Presentation*
- Alauddin Khan Vyakhyanmala, **Bhopal** - *Lectures Based on Indian Classical Music*
- Bhavbhuti Samaroh, **Gwalior** - *Sanskrit's Literary Programmes*
- Malwa Utsava, **Ujjain and Indore** - *Folk Arts and Indian Classical Music*
- Makhanlal Chaturvedi Samaroh, **Jabalpur** - *Literary Programmes*
- Lokrang Samaroh, **Bhopal** - *Indian Folk Arts' Presentation and Performance*
- Pt. Kumar Gandharva Samaroh, **Dewas** - *Indian Classical Music Performances*
- Shankari Samaroh, Different Parts of MP - *Sanskrit Literary Programmes*
- Kabir Samaroh, Different Parts of MP - *Folk arts, Music, Dances and Literary Programme*
- Rashtriya Alankaran Samaroh, **Bhopal** - *Distribution of Cultural Awards Instituted by the Government of MP*
- Krishna Rao Shankar Pandit Samaroh, **Gwalior** - *Indian Classical Music Performances*
- MP Sangeet Samaroh, Different Centres of MP
- Nimar Utsava, **Maheshwar** - *Indian Folk and Classical performances*
- Bharat Bhawan, **Bhopal** - *Various Folk, Arts Exhibition and Performances throughout the year*
- Film Festival, **Bhopal** - *Films from India and Abroad*
- Lata Mangeshkar Samaroh and Award Ceremony, **Indore** - *National Level Light Musical Performances*
- Bhagoria Haat, **Jhabua**: *This colourful festival of the Bhils and Bhilalas, particularly in the district of West Nimar and Jhabua, is actually in the nature of a mass svayamvara, a marriage market, usually held on the various market days falling before the Holi festival in March*
- **Khajuraho** Festival of Dances: *This festival draws the best classical dancers in the country who perform against the spectacular backdrop of the floodlit temples, every year in February / March. The finest exponents of different classical Indian styles are represented - Kathak, Bharatnatyam, Kuchipudi, Odissi, Manipuri, and many more.*
- **Tansen** Music Festival: *More than a monument, the Tansen Tomb is a part of Gwalior's living cultural heritage. It is the venue of the annual Indian classical festival held in November-December. Renowned classical singers of the land regale audiences through five mesmerising night-long sessions of the much-loved classical ragas.*

### **The fairy fairs**

The State has been gifted with a tradition of fairs, which mark the prospects and progress achieved. Notwithstanding the religious nature of these fairs, people have attended it traditionally from different walk of life. Few of these fairs, which perhaps date back to the

18<sup>th</sup> century, still celebrated with much fanfare are, are listed below with the corresponding locations.

<b>Fair</b>	<b>Region</b>
<i>Jageshwari Devi</i>	<i>Chanderi (Guna)</i>
<i>Garibnath Babu</i>	<i>Avantipur, Barodia (Shajapur)</i>
<i>Kana Babu</i>	<i>Sadalpur (Hoshangabad)</i>
<i>Dhamanu Urs</i>	<i>Hastan Shah Mosque (Sagar)</i>
<i>Nagajee</i>	<i>Porsa (Morena)</i>
<i>Hira Bhumiya</i>	<i>Gwalior</i>
<i>Ramleela</i>	<i>Gwalior</i>
<i>Pir Budhan</i>	<i>Shivpuri, Sanwra</i>
<i>Tejajee Fair</i>	<i>Bhamawad, Guna</i>
<i>Mahamritunjya</i>	<i>Aahate, Rewa</i>
<i>Chamti Devi</i>	<i>Ghaghra Gao, Sidhi</i>
<i>Baha Sahabuddin</i>	<i>Neemuch, Mandsour</i>
<i>Kalujee Maharaj</i>	<i>West Nimar</i>
<i>Sinnajee</i>	<i>West Nimar</i>
<i>Mandhatta</i>	<i>East Nimar</i>
<i>Rajjim Fair</i>	<i>Rajjim, Raipur</i>

## IMMENSE ECOTOURISM POTENTIAL

### ***The fascinating biodiversity***

India is one of the 12-mega diversity centres of the world. Quite remarkably MP with 9.38% geographical area of the country accounts for 12.44% of the country's forests. Within the State 31% of the geographical area amounting to 9.5 million hectares is under forests. The Dry and Moist Deciduous Tropical Forests, which are abundant in the State, are extremely rich in terms of both floral and faunal biodiversity. These rich biodiversity coupled with a range of colourful culture and heritage, the State celebrates intermittently one of the hotspots for Ecotourism as well. Arguably the State holds in its credit certain unique features in its biodiversity as well as cultural wealth, which make it a bounty of ecotourism potential territory.

MP has got approximately 1026 Tigers, which account for 22% tiger population of the country. Barasingha (*Cervus duvancelli branderi*) is one species, which is endemic to the State. Kanha holds the only remaining population of Barasingha in peninsular India. In 1970 these were down to only 66, but now after careful management, the population numbers about 400. These are found mainly on the meadows around Kanha village, but recently they seem to have been spreading to other areas of the Park.

As far as the floral diversity is concerned, Pachmarhi, well known hill station in the North East Provinces, from the British time onwards is virtually a junction of forest representative types prevailing in the State. It is natural junction of two most important timber species viz. Teak and Sal. The occurrence of relict population of Sal (*Shorea robusta*) in the predominant teak bearing area is a unique ecological phenomenon in the biosphere reserve. Certain endemic plants like *Psilotum* are found in the State.

MP thus has enormous potential for Ecotourism, as it is rich in its natural diversity, cultural heritages and civilization and traditions. But so far the ecotourism potential of the State has not been explored to its point as it carries in it.



**The nowhere else wildlife**

<b>National Parks</b>	<b>Wildlife Sanctuaries</b>		
1. Bandhavgarh	1. Bori	10. Chambal	19. Son Ghariyal
2. Fossil (Dindori)	2. Bagdara	11. Nauradehi	20. Sardapur
3. Kanha	3. Phen	12. Pachmari	21. Sailana
4. Madhav	4. Ghatigaon	13. Panpatha	22. Ralamandal
5. Panna	5. Gandhisagar	14. Kuno	23. Orchha
6. Pench	6. Karera	15. Pench	24. Gangau
7. Sanjay	7. Ken Ghariyal	16. Ratapani	25. Durgawati
8. Satpura	8. Kheoni	17. Sanjay Dubri	
9. Vanvihar	9. Narsinghgarh	18. Singhori	

One-third of MP is forested. The State offers a unique and exciting panorama of wildlife in sylvan surroundings. Spectacular mountain ranges, meandering rivers and miles and miles of dense forests are on offer for those who visit the State.

The immediate jungle plan for the tiger country and other such attractions are part of the State's wildlife promotion drive include developing new areas in the State. The State is also serious about the future development of Kanha and Bandhavgarh National Parks, which can arguably be recognised MP's pride.

- **Bandhavgarh National Park:** One can be almost certain of seeing a tiger in this region. The density of the Tiger population at Bandhavgarh is the highest known in India. This is also White Tiger country.
- **Kanha National Park:** Kanha's Sal and Bamboo forests, rolling grasslands and meandering streams stretch over 940 sq km in dramatic natural splendour which form the core of the Kanha Tiger Reserve created in 1974 under Project Tiger. The park is the only habitat of the rare hard ground Barasingha (*Cervus duvancelli branderi*).

**More to offer - potential ecotourism sites**

The various destination areas, which carry the ecotourism potential, have been listed below which have the potential to be developed as the ecotourism destination points. The following are listed some of the Sites in MP which have an enormous potential for the development of the Ecotourism sites.

<b>DESTINATION</b>	<b>TOURISM INTEREST</b>
<i>Ratapani WLS (Obedullahgunj)</i>	<i>Nature, Historical</i>
<i>Panna NP and adjoining Forests (Panna)</i>	<i>Nature, Historical, Religious, Adventure</i>
<i>Pench WLS and Sakta Rukhad Forests (Seoni)</i>	<i>Nature and wildlife</i>
<i>Noradehi WLS (Sagar)</i>	<i>Nature and wildlife</i>
<i>Rani Durgawati WLS (Damoh)</i>	<i>Nature and wildlife, Historical</i>
<i>Satpura NP and Bori WLS (Hoshangabad)</i>	<i>Nature and wildlife, Religious, Adventure</i>
<i>Sanjay NP (Sidhi)</i>	<i>Nature and wildlife</i>
<i>Betul Forests (Betul)</i>	<i>Nature</i>
<i>Buffer zone Forests of Kanha Tiger Reserve (Mandla)</i>	<i>Nature</i>
<i>Ralamandal WLS (Indore)</i>	<i>Nature and wildlife</i>
<i>Kheoni WLS (Dewas)</i>	<i>Nature and wildlife</i>

In addition to the above list, MP provides an excellent blend of nature, adventure and wildlife tourism. The major attractions of these blend can be had from the variety of identified places of interest.

### **The unique features**

MP, with an infinite number of heritage sites, coupled with extensive natural flora and fauna, MP easily works out to be an adventure tourism and art and culture tourism destination. With wildlife being an essential element of the State, and around one-third of the State forested, the State has a lot to offer in wildlife tourism, which can be termed as the State's USP.

- MP has got approximately 1026 tigers, which account for 19% tiger population of the world.
- Barasingha (*Cervus duvancelli branderi*) is one species that is endemic to the State.
- Occurrence of relict population of Sal (*Shorea robusta*) in the predominant teak bearing area of Pachmarhi is a unique ecological phenomenon.
- Many endemic species, like *Psilotum nudum*, a very rare and primitive plant commonly known as whisk fern are found only in Pachmarhi area.

Apart from announcing its heritage policy, and hosting various road shows across the country, the government of MP has put in place the State's eco and adventure tourism policy, declaring itself as a 'wildlife and adventure Tourism State'.

The State aims to position itself as a '**wildlife**' destination, especially as the '**Tiger State**' both in the national and international arena.

Disclosed an official from the State tourism department: "Today's tourists are not content with cultural or religious tourism alone - what one looks for is some thrill, fun, adventure and something other than the routine. So, in keeping with this change of attitude in tourists, the State government has decided to actively promote Ecotourism and adventure tourism. Further, to popularize and develop these forms of tourism, the government is for the first time seeking participation of private investors. Adventure tourism provides tourists a special thrill whilst participating in sporting activities like river rafting, trekking etc. MP with its rich natural flora and fauna, unexploited so far, has immense potential for such sports."

### **The ambient Infrastructure**

Infrastructure is an absolute necessity for any tourism activity, no matter how minimal it is. MP State also realised this aspect quite early and has taken initiatives already in this direction by involving different stakeholders. Destination specific activities and infrastructure has been promoted over the period of time. An excerpt of the destinations and activities are given below with the specific tourism category.

### **The versatile destinations and vibrant activities**

<b>The versatility</b>	<b>Places of Importance</b>	<b>Facilities</b>
<b>Cultural Tourism</b>	Gwalior, Orchha, Khajuraho, Sanchi, Mandu.	Heritage Hotels, Museums, Craft Villages.
<b>Wildlife and Adventure Tourism</b>	Pachmarhi, Kanha, Bandhavgarh, Panna, Satpura, Pench Valley National Parks, Tigr Lake (Gwalior), Upper Lake (Bhopal), Gandhi Sagar (Mandsaur).	Log Huts, Camping Grounds, Trekking, Water-Sports, Aero-Sports, Angling, Cruises, Caravans, Tents etc.
<b>Leisure and</b>	Pachmarhi, Khajuraho, Bhopal, Gwalior, Indore, Mainpat, Tamia,	Convention Centres, Exhibition Grounds, Shopping, Evening

<b>Business Tourism</b>	<i>Jabalpur etc.</i>	<i>Entertainment, Golf Courses, Country Clubs, Weekend Getaways etc.</i>
<b>Pilgrim Tourism</b>	<i>Ujjain, Maheshwar, Omkareshwar, Chitrakoot, Amarkantak, Rajim, Sanchi, Bhopal, Orchha etc.</i>	<i>Budget Accommodation, Day Shelters, Cafeterias etc.</i>

Recently, as part of the Tourism Policy, the Government has declared special package of incentives for the tourism industry. These incentives will be available for private entrepreneurs for infrastructure development activities.

**Hotels, Motels and Restaurants:** The MP government has amplified its tourism drive by attracting bids for development from private sector in the area of hospitality investment. Inviting the hospitality industry to invest in the State is one of the most important plans of action that MP tourism has identified. The State government has also shorted-listed locations that could attract hospitality investment.

The investment covers of the hospitality segment would be in heritage hotels, health farms, recreation centres, ropeways, golf courses, museums, amusement parks, craft villages, convention centres, and all other bonafide tourism-related activities recognised by the government.

Subsequently, hospitality giants of the country have also evinced interest in investing into the hotel sector of the State. Revealed Jamshed S Daboo, chairman, CII tourism sub-committee, western region, and chief operating officer-leisure hotels, Indian Hotels Company Limited (IHCL): "The State has got tremendous potential in the area of tourism, so IHCL would definitely look at investing in the region in the near future. The avenues, which the State has to offer for hospitality investment, are worth exploring."

Highlighting the potentials and plans with respect to **tourism and infrastructure development**, the State has identified the hospitality industry as one of its prime movers in strengthening the tourism position of the region.

Instead of depending on its limited resources, the State government has decided to open up this sector for private participation for optimum utilisation of these natural resources. While on one hand, with these efforts, the government hopes to attract tourists in larger numbers, on the other hand, it is expected that it would help in generating greater demand for local products, and creating new employment avenues for local communities.

In order to attract private participation, the State government has finalised a set of simplified guidelines that are hassle free and would make it easy for entrepreneurs to conform with.

### **The ecotourism breakthroughs**

#### ***The Strengths***

MP, because of its central location in India, has remained a crucible of historical currents from North, South, East and West. Rich archaeological wealth has been unearthed in various parts of the State throwing light on its history. Its central location makes MP a strategic hub with so many logistical advantages.

- MP is highly benefited from its strategic location as the central part of the country. It is very well connected both by the road, rail and air to any important destinations in the country.
- MP is one among the largest producer of minerals, agricultural and forest produces and is ideal for modern biotech industries.

- MP is an ideal tourist destination from the viewpoint of hospitality industry - with two world heritage sites of Khajuraho and Sanchi and several other major monuments in addition to some major tiger reserves and spots for adventure and eco tourism. It caters a tourism package blended with various cultures, traditions, festivals, fairs and wildlife and archeological attractions
- MP has the advantage of promoting a Composite Tourism Package, as the State is gifted with sites worth Wildlife tourism, Cultural tourism, Archaeological tourism, Natural Tourism, Indigenous tourism, so on and so forth.
- MP dotted with 19 Industrial Growth Centres is home to a large number of companies. Well-developed industries base is available at attractive prices and a package of incentives.
- The infrastructure advantage in MP include the strongest Optical Fibre backbone at every district headquarters, a network of roads, railways and regular air services connecting Bhopal, Indore and Gwalior with rest of the country.
- MP is building a road network that can be compared to the best in the country. This network of over 10,000 kms of road taking care of 90 percent of traffic in the State is being completed on war footing in two years time.
- MP has some of the finest educational institutions in disciplines like IT, management electronics, hospitality, law, forest management etc. New institutions in hi-tech area like biotech and microbiology are on the anvil in the State.
- MP is profited by an efficient and responsive administration.
- Striving for a growth at par with any developed States, MP offers a variety of incentives and concessions for the investors.
- On top of it all the State over the period of time developed a congenial atmosphere for the growth and development of tourism. A special policy framework that supports the tourism activity with administrative as well as legal mechanism is put in place. A separate Ecotourism policy, which will focus on the ecotourism development of the State, is on the offing.

### **THE GRAY AREAS**

- The poor network of road communication, both between and outside different tourism locations.
- Lack of adequate and appropriate infrastructural facilities, pulls the State back from utilising its tourism potential in its maximum.
- A concerted effort from different departments and agencies that are the stakeholders in tourism promotion is lacking.
- Involvement of the community should also be ensured, as this is one important aspect one cannot do away with.
- Comparing to other States in the country, which had achieved grand success in Tourism, MP is disadvantaged with a comprehensive promotion campaign targeting both the domestic as well as foreign tourists.
- Lack of funds to the government for the development of sustainable tourism in the State.
- Lack of efficient manpower and technical staff in the field of tourism development.



- Lack of special incentives and packages for the tour and travelling in MP.

## **FUTURE STRATEGY**

### **The enabling environment**

From being the first-ever State in the country to announce its exclusive heritage policy, to that of conducting the first road show in the Capital and other metropolises in India, MP tourism has arrived with a bang. Marketing its product as 'Mystic MP' the State has firmly declared its presence on the tourism map of India. Consequently, the MP State Tourism Development Corporation (MPSTDC), the official body and tourism facilitator of the State, in association with the local CII representation, with the support of the MP State government and other State tourism and hospitality bodies and associations have formulated concrete plans to position the State as a world class tourism destination in India.

### **Progressive policies and administrative framework**

Keeping in sync with the global trend on environmental consciousness, the North-Eastern States of Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura are coming together to form a joint ecotourism policy shortly. On a similar eco-focus, like other States of Kerala, Karnataka, Maharashtra, Andhra Pradesh, Bihar, Rajasthan, Delhi and Tamil Nadu, MP is extensively working towards incorporating ecotourism as a vital approach for tourism and hospitality industries in the respective existing tourism policies.

Subsequently, the State Government in its new Ecotourism Policy has provided the much needed focus on the development of Ecotourism in the State. The State Government revealed, "In order for the State to grow as a leading domestic and international tourist destination, it needs to work in tandem to promote its greatest asset - Ecotourism."

### ***Ecotourism sets a goal in the New Forest Policy***

Setting things upright, the State of MP had recently come out with a new policy on forests called the MP Forest Policy- 2004. Ecotourism gets a very special mention in this policy which apparently reflects the acknowledgement of the State on its awesome potential. Reiterating the participatory approach in the forest management, the new policy finds ecotourism as a tool for better management of the forest resources with a constructive participation from the forest dependent communities. Highlighting the inherent advantages of the ecotourism explicitly, the new forest policy places the need for preparing area specific Ecotourism Management Plans at each region of the State. Evolving a permanent mechanism with appropriate participation from the stakeholders of different kind is the basic idea underlying this policy initiative. Sustaining the tourism interests of the visitors the policy proposes a composite package of experiences in the form of interpretation centers, better infrastructure so and so forth.

### ***The liberal Tourism Policy***

In a bid to expedite the development of tourism in MP, the State government has a proactive tourism policy in place since 1995. The new tourism policy envisages creation of an environment conducive to attracting increased private investment in the tourism sector, and a more meaningful role for the government. The policy has also conceptualised the strategy for development, wherein the focus shall be on the following areas:

- Improvement and creation of adequate basic infrastructure.
- Upgradation and augmentation of accommodation, catering and recreational facilities.
- The stepping up of transport facilities.
- Marketing of destinations to ensure optimal use of infrastructure.

- Evolving suitable policies for increasing foreign exchange earnings.
- Promotion of traditional arts and crafts of the State.

### ***Divergent Eco and adventure tourism policy***

Ecotourism, which primarily connects conservation with the economic development, has got special recognition in MP. Considering the unique and abundant forest resources, the State found that the scope for Ecotourism is tremendous at par or even better than various other States in the country. This acknowledgement received administrative as well as legal support through the adoption of a new policy framework, which is called, the Eco/Adventure Tourism Policy 2001-02. Welcoming the large-scale private participation the policy enumerates the proactive role of government and its various departments in exploiting the ecotourism potential of the State. Adventure tourism, which is perhaps an ingredient in the ecotourism, got special emphasis in the policy, as the State have incredible prospects in that. Despite the fact that, it opened up a wide spectrum of opportunities and options for the private entrepreneurs, the policy evidently restricts the magnitude of those activities just to avoid all those adverse impacts.

### ***Newer horizons in new ecotourism policy***

The MP Forest Department, being the custodian of the largest forest resources in the country is also coming out with an exclusive comprehensive policy on Ecotourism. The new ecotourism / nature tourism policy of the government focuses on reorienting the forest staff as well as the forest community in order to enable them in popularizing the concept of nature based tourism. The policy indeed identifies the various options and activities, which are required for the implementation of ecotourism. While listing out all the possible activities, the policy demands for equally worth infrastructural facilities as well, which suits to the requirements of the tourists of different categories? Taking a cue from the examples of various State Forest Departments, which had already become successful in the ecotourism initiative, the government through this policy wishes to bring in a range of benefits in the form of improved conservation, securing the economic development of the forest communities and accelerating the progress among them.

## **STRATEGY FOR ECOTOURISM DEVELOPMENT**

In order to promote ecotourism as a tool for sustainable development, the focus shall be on the following areas:

- Improvement and creation of adequate basic infrastructure - land, roads, water, electricity etc.
- Upgradation and augmentation of accommodation, catering and recreational facilities.
- Augmentation of transport facilities.
- Marketing of destinations to ensure optimal use of infrastructure
- Evolving suitable policies for increasing foreign exchange earnings.
- Promotion of the arts and crafts of MP.

## **ROLE OF THE STATE GOVERNMENT**

The State government will confine its efforts to infrastructural development like ensuring uninterrupted electricity, water supply and provision of basic medical facilities. It will also be responsible for dissemination of information, organisation of festivals and interdepartmental co-ordination to create conditions for attracting private sector investment for the tourism sector. For this, it will provide fiscal incentives, assist in providing suitable sites and remove bottlenecks, especially those connected with infrastructural development.

## **INCENTIVES**

A special package of incentives for the tourism industry has been prepared. These incentives will also be available for private entrepreneurs for any of the following activities:

- Hotels, Motels and Restaurants.
- Heritage Hotels, Health Farms, Recreation Centres, Ropeways, Golf Courses, Museums, Amusement Parks, Craft Villages, Convention Centres, and all other bonafide tourism related activities recognised by the government.
- A/c Luxury Coaches, A/c Mini Buses, and imported Limousines purchased by registered tour operators for tourist transport.
- Activities connected with adventure tourism, such as hang gliding, para- sailing, river rafting, boating, trekking, rock climbing etc.

**Special incentives are as follows -**

### **Land**

1. Government land will be offered with the approval of the Empowered Committee as equity participation on behalf of the Government at current market value for setting up Joint Ventures.
2. The companies thus formed who are given any kind of Government land will be expected to complete the project within a period of three years from the date of transfer of land, failing which the land will revert to the Government. The company will not be allowed to transfer the land to anybody else, or use it for any purpose other than that for which it is allotted.
3. For construction of approved category hotels, etc. in the urban areas, exemption under Section 20 of the Urban Land Ceiling Act will be made available on a case-to-case basis as decided by the Empowered Committee.

### **Luxury Tax**

New projects shall be exempt from Luxury Tax for ten years from the date of commencement of commercial operations.

### **Sales Tax**

New projects shall be exempt from Sales Tax for ten years from the date of commencement of commercial operations.

### **Entertainment Tax**

Entertainment Centres will be exempt from Entertainment Tax for ten years from the date of commencement of commercial operations.

## **EPILOGUE**

Without having an enabling environment, the efforts for achieving development will never find the fruits. It requires a class of visionaries and energetic lot both in the governance and administration. MP, though a little rearward industrially, has found enough reasons for the apparent dull growth. Understanding the available resources, its worth and utilising it sensibly and successfully requires a quantum of confidence. And confidence emanates from an environment, which is promising and vibrant. In MP the environment has ripened enough to have a wide range of investments, especially in the sector of tourism. Ecotourism, which can be a solution for a wide variety of problems receive a boost from the State in the form of policy initiatives. These policies are demanding to create a range of facilities in the form of legal and administrative support as well as infrastructure development, which in turn can provide an atmosphere where the ecotourism can flourish. Diversity within the diversity makes MP different from others States in the country. The State is in its surge ahead for utilising these unique resources by promoting ecotourism in the big way and long way.

26.

## ECOLOGICAL INFRASTRUCTURE DESIGNING FOR SUSTAINABLE ECOTOURISM

A K Bhattacharya and Muhammed Nahar J

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### **Abstract**

*Ecotourism merges tourism to the conservation of natural resources along with preserving the intricacies of local culture. It not only provides economic incentives to the local people but also a substantial reason for policy makers to attempt a holistic approach towards nature conservation. A much deeper analysis of similar issues is sought through this article, where the attempt is made to understand the complexities and considerations underpinning the development of ecotourism plan of an area. There are various factors that need to be addressed before developing the necessary infrastructure for the ecotourism purpose. For sustainable ecotourism it is essential that the infrastructure designing should adopt the ecosystem approach and be based on the principles of the conservation, education (demonstration), low energy consumption, low impact and the ecological sustainability. The article broadly discusses all these issues.*

### **INTRODUCTION**

Taking into consideration the current demand for ecotourism destinations, it is crucial that the design and development of ecotourism facilities place the integrity of the given ecosystem as a top priority. It is important to note that the ecotourism industry is currently at a crossroads in its development. In the last decade, it has generated much revenue for local and regional economies worldwide, provided new incentives for governments and local communities to preserve protected areas and species, and heightened over-all local awareness of the importance of conservation. Unfortunately, it has also led to numerous problems, and placed undue pressures and threats on the natural and cultural resources that sustain it. From these often-costly lessons, we are learning that the benefits of ecotourism can only be sustained through well-planned and carefully integrated projects.

Infrastructure refers to systems in place, which allow for the efficient functioning of a business activity or concentration of people. One of the early but still often heard arguments is that this industry can be built on existing infrastructure. An important task in development planning is to determine infrastructural capacity and expected demands before proceeding with physical development. Infrastructure technology has progressed from ground-based systems to include satellite telecommunications. Infrastructural improvements are generally very expensive undertakings and often deemed the responsibility of the government.

A new approach to architecture and physical facilities planning is needed, not only in tourism, but in all human activities, if we are really going to stop the irreversible damage to the environment, further pollution, and depletion of energy sources. This new approach should be based on the concept of **eco design**, which may be defined as “any form of design that minimizes negative environmental impacts, by integrating itself into the surrounding ecosystem” (Ceballos-Lascurain, 1997)<sup>2</sup>.

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<sup>1</sup> [http://www.enterprisens.org.nz/publications/other/2003/Massey\\_report.pdf](http://www.enterprisens.org.nz/publications/other/2003/Massey_report.pdf)

<sup>2</sup> Ceballos-Lascurain H, 1997. Tourism, Ecotourism, and Protected Areas: The state of nature-based tourism around the world and guidelines.

Tourism facilities should be particularly designed in an environment-friendly way, since these are frequently located in areas of great scenic beauty and ecological significance. Application of appropriate waste treatment methods and the use of alternative energy sources (especially in remote locations) are especially important items to be considered for effective infrastructure designing for ecotourism. Physical facilities should be technologically viable and adequate, and also socially acceptable and economically feasible. Joint ventures, communication and working with funding agencies can assist with addressing the expense of technologies. Physical planning and building (planning for expansion) should always be long term endeavours.

### **Infrastructure in Ecotourism: How far they are significant?**

The activity of creating shelter is one of the most ancient of the human races' activities. So the built form of any culture reflects its deepest roots as well as its current direction. A tourism product that can sensitively recognize this, work within it or complement it, will guarantee a unique product that is attractive to the traveling customer. Accommodation and facilities of an eco-tourist operation set the tone for the guest experience. It is essential that the facilities are well planned and designed in all respects and that they inform, and are informed by, the operations of the property and are harmonious with the culture and natural landscape of their environment.

Generally the ecotourism structure should be a composite mixture of contemporary, vernacular and historical building forms. Most importantly it has to conceive the idea of 'low density' and 'low impact facility'. The structure which is been proposed for the tourism activity should be constructed in such a way that, the damage to the natural resources would be minimum both in the short as well as long run. The basic idea is to give emphasis on 'ECO' in the Ecotourism. The educational, cost and design factors of the built structure are also quite important. Options such as utilizing the existing structure with adequate modifications or new structures with minimal impact would be more preferable. Existing structure has the advantage of its representative value with the past and hence it should get promoted.

The structures and constructions should be reckoned with the most minimum facilities and should be in the lines of the existing architecture of the area. Invariably the cost factor will also play as a guiding force in the whole activity. The table below encompasses few of the model types under various categories, which one can think of for ecotourism infrastructures.

<b>Vernacular building types</b>	<b>Historical building types</b>	<b>Contemporary Structures</b>	<b>Portable and low impact structures</b>
Indigenous structures, Grass huts, Mud structures, Caves, Elevated halls, House boats, Reed platforms and building, Yarts, Tree platforms, Ice houses, Cliff dwellings, Stick houses, etc	Developed vernaculars, colonial architecture, residentially derived styles, commercially developed styles, Military architecture, etc	Prefabricated structures, Masonry, Glass fibre. Traditional tourism, Cottage colonies, Inns, Guest houses, Homes, etc	Rigid tents, Collapsible tents, Elevated huts, Inflatable structure, etc.

*(Adapted from the Weaver 2001)<sup>3</sup>*

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<sup>3</sup> Weaver B David, 2001. The Encyclopedia of Ecotourism, ed, CABI Publishing, USA.

## **Sustainability: A Contested Theme**

In the contemporary world, the word sustainability is often seen quoted. Put in simpler terms, sustainability is providing for the best for people and the environment both now and in the indefinite future. In the terms of the 1987<sup>4</sup> Bruntland Report, sustainability is: "*Meeting the needs of the present generation without compromising the ability of future generations to meet their needs.*" This is very much like the "seventh generation" philosophy of the Native American Iroquois Confederacy, mandating that chiefs always consider the effects of their actions on their descendants through the seventh generation in the future.

The original term "sustainable development," was adopted by the Agenda 21 program of the United Nations. Some people now object to the term "sustainable development" as an umbrella term since it implies continued development, and insist that it should be reserved only for development activities. "Sustainability", then, is nowadays used as an umbrella term for all human activities. The Brundtland Committee report had identified the following principles for the sustainable development.

- Inter-generational equity
- Intra-generational equity
- Public participation
- Environmental protection integral to economic development

## **Sustainable Infrastructure: Considerations underway**

Ecotourism has been hailed as one of the ways to achieve the sustainable development. Sustainable tourism, otherwise it is called Ecotourism, considers all the important principles of sustainable development in its ambit. Putting it on the other way around Ecotourism, to be successful, must promote sustainable development by establishing a durable productive base that allows local inhabitants and ecotourist service providers to enjoy rising standards of living. An ecotourism project must incorporate the social dimensions of productive organization and environmental conservation. The ecological, social and economical factors are to be given special emphasis in the sustainable tourism project.

Advocating the minimal consumption pattern of life, the concept of sustainable development demands for embracing the changes emanating from the global interdependence, environmental stewardship, social responsibility and economic viability. Global as well as local issues have to be properly represented in any development project, where sustainability matters. The underlying philosophy in the sustainable building design is to attain a balance between the human needs with the capacity of the natural and cultural environments. Minimizing the damage both in the natural as well as the cultural setting, the sustainable design encompasses the following principles -

- Utilizing the building and its architecture as a tool for educating the importance of environment and the culture.
- Reestablishing the **Human-Nature** connection for benefits ranging from spiritual, emotional and therapeutic.
- Promotion of new human values and lifestyles for achieving a harmonious relationship with the local, regional and global resources and environments.
- Awareness creation on various aspects ranging from the energy minimization to waste management and natural conservation to cultural preservation.
- Nurture living cultures to perpetuate indigenous responsiveness to, and harmony with, local environmental factors.
- Reflection on the historical as well as cultural values of the area.

<sup>4</sup> Bruntland G (Ed), 1987. 'Our Common Future'. World Commission on Environment and Development. 1987. Oxford University Press, Oxford.

Marrying the vision of the experience with the environmental sustainability and the constraints of a successful business venture is to be essentially carried out in the infrastructure development. Major question to be addressed is the complexity arising from comfort and extravaganza. There should not be any compromise on comfort, but a standard should be developed, as comfort appears different for different people.

Development strategies for Ecotourism accommodation should include following attributes -

- Maximum interface with the natural environment.
- Downsizing of central facilities offset by operational planning and efficiencies.
- Facilities and activities that minimize the emphasis on individual accommodations.
- Communal living option.
- Services and facilities provided by local development partners.
- Self-sufficiency of the occupant to minimize operational overhead and central facilities.
- Use of low impact and lower cost structures.
- Use of indigenous building types that capture local sense of place.
- Use of pre fabricated building types.
- Operates to de-emphasize site requirements.
- An emphasis on landscaping.

## **PHYSICAL PLANNING**

### ***INFRASTRUCTURE DESIGN AND SITE PLANNING***

Site planning and design is a process, which involves in an integrated way the issues of land use, human circulation, structures, facilities and utilities within the natural and human environment. In order to ensure harmony between tourism developments and environmental protection, it is indispensable to apply sensitive design of infrastructure, master site planning, ecologically and socially conscious site design, and landscaping.

Preserving the special characteristics of a tourism destination demands an in-depth understanding of the natural systems on the site, as well as an immersion into the time-tested cultural responses to that environment's opportunities and constraints. If we want to change the way we build traditional tourism facilities, we need a new way of thinking about site planning and design, which involves a holistic approach. Sustainable site planning and design can lead to a better integration of physical facilities for tourism and their site and surroundings and can indeed help to lessen the environmental impact of these facilities.

Site planning and design for any tourism facility must clearly indicate the process of ordering human actions and works in a specific tract of land. In addition to constituting a graphic representation (to scale) that shows location, layout, general size and shape, and orientation of the different elements of the project, site planning and design should indicate the sequence of activities that make up the project, clearly establishing a space-



time interaction. Also, it should ensure that all on-site human activities should have a minimum negative impact on the natural and human environments.

The site planning and design for any tourism facility must be, first of all, an instrument that safeguards the sustainability and conservation of the surrounding natural and cultural heritage. Not only should it conserve the natural ecosystems but it must also contribute to repairing and restoring the environmental damages that may already be present in the site. The development of the site should strive to leave the site better off after development than before.

Zoning is a very important tool in the site planning and design process. It is the process of applying different management objectives and regulations to different parts or zones of a specific area.

The success of any tourism facility (including eco-lodges) often lies on the initial process of site evaluation and selection. Careful evaluation, in some instances, may reveal that the site is not appropriate for developing the facility. All considerations involved in selecting the most appropriate site will be essential in any forthcoming decisions dealing with design and construction.

Considering the increasing visitation to wilderness areas over the past decade and the resultant effects on the carrying capacities of the ecosystems, it would be prudent to select sites for developing ecotourism facilities that are situated just outside the nature preserves, although this is not always possible since some of the preserves are very large. As such, a well-conducted site evaluation can assist developers in finding alternatives to developing in protected areas. Selection of an appropriate site is critical for ensuring the sustainability and viability of an eco-lodge. The selected site should support the lodge within natural and biophysical resource limits while offering ecotourists the opportunity to experience and enjoy the environment.

Frequently, in those sites that are more appropriate for eco-lodge development, there are limited or no infrastructural elements or public services, because of typical isolation and remoteness.

It is important to analyse how much infrastructure should be provided by the local authorities, and how much by the private sector. Since the extra service demand is often only used part of the year (seasonal), and takes precedence over use by local communities, tourism providers must invest in their own infrastructure needs. Both communities and tourism sector should benefit from infrastructure development.

### ***Specific Examples of Best Practice from Selected Countries***

1) **Bolivia:** *Chalalan Eco-lodge is located in a primary rainforest area and was developed with as little ecosystem disturbance as possible during the construction process. The lodge now boasts populations of monkeys, macaws and other flagship species that are a big attraction to clients.*

2) **Thailand:** *The Banyan Tree Hotel in Phuket was built on a site formerly used for tin mining. In order to restore the land, the resort did extensive landscaping and planted hardy native plants such as Casuarina trees and palms. Construction materials were chosen to minimise the use of scarce local forestry resources. Instead, all villas were built of bricks, with clay roof tiles. As a result of these efforts, wildlife has been returning to the area.*

3) **Nepal:** *Narayani Safari Hotel and Lodge were built on the periphery of the Royal Chitwan National Park (this was preferred to building within the national park), located in land of low agricultural value. At the planning stage, permission to build tourist facilities inside the Park could have been obtained (seven tourist lodges were already located*

*inside the park). However the company believed that the National Parks should be set aside primarily for conservation and decide to site the facilities outside of the protected area and apply for permission to use the park only for wildlife viewing trips.*

## **BEST PRACTICE GUIDELINES**

- Ensure that the site plan is environment-friendly, minimising negative impacts on the natural landscape, local biodiversity and any existing cultural features found nearby.
- When selecting a site for any tourism facility, analyse the local availability of the following infrastructure elements and public utilities and services:
  - Conventional systems for providing electricity, drinking water, sewage, telephone line, public lighting.
  - Communication means: highways, roads, trails (tracks), airport, landing fields, railway, docks, etc.
  - Postal service, refuse collection and disposal, medical services, schools, commercial facilities, etc.
  - Local means of transport: land motor vehicles (bus, taxi, rent-a-car, etc); regular commercial, charter, or private flights; motor boats, cruise ships, yachts, ferries; railway (schedules of nearest railway station), etc.
- Carry out a feasibility analysis for each site option before the particular site is selected. This analysis should include biophysical features of the site (climate, land, vegetation, wildlife, etc) as well as socio-cultural features (local communities, traditional villages, archaeological sites etc), and business aspects (comparative analysis of the different possible sites, suitability of location, market niche, profitability, long-term economic sustainability).
- In the case of an eco-lodge, select a site, which is within, or sufficiently near, a natural area of great ecotourism potential (i.e. an area with high flora and fauna values; perhaps supplemented by important cultural values). The eco-lodge itself should not directly affect the focal (or flagship) ecotourism attractions of the area or visually compete with these attractions. In other words, a balance must be struck between easy accessibility to outstanding natural areas and minimisation of negative biophysical and cultural impacts (including visual impacts) of the environs.
- Consider travel distances as a siting criterion and the natural and cultural features that can be accessed from the site.
- Consider proximity of the lodging facility to airports and major transportation routes in the region. However, in the case of an eco-lodge, it should not be too close to airports or major transportation routes due to the excessive noise and pollution.
- Analyse what benefits the local people will receive from the development of a tourism facility.
- Study possible environmental and cultural impacts for each site for both the construction and operation phases of the development of the eco-lodge. Consider both mid- and long-term scenarios for development impacts.
- Contract appropriate professionals to develop the site plan. The site plan should prominently include an analysis of the site in regards to its major biophysical characteristics and measures to minimise impacts.
- Every site plan should carefully consider existing and future vegetation. Tree preservation and reforestation are key elements. Regarding trees, always keep in mind the quadruple principles: remove, relocate, replace, restore.

- Carry out your landscaping using native plant species. Exotic plants are always out of place in a natural environment.

### **WASTE MANAGEMENT**

The management of waste is a crucial conservation problem in both urban and rural areas, including natural areas (legally protected or not). The basic premise of a tourism facility operation is minimising waste generation, since this is one of the main causes of degradation of the surrounding environment. The best attitude towards trash is to avoid it as much as possible, instead of finding ways of treating it.

Try to use biodegradation practices as much as possible. In the process of biodegradation, microorganisms break down the products of other living things and incorporate them back into the ecosystem. Biodegradable or bio-convertible materials include anything that is organic. Plastics are not considered includable in this category, despite industry contention that they are.

A material doesn't become waste until it is thrown into the dustbin. If a material can be reused it is a resource, not waste.

### **Best Practice Guidelines**

- As regards waste management, always apply the quadruple principle: recycle, reuse, refuse, and reduce.

- Reuse wastewater (both grey and black) as much as possible. Create systems in which water goes through several uses before being disposed of, utilising it for flushing toilets, and as irrigation or fertiliser for cultivations (whenever possible). Always avoid using potable water for irrigating. In case you reuse both grey and black waters, separate lines and septic systems must be installed.

- In general, use products that minimise waste and are not toxic. Whenever possible, convert biodegradable waste to compost, utilise the biomass or submit the waste to digestive anaerobic systems.

- Whenever possible, use constructed wetlands treatment systems, which are engineered systems that have been designed and constructed to utilise the natural processes involving wetland vegetation, soils, and their associated microbial assemblages to assist in treating wastewater. They are designed to take advantage of many of the same processes that occur in natural wetlands, but do so within a more controlled environment.

- Compost biodegradable wastes and make use of the resulting fertiliser or sell it.

- In order to save water, use dry toilets (and pit latrines, in cases of extreme isolation and budget restrictions), always designed to minimise negative impacts on the environment.

### **ECO-DESIGN OF TOURISM FACILITIES**

It is important to remember that economic benefits come from environment-friendly facilities and technologies.

Eco-lodges are often located in remote and wild areas, and therefore very few typical infrastructural elements and services found in more traditional settings are available, such as access by paved highway, public transportation services, electric and telephone lines, piped potable water, public drainage and sewage, refuse collection and disposal, nearby school and medical services, shopping areas, etc.

For this reason, a totally new and different approach to physical planning is required, one based on a high level of functional, energy and food self-sufficiency. Before designing and building an eco-lodge, realistically and clearly identify the specific characteristics of

isolation and difficulty of access to infrastructural elements and public services and define beforehand the level of self-sufficiency you wish or need to attain.

Many nature tourists do not expect, in a poor rural area, the facilities found in rich cities and beach resorts. Some enjoy roughing it for a while, and are even prepared to pay more for the privilege.

### **Specific Examples of Best Practice from Selected Countries**

1) **Peru:** *Manu Lodge, located in the Amazonian rainforest, is a rustic facility using local building materials (wood, palm leaves, bamboos), designed in such a way that it is practically hidden in the deep forest, its building height well below the tree line. Situated in Manu Biosphere Reserve, one of the areas of major biodiversity in the world (1,100 species of birds), the lodge attracts ecotourists from around the world (especially US bird watchers), who are willing to pay US\$200 per night, without having such conventional amenities as electric light (kerosene lamps are used instead), air conditioning or jacuzzi.*

2) **St. John, U.S. Virgin Islands:** *As an example of how apart from conventional materials (sand, gravel, wood), other materials recycled from other sources may be used, nearly all building materials at the Harmony Resort are made of innovative products from the waste stream of other industries, such as sawdust and plastic. The resort is now attempting "close the loop" on its own waste stream, by recycling bottles on-site into products such as glasses and tiles and recycling aluminium cans into table legs.*

3) **Costa Rica:** *As an example of "small is beautiful", currently, 65% of all hotels in Costa Rica have less than 40 rooms (46% of the total offer of available rooms in the country) and 75% of tourist ventures are in rural areas. This scale of facilities means providing a well distributed tourism benefits in many areas of the country, in many cases fostering family businesses. Research has shown that nature-oriented tourists prefer smaller, intimate accommodations than big, multi-storey hotels.*

4) **Nepal:** *In the Narayani Safari Hotel and Lodge, located just outside of the Royal Chitwan National Park, wooden beams, door and window frames from derelict houses on the land were reused for building the single-storey cottages of the hotel and lodge. Cottage roofs are made of locally made tiles. Solar panels are used for water heating, lighting is provided through kerosene lamps.*

### **Best Practice Guidelines**

- Ensure that the design allows for possible future expansion, modifications and retrofitting.
- Minimise negative environmental impacts on site during the construction process. Clean up when you finish building each phase.
- Apply life-cycle assessments of all building materials to ensure that the best environmental and cost options are chosen.
- In the case of eco-lodges and other tourism facilities located in natural areas special attention should be paid to the conservation principles.
- Create the most appropriate access to your eco-lodge, striking the right balance between ease of approach and minimisation of negative impacts on the natural environment. Limit the number of entry points to your site (preferably only one) in order to facilitate surveillance control and management.
- Remember that paved highways are usually an invitation for all kinds of human settlements and that they stimulate branching effects. If there is no existing access paved

highway and the distance from the tourism distribution points is a considerable one, sometimes there is less impact in developing a landing field for light planes than to build a paved highway.

- Keep in mind that construction of highways, roads and other motorways within a natural area or near to it causes negative impacts to the natural resources that one wishes to protect. Consequently, they should be strictly limited and justified only if there are no other viable solutions.

- Avoid building highways or motor roads with a width of more than 5m within a protected area or ecotourism destination. Wider roads become veritable barriers for wildlife mobility and also mar the natural landscape.

- Whenever possible, use waterways (fluvial, ocean or lake), ensuring the use of boats with minimum negative impact. Avoid the use of internal combustion motors as much as possible within fragile areas such as mangroves or marshes. Consider the use of electric-powered boats. For short distances and wildlife-watching excursions it is best to use a rowboat, with good stability. These waterways are often crucial to local fishermen and hence the local economy. Thus, their use is a sensitive issue and needs to be negotiated.

- Minimise impermeable surfaces when possible to reduce runoff and maximise groundwater recharge.

- Not all protected areas should have built facilities inside their boundaries. Sometimes these facilities are preferably placed in the nearby community or in the buffer zone. Always proceed according to the management plan of the protected area (if it exists).

- Interpretative centres (as part of a broader interpretative programme) are needed in most ecotourism destinations, including protected areas, but each case should be carefully analysed.

- Always endeavour to harmonise tourism facilities with the surrounding environment (both natural and cultural). Use architectural forms in harmony with the natural landscape (vegetation and land forms), designing with long-term environmental criteria. A tourism facility should always possess a sense of place.

- Ensure that your tourism facility minimises impacts on the natural and cultural environment and also acts as a tool for biodiversity conservation and to enhance natural ecosystems.

- Whenever possible, use local building materials and local hand labour.

- If local building materials are not available, bring materials from elsewhere, ensuring ease and economy of transportation and on-site assembly.

Various factors are to be taken into account before going for designing the building. The following box examines the parameters, which need to be taken into consideration for the selection of the building materials.

### **Environmentally-Sensitive Building Materials**

*The complete life-cycle energy, environmental and waste implications of each building material must be examined. This cradle-to-grave analysis is the tracing of a material or product, and its byproducts, from its initial source availability and extraction through refinement, fabrication, treatment and additives, transportation, use and eventual reuse or disposal. This tracing includes the tabulation of energy consumed and the environmental impacts of each action and material.*

*Source of raw ingredients (renewable? sustainable? locally available? nontoxic?)*  
¥

*Raw material extraction (energy input? habitat destruction? topsoil erosion? siltation / pollution from runoff?)*  
¥

*Transportation (most local source? fuel consumption? air pollution?)*  
¥

*Processing and / or manufacturing (energy input? air / water / noise pollution? waste generation and disposal?)*  
¥

*Treatments and additives (use of petrochemicals? exposure to and disposal of hazardous materials?)*  
¥

*Use and operation (energy requirements? longevity of products used? indoor air quality? waste generation?)*  
¥

*Resource recovery / disposal (potential for recycling / reusing materials? disposal of solid / toxic wastes?)*

*(Adapted from Anderson, 1993)<sup>5</sup>*

<sup>5</sup> Anderson DL, 1993. A window to the natural world: The design of ecotourism facilities. In *Ecotourism: A guide for planners and managers, Volume 1*, K. Lindberg and B. Hawkins (eds.), 116-133. N. Bennington, Vermont:

The box below depicts the Green Report Card, which can be utilized for evaluating any sites for designing the structure for ecotourism

### ***The Green Report Card for Evaluating Ecotourism Facilities***

- *Is the scale of the development appropriate for the local community and the capacity of the environment to support the facility?*
- *Were the members of the local community actively involved in the planning and construction of the facility?*
- *Are members of the local community involved in day-to-day operations of the facility?*
- *Is the facility to be a phased development, and if so, are the subsequent phases provided for in a manner that allows for minimal disruption of the environment and the existing facility?*
- *Are roads and trails placed to minimize intrusion on the environment?*
- *Does the facility design utilize traditional cultural building forms and materials found in the immediate area?*
- *Does the design of the facility encourage the visitor to look at the natural environment in a new way?*
- *Are there any contradictions to the ecotourism mission of conservation apparent in the facility?*
- *Are provisions such as a library, laboratory, discussions, guided walks or other experimental settings made to provide visitors with educational opportunities?*
- *Is the energy source(s) environmentally sound and sustainable?*
- *Are building materials free of toxic or non-biodegradable agents?*
- *Are appropriate technologies employed for the treatment of organic wastes and other wastes? Is recycling practiced?*
- *Are the building structures and paved areas properly sited to prevent erosion?*
- *Are the furnishings and other lodging accommodations consistent with the architectural theme and environmental parameters?*
- *Is accommodation made for older guests and physically-disabled individuals?*
- *Does the staff seem informed about ecotourism and the facility's design and operational features?*

*(Adapted from Anderson, 1993)<sup>5</sup>*



## **ENERGY CONSERVATION, BIO-CLIMATIC DESIGN AND ALTERNATIVE ENERGY SOURCES**

In every type of tourism facility and operation saving energy, water and other precious resources by applying the most appropriate available technologies, should occupy the highest priority.

There are various methods for meeting the energy and vital resource needs of a tourism facility. The most common practices around the world involve recurring to conventional methods, such as public utilities (electricity, water, gas, telephone), conventional fossil fuels, and fuelwood. But there are many alternative practices that should be advanced in all types of buildings, including tourism facilities (both in urban and rural settings), since they are more environment-friendly, minimise impacts and also reduce costs. Some of these alternative practices involve design techniques that allow for natural ventilation, heating, lighting, and rain water catchments, while others use energy sources such as solar power, wind power, low-scale hydroelectricity, geothermal power, natural gas and biomass. Solar energy especially has an enormous potential (both for heating water and for generating electricity) but so far is not exploited to its full potential in the majority of countries and regions.

Tourism facilities, including eco-lodges, should make use of this wide spectrum of alternative technologies. The extra energy that could be made available through the use of various conservation techniques is one of our most underused and invisible resources. Low-energy lighting should be widely preferred over conventional, incandescent bulbs. Water use in toilets and showers must also be drastically reduced and this can be achieved in many ways, including such easy techniques as placing bottles filled with sand in the flushing tank, flow-reducing shower heads, etc.

### **Best Practice Guidelines**

- Apply bio-climatic design criteria, which means understanding the physical setting of the facility, the local climate, including prevailing winds, solar radiation, appropriate local materials, biodegradation, surrounding vegetation, etc., and applying simple physical and biological principles.
- Consider the sun's positioning when choosing the orientation of the tourism facilities so as to maximise use of natural light and trap incoming solar radiation to heat interior spaces, taking note that in the northern hemisphere the sun is mainly shining from the south and in the southern hemisphere the situation is reversed. To maximise the "solar window", the slope of the roof (in degrees) should be roughly equal to the latitude of the site.
- Analyse in each case the convenience of applying solar energy for heating water and for generating electricity (photovoltaic systems), as well as other alternative, environment-friendly energy sources, such as wind power, biomass, geothermal energy, etc.
- A good option in isolated areas with no access to a conventional power grid is the use of photovoltaic cells (based on the use of silicon) for converting solar energy in electric energy (usually 12 volts DC). Some models offer both options of 12 volts DC and 110 volts AC (using the second alternative, the battery obviously drains down faster). There is presently a choice in photovoltaic cells between four technologies: monocrystalline, polycrystalline, semicrystalline, and amorphous silicon. The four technologies are now available commercially (fundamentally Japanese, German, and U.S. producers) and all have different comparative advantages. Typical monocrystalline silicon cells have an efficiency of about 10-20%, but are quite more expensive than polycrystalline cells (which have an efficiency of 4-5%). Amorphous cells are even

cheaper but also less effective. In every case, electric storage is by lead-acid deep-cycle batteries, similar to those used in golf carts.

- Use techniques such as the so-called Trombe wall, which consists of storing solar energy in a sun-facing wall, made of heavy masonry material, such as brick, stone, block, or earth, with a dark-colored surface toward the sun. As the sun's rays shine on the wall, generated heat is stored and circulated passively (especially during the evening) through wall vents into the living areas.

- The architect should pay special attention to water management when planning a tourism facility, especially given the critical water situation in some nations, which at times experience severe droughts. Use water catchment methods whenever possible. At all times, maintaining the drinking quality of this scarce commodity is of paramount importance.

- In the design of the lodge or other tourism facility apply cross-ventilation, which implies placing openings in opposite and parallel walls so as to induce natural air flow from outside and cooling interior spaces. In this way you will be contributing to the elimination of air conditioning systems, which consume enormous amounts of electricity and also cause damages to the ozone layer.

### **Specific Examples of Best Practice from Selected Countries**

1) **Australia:** J's Bay YHA Hostel in New South Wales, has designed all rooms to maximise the natural ventilation from the prevailing winds, and external screens have been fitted to shade windows from direct sunlight. Ceilings are well insulated to minimise heat transfer into the rooms. No air conditioning is required to cool the rooms. A single ceiling fan, which requires a fraction of the energy to operate, is enough to keep the rooms comfortable cool throughout the year

2) **Hungary:** By using energy-saving light bulbs, the Budapest Hilton has reduced the energy bill by 13%, or US\$40,000 per year. Low flush toilets have been used in the newly restored bathrooms. Guests can choose to re-use towels or have them changed daily, which reduces water and laundry detergent use, and effluent (IHRA/UNEP, 1996).

3) **Malaysia:** River tours from the Sukau Rainforest Lodge in Sabah make use of quiet electric motors when viewing wildlife, since it was recognised by the owner that electric motors can significantly reduce disturbance and increase the likelihood of seeing wildlife, apart from minimising pollution effects.

4) **India:** The Hotel Guestline Days in Tirupati is designed in a Y shape to optimise the use of natural light. The ceiling on the top floor is lined with a 75mm thick layer of expanded polystyrene which acts as a heat insulator, keeps the indoor temperature at a lower level and brings down air conditioning costs. Showers are installed instead of baths. Rain water is collected (especially during the monsoons) and used for many purposes, including toilet flushing.

5) **Canada:** By simply putting sand-filled bottles in toilet tanks to reduce flush volumes in 25% of its rooms, the Hotel Beausejour in New Brunswick saved 100,000 litres of water per year.

6) **Australia:** At the Frogs Hollow Lodge in Darwin, up to 50% of hot water requirements are met by solar water heaters on the roof.

### **ARCHITECTURAL OPTIONS: A TRADITIONAL WAY**

The traditional way of architectural designing could be adopted in the Ecotourism plans. The Management plans could ascribe the designs from the traditional styles of Feng Shui and Vastu Shastra. The Feng Shui of China and Vastu Shatra of India are the two

architectural options which can be adopted for the eco-designing of the ecotourism infrastructures.

### **Feng shui**

The Chinese based the science and art of siting and orienting buildings upon the workings of earth forces, which are known as *Feng Shui*, literally "wind" and "water". Rooted deeply with ecology, geology, astronomy, and hydrology, Feng Shui aims to harmonize nature with the built environment. Feng Shui offers an ancient method of site planning that adds to balance and harmony for those who live on the land and for the earth itself.

The Chinese believe that the earth is criss-crossed with energy lines that affect and are affected by virtually all geographical and topographical phenomena. This means that humans are affected by our environments, and we in turn modify our environment by what we do within it.

Chinese believe that Chi (the Chinese word for energy) pervades every element in the cosmos and is the beginning of all life. Yin and yang are two kinds of Chi with opposite characteristics. Yin is characterized as female; negative, and passive, while yang is characterized as male: positive, and active. Only when yin and yang meet and stay in balance can life begin. Their continually complementary interaction creates the ideally harmonious site.

### **Vaastu Shastra**

In India since time immemorial, eternal principles of Vaastu Shastra have been applied in the designing of villages, towns, and cities apart from temples, palaces, public buildings and residences. Vaastu is derived from the verb "Vaasa" meaning to "dwell" or "place of residence".

Vaastu Shastra states that every form creates a concentration or dispersal of cosmic and earth energies, which are harmful or beneficial to human beings. Therefore, Vaastu Shastra can bring about harmony between people, nature, and buildings. Since a property represents a fixed form, it will radiate positive as well as negative energies depending upon its shape, properties, direction and location.

Vaastu Shastra recognizes with simple logic that all people live in an environment influenced by the five basic elements: Akash (Sky), Pruthvi (Earth), Pani (Water), Agni (Fire), and Vayoo (Wind) and followers of Vaastu Shastra will respect and be in harmony with these forces when building a lodge.

Paraa Lodge, is located in Northwestern Uganda, just a few miles downstream from Murchison Falls, on the banks of the River Nile. This area has one of the largest breeding populations of the ferocious Nile crocodile. The existing, very ugly, 30-year-old lodge was in a total mess and had been ransacked by Idi Amin's army in the early 1980s. A project was undertaken to prepare an impact study for the rehabilitation and additions and suggest ways to turn the lodge into an ecotourism facility. What is interesting about this project is that the Hindu client wanted to have the entry from the North East as this is considered auspicious in Vastu Shastra.

### **CONCLUSION**

The development of ecotourism as a strategy to promote sustainable resource management and tourism could positively work if brokers, locals and tourists behave to a tolerable level wherein no damage (or maybe minimal and could be mitigated) to the local ecosystem is created. Moreover, the internalization of brokers, locals and tourists of appropriate behaviors corresponding to their respective statuses and roles have to be

achieved by modifying the quality of their involvement in the tourism industry. The tourism system model considers that their behaviors could be modified or regulated by any of them by the proper use of power geared toward the realization of the ecotourism image desired as a departure from the tarnished image of mass tourism. In other words, power and the success and failure of tourism are not only the monopoly of tourists as traditionally perceived but by all those involved directly or not in the tourism business.

As landscape architects and planners, are we truly the stewards of the land and oceans or are we the destroyer of these natural resources, which are essential for the existence of the mankind. Can we truly reverse the havoc on mother earth that is being caused by our fellow human beings? In this millennium, we have a lot of work ahead of us. Either we take up the challenge and create a livable, breathable world for future generations or we could take the easy road and be comfortably numb.

There is a lot to learn from the nature and the indigenous tribes of the world and their relationship to mother earth. Their landscapes were "one with the land" and we do not see why we should not be able to use these principles for the design of ecotourism facilities. A holistic approach should be adopted towards the sustainable infrastructure designing for the ecotourism facilities, so that the infrastructures conform the ecological and conservation principles and strengthen ecotourism to develop as an effective tool for sustainable development.

27.

## ECOTOURISM MARKETING - WITH SPECIAL REFERENCE TO MADHYA PRADESH, THE HEART OF INDIA

A K Bhattacharya and Aparupa Chatterjee

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### Abstract

*There has been a significant growth in ecotourism all over the world. The world tourism has attained new records with half a billion tourists arrival over the world in spite of the recession in the previous years. Madhya Pradesh with its vast resources in the form of natural landscapes, bio-diversity, heritage sites and adventure sites has got tremendous potential in terms of promoting ecotourism. The state can offer every thing, which a tourist wants when he visits a place. The newly formed Ecotourism Board of Madhya Pradesh forest department has a vision of promoting the state as 'land of multiple destinations' that offers various activities under the broad umbrella of ecotourism. Marketing is one important aspect, which needs to be looked into for the promotion of a place. At present ecotourism in the state is in the nascent phase and has a very good potential to become a favorite spot for both Indian and Foreign tourists. The target segments have been identified for promoting ecotourism and the strategies are formulated based on needs and preferences of these target groups. There are certain gray areas, which need to be looked into before carrying out the promotional activity. The connectivity by roads in the state is not in a very good condition and thus lots of tourists hesitate coming to the state. There are lots of potential areas, which are still not focused and can attract many tourists from the various segments in the market. The different traditional stories related to the different monuments all over the place needs to be found out and publicized to get more number of people attached to the state. A large segment of the young domestic tourists is getting attracted towards the wildlife and adventure sports activities. Such activities can be promoted to target this segment of the market. At present the standardization of the rates of the other services being provided with the products is very low and this area needs attention for increasing the satisfaction level of the tourists visiting the place. Thus, with proper development of the existing and new products and promotional activities the state of Madhya Pradesh can become a favorite destination of the tourists.*

### INTRODUCTION

Ecotourism is a component in the field of sustainable tourism. However, it is important to stress that all tourism activities, be they geared to holidays, business, conferences, congresses or fairs, health, adventure or ecotourism, should aim to be sustainable. This means that the planning and development of tourism infrastructure, its subsequent operation, and its marketing should focus on environmental, social cultural and economic sustainability criteria. The strong orientation of the ecotourism field toward principles, guidelines, and certification based on sustainability standards gives it an unusual position in the tourism field. The International Ecotourism Society in 1991 produced one of the earliest definitions "Ecotourism is responsible travel to natural areas that conserves the environment and sustains the well being of local people." In the years since the concept was first defined, a general consensus has formed on the basic elements of ecotourism:

- ◆ Contributes to conservation of biodiversity
- ◆ Sustains the well being of local people
- ◆ Includes an interpretation/ learning experience
- ◆ Involves responsible action on the part of tourists and the tourism industry
- ◆ Is delivered primarily to small groups by small-scale businesses

- ◆ Requires the lowest possible consumption of nonrenewable resources
- ◆ Stresses local participation, ownership and business opportunities, particularly for rural people

## **ECOTOURISM AS A MARKET SEGMENT**

Ecotourism is a small scale but rapidly growing industry, a niche market that is governed by market forces and regulations. It is primarily advertised as a form of nature tourism. Ecotourism is one of the fastest growing sectors in the tourism industry at present. The market for nature holidays is certainly a growing one. In 1993, the World Tourism Organization (WTO) has estimated that nature tourism generates 7 per cent of all international travel expenditure, where the total annual global earning from tourism is nearly \$3 trillion and 212 million people are employed (Eagle, 1997)<sup>1</sup>. Year 2002 was declared as an International Year of Ecotourism (IYE) by the UN, which reflects its global importance.

Some countries, companies and destinations have social and environmental policies and programs, while others do not. This has led to confusion worldwide about the meaning of the term ecotourism as it is applied in the marketplace. *Ecotourism has to be destination based*. India, or for that matter any country cannot be sold as a whole. A particular area has to be chosen for doing the same.

How ecotourism fits into the larger tourism marketplace? Both adventure tourism and ecotourism are components of nature tourism, while ecotourism has stronger links to rural and cultural tourism than to adventure tourism. In ecotourism the prime motivation is generally the observation and appreciation of natural features and related cultural assets, whereas in adventure tourism it is physical exercise and challenging situations in natural environments.

From a functional viewpoint, ecotourism is mostly individual or small-scale tourism (tour groups up to 25, and hotels with fewer than 100 beds) that is operated by small and medium sized companies in natural areas. It concentrates on leading and accommodating small groups in natural areas in an educational manner through interpretive materials and local specialist guides.

## **ECOTOURISM MARKETS ARE NOT HOMOGENEOUS**

Even if a definition is established, ecotourism markets are not a homogeneous group. In the same way that there is a spectrum of products/experiences which may be termed ecotourism, there is also great variation in the activities, motivations and characteristics of markets. Indeed, individuals may be interested in a number of overlapping experiences and activities. These elements of understanding were:

- ◆ Taking vacations in natural locations
- ◆ Understanding the term ecotourism
- ◆ Attitudes towards nature and nature based-tourism
- ◆ Reasons for choosing where to take a vacation, in particular the role of nature and learning about nature
- ◆ The extent of planning for the vacation
- ◆ Nature-based activities conducted while on vacation

<sup>1</sup>Eagles PJ, 1997. "International Ecotourism Management: Using Australia and Africa as Case Studies, Protected Areas in the 21st Century: From Islands to Networks, Albany, Australia.

## THE INDIAN TOURISM MARKET -- A BRIEF SKETCH

A study conducted in collaboration with the Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce and Industry (FICCI) said. Indian domestic and outbound tourism will become an \$80 billion industry by the year 2007. Tourism comprises only 5.2 per cent of the country's gross domestic product due to low per capita income. But things are changing as domestic travel and outbound tourism has grown by 23 and 25 per cent in the last three to five years. The trend is likely to intensify over the next five years, the study said. "Industry should see a higher growth rate in inbound travel and outbound tourism will keep pace with growth of inbound tourism."

- India averages 2.54 million International Tourists annually.
- India is one of the top 4 domestic tourism markets in the world. The domestic market has kept the tourism industry afloat with an annual average of 234 million tourists.
- Travel receipts in India amounted to \$ 3.04 billion in 2001.
- Tourism activities provide employment to 10 million people directly and additional 10 million indirectly

(000)

Year	Number of foreign tourists
1991	17000
1992	19000
1993	18000
1994	19500
1995	21000
1996	22500
1997	24000
1998	24000
1999	25000
2000	26500

Number of foreign tourists to India, (Source - CSO 2000)

Year	Number of Tourists leaving home World wide
1964	100 Million
1974	200 Million
1992	500 Million
2001	700 Million
2020	1.50 Billion expected

TOURISM, ECOTOURISM AND WILDLIFE TOURISM (2004)				
	Feature	Tourism	Ecotourism	Wildlife tourism
WORLD	Arrivals (crores)	76.3	30.5-45.5 (40-60%)	15.0-30.0 (20-40%)
	Earnings (Rs crore)	28,03,500	1,98,000	-
INDIA	Arrivals (lakh)	33.7	13-20	7-13
	Earnings (Rs crores)	22,000	14500	



TOURISM HIGHLIGHTS 2004		
World	India	MP
<ul style="list-style-type: none"> <li>• Total arrivals: 76.5 crores</li> <li>• Earnings from tourism: \$ 62300 crore (Rs. 30, 00,000 crore)</li> <li>• Growth rate: 11%</li> <li>• Share in export of goods and services: 6%</li> <li>• Share in services exports: 30%</li> </ul>	<ul style="list-style-type: none"> <li>• Total arrivals: 33.7 lakh</li> <li>• Earnings from tourism: \$ 481.0 crore (Rs. 22,000 crore)</li> <li>• Domestic tourist visits: 36.7 crore</li> <li>• Indians going abroad: 62 lakh</li> <li>• Share of tourism in GDP: 4.9%</li> <li>• Share of India in world arrivals: 0.44%</li> </ul>	<ul style="list-style-type: none"> <li>• Madhya Pradesh with an annual tourism influx of around 0.11 million generates benefits equivalent to Rs 637 crores annually.</li> <li>• The projection for the next 2-3 years will bring in the Madhya Pradesh of 2.69 million employment opportunities and a generated income, which is quite equivalent to Rs 2336.4 crores annually.</li> <li>• 80% of tourism in MP is ecotourism</li> </ul>

### THE MADHYA PRADESH TOURISM MARKET -- A BRIEF SKETCH

Madhya Pradesh, which is considered the *heart of India*, is a major center of attraction for tourists. There are numerous places spread all over the State, which offer rejuvenating respite to all classes who can afford. Also, it is those people who seek relaxation or a healthy refreshing change from the daily root of life or the dead routine. For them the state has much to offer. There are not less than about 450 places of tourist attraction spread all over the state. There are places of outstanding natural beauty like Pachmarhi, Bhedaghat and wildlife resorts like Kanha and Shivpuri, with their spectacular and unique wildlife as well as places of historical, archaeological or religious significance like Bhimbetka, Bagh Caves, Khajuraho, Sanchi, Bhojpur etc. Wildlife tourism has so far been the main focus in the State.

WILDLIFE TOURISM IN MP				
Category	2002-03	2003-04	2004-05	2005-06
Indian	4,84,736	5,35,149 (+10%)	6,85,917 (+28%)	6,72,712
(-0.2%)	Foreigners	9,643	17,664 (+25%)	22,117(+25%)
24,466(+11%)	Revenue to Parks (Rs Lac)	182.09	212.61 (+16%)	427.07 (+108%)
516.5 (21%)	Rev./Tourist (Rs)	36.84	38.44 (+4.48%)	60.31 (+83%)
74.10 (23%)	Fees (Indian /Foreign)	20/200	20/200	25/500

(Refer Tourism Profile of MP)

### GOVERNMENT POLICIES TOWARDS TOURISM INDUSTRY

The State of Madhya Pradesh offers a variety of tourist attraction ranging from sculpture to wild life and hence it is comparable to any top tourist region of the country. As an industry tourism has a great potentiality for earning foreign exchange and also creating employment opportunities. Based on this realisation the tourism has been marked as a priority sector for the Tenth Five Year Plan. In the state the MPTDC was set up with the objective to provide lodging catering transport facilities to nation as well as international

tourists. The corporation was expected to provide information regarding tourism and organise adventure and water sports for the tourists. It was also entrusted with the responsibilities to develop new areas having tourism potential. The MPTDC has over the years tried to provide basic infrastructure and tourist facilities in such areas of tourist importance where the presence of private sector is negligible or non-existent.

### **Tenth five-year plan and annual plan 2002-2003**

The important provisions kept in Tenth Plan for development of tourism sector are as follows

- It is planned to develop at least one good tourist spot in each district. An amount of Rs. 30.00 lakh has been proposed for this purpose.
- In the present age promotion and publicity has a great role to play in the marketing of tourism products. An amount of Rs. 1000 lakh has been proposed for this head.
- To develop the minimum basic essential facilities at two new tourist circuits. One at Jabalpur - Bhedaghat - Kanha - Bandhavgarh and Second at Bhopal -Bhojpur - Bhimbetka - Pachmarhi provision of Rs. 50 lakh has been made in the Tenth Plan.
- To promote youth and adventure activities an amount of Rs. 100.00 lakh has been provided.
- Provision for grants to local bodies for construction of day shelters, approach road, water supply, landscaping, construction of *Dharmshala*, development of garden etc. at important tourist centers for tourist amounting to Rs. 95.00 lakh has been made.
- During the Tenth Plan for the year 2002-03 an amount of Rs. 1400.00 lakh and for the year 2003-04 an amount of Rs. 1145.00 lakh has been provided under the 11th Finance Commission to fulfill the special needs of the tourists in the Jabalpur-Satna area.
- An outlay of Rs. 5360.00 lakh has been kept for Tenth Plan and Rs. 2073.00 lakh for Annual Plan 2002-03.

### **ANALYSIS OF ECOTOURISM MARKET DEMAND**

There is a lack of systematic information on the origin and location of the demand for ecotourism. Investigations of ecotourism market demand focus on activity preferences travel motivations, demographic profiles and information sources of clients. There are five basic market characteristics for ecotourism -

- Income
- Occupation
- Education
- Age
- Gender

### **ECOTOURISM MARKET PROFILE**

TIES (The International Ecotourism Society, 1994) has constituted the following ecotourists market profile:

**Age-** 25 - 54 years old, although age varied with activity and other factors such as cost.

**Gender** - 50% female and 50% male, although clear differences by activity were found.

**Education** - 82% were college graduates, a shift in interest in ecotourism from those who have high levels of education to those with less education was also found, indicating an expansion into mainstream markets.

**Household composition** - No major differences were found between general tourists and experienced Ecotourists.

**Party composition** - A majority (60%) of experienced ecotourism respondents stated they prefer to travel as a couple, with only 15% stating they preferred to travel with their families, and 13% preferring to travel alone.

**Trip duration** - The largest group of experienced ecotourists (50%) preferred trips lasting 1-7 days.

**Expenditure** - Experienced Ecotourists were willing to spend more than general tourists,

**Important elements of trip** - Experienced Ecotourists top three responses were: (1) wilderness setting, (2) wildlife viewing, (3) hiking / trekking.

**Motivations for taking next trip** - Experienced Ecotourists top two responses were (1) enjoy scenery/nature, (2) new experiences/places.

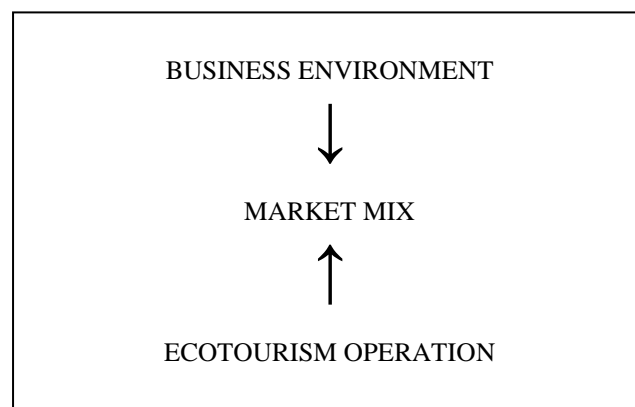
## PLACING STRATEGIES

**MP Tourism Development Corporation** can play a **major role** in the placing strategies as they are into the business for promotion of tourism in Madhya Pradesh. They have offices all over the country and have the contacts with all the major travel and tour operators of the country. They can take up new initiatives for the placing the new destination for the promotion of ecotourism in particular. For the placing i.e., the distribution of the place to the various tourists the present **hierarchy of the tour and travel operator** should be **targeted**. The travel and tour operator at the national level should be approached and made aware about the plans and the products to be offered for the different segment of tourists. A joint effort should be made with these travel and tour operators for promotional activities to be taken up. The **corporate sector should be approached** for providing the package tours to the different destination of the state at concessive rates, as perks to their employees. The travel and tour operators of the **southern part** of the country should be approached to offer tours to the state for the people of South India, which at present form a very meager amount of the total tourists. The strategies should also be made to involve the **tour operators** of the state like **Rajasthan, Jharkhand** and **Andhra Pradesh** so that the people of these can also be targeted from the placing point of view for the scenic spots of Pachmarhi.

## PROMOTIONAL STRATEGIES

The central element in this model is the market mix of price, promotion, product and place, which provides the base for the tourism product. The price of the product is always an important decision point for consumers. The level of promotion influences consumer expectation. The product - the trip is influenced by many factors, including the philosophy of the businesses and government agencies involved. The place is very important in ecotourism because the experience is so heavily influenced by the characteristics of the site visited. Two components, the external business environment and the actual operation of the ecotourism, influence this market mix

## Market evaluation model



## MARKETING - MIX STRATEGY

**Product** – The firm's offer to the market, which includes the product quality, design, features, branding, and packaging. The product of ecotourism will be based on three important features they are Wilderness, Adventure, and Ethnic. Typically, in and around the ecotourism areas local tribal settlements exist, this will help to promote ethnic/culture tourism.

**Price** – The amount of money that customer pay for the product. On the basis of the above data the price can be fixed according to the package of the product. The price can be ranging from Rs.400 per day and night stay with lording and boarding to Rs.1000 per 3 days and 2 nights including lording and boarding.

**Place** - The place is very important in ecotourism because the experience is so heavily influenced by the characteristics of the site visited. Here the infrastructure will play major role to boost and attract the tourist. Areas, which are situated near places with good infrastructure (roads, power supply etc) and near to other places of attraction, have their own advantage to attract the eco-tourists.

**Promotion** – All the activities which undertake to communicate and promote its products to the target market. In this Global village it is necessary to establish its own web portal to provide the information and get registered online customer. The other means of promotion is print and electronic media as well as national and international *tourism melas*.

## DESIGNING THE PRODUCT

Considering the above key elements the product will be designed on the basis of income, occupation, education, age and gender. The main target will be the domestic and middle-income groups which having the potential to boost the business. The target will be the educated people and mostly 25 to 45 years old although the age will be vary according to the situation. In gender the target will be both men and women.

### Trip characteristics

The trip characteristic will be depending upon Season, Trip length, expenditures and willingness to spend. Season is the limitation of the business. Mostly rainy and winter seasons will be targeted to attract the tourist. The trip length can range from one day to

five days to attract the different tourists. One of the important factors to be considered in the product is expenditures and willingness to pay. Thus the main target is middle-income group where the rates have to be moderate, initially ranging from Rs.400 to Rs.1000.

### Activities

Typically, the most popular ecotourism activities are included in the product like admiring nature, hiking, wildlife sightseeing, camping and touring. Additionally, cultural aboriginal experiences to be included. All these features are generally available in ecotourism areas. The number of tourists coming to a place heavily depends on the kind of promotional activity of the place. There is a need to set a collaboration of different departments of the state for the promotional activity to be carried out. For the promotion of ecotourism in the state the following activities should be taken up –

1. The **meetings and conferences** should be held with all the major national and international travel and tour operators to make them aware of the different products available in the state.
2. Promotion of the various ecotourism destination of the state in the different **travel fairs at the national and international level**.
3. The **press releases** about the different products and the initiatives taken up for development of the area and promotion of ecotourism.
4. A **brochure** should be made which tells about all the ecotourism destination of the state and the packages that can be offered. This brochure should be distributed to various travel and tour operator at the state, national and international level which can help them in planning the itineraries for the tourists. Guidelines containing the dos and donts for ecotourism should be distributed with the brochure. This brochure should be translated into different languages for the distribution of the various countries according to the number of tourists coming from these countries.
5. While targeting the foreign tourists special attention should be given to the **cultural activities** apart from the different other attractions of those places, which are brought in the itineraries.
6. **Articles** about the ecotourism destinations in Madhya Pradesh in various national and international travel magazines should be published.
7. A separate **website of ecotourism of Madhya Pradesh** should be launched which gives all kinds information about the destination, charges, guidelines etc. This site can be a source of information for everyone which includes those who want to take up a package tour, those who want to come to the destination directly (walk-in-clients), travel and tour operators and the general public. The website can prove to be a source of useful and vital information for the foreigners who depend much on the Internet for any kind of information.
8. The **different stories** of to all the places of **historical importance**, which are not so popular; like Kalinjar fort, Mahoba, which has got various stories of **Allha** and **Udal** who were the rulers and their sister, traditionally these have been part of folklore, Ajaigarh fort, Birsingh palace etc need to be popularized by means of various articles in print media, promotional material and in different travel programs floated in the television. **Promoting such stories** about local rulers and legends would also help in reviving the culture, increase the interest of people and the responsible department will also have many things to promote. It would also help in showcasing the rich cultural heritage of the region and Madhya Pradesh could then also be promoted as Mystic '**Hazar kisso ka desh**' (Land of Thousand Tales). Mysticism unknown curious stories have always attracted peoples' attention. This would also catapult a new era for ecotourism in the state.
9. **Advertisements through television**, especially in the channels like the Discovery, National Geographic, and Animal Planet etc by focusing on the different ecotourism destinations of the state and the variety of the products being offered should be

highlighted in the various travel programs. The direct target by the promotion through television will be the domestic market.

10. Promotional activities should be carried on with the focus on Bhopal as a centre for the various cultural activities with **Bharat Bhawan** and **Manav Sangrahalaya** playing the eminent role. Information and picture gallery of other eco-destination spots should also be displayed on these venues.

### **Accommodation**

Recent ecotourism research has found that ecotourism markets prefer more than the conventional hotel. To provide the accommodation, environmental friendly thatched, intimate and adventure-type roofed accommodation (such as bed and breakfasts, cabins, lodges etc) could be established.

### **ECOTOURISM CERTIFICATION**

What is certification?

A management tool for:

- Industry
- Government
- Non-governmental organizations

What is ecotourism certification?

- The procedure by which a third party gives written assurance that a product, process, service or management system conforms to specified requirements (TIES).

Why certify?

- To keep the government out.
- To protect natural resources
- To protect local communities
- To get a handle on one of the largest growing business sectors.
- To create a green premium.

### **SWOT ANALYSIS**

After summarizing the current marketing situation, it is necessary to identify the major strengths, weaknesses, opportunities, and threats.

**Opportunities / Threats** – Ecotourism industry has just started in India and especially, it is a great opportunity for Madhya Pradesh to attract the tourist because of its location. Madhya Pradesh is the only state having largest forest cover, which is going to be the ultimate destination for ecotourism in the coming years. The other opportunity is that recently Bhembetika has been declared the world heritage site, which will attract the foreign tourist. The major threats are the poor infrastructure facilities but still government is providing special budget for tourism industry to develop infrastructure.

**Strengths/Weaknesses** – Ecotourism areas have their own strengths like large number of wildlife species and inhabitant of indigenous people, which also attracts the tourists. This also promotes cultural heritage as well as tribal development. Weakness of the product is the lack of awareness among the domestic tourists. Ecotourism is mainly based on season thus it is also a weakness of the product.

## GUIDELINES FOR THE MARKETER

### Article 1: The Nine Principles of Customer Service for the Ecotourism Industry for the Marketer

**1) Be a Good Listener** - Most important, listen to your customers' concerns and complaints, as well as their praise. Discover what it is they want. Your guests are your best source of information in assessing your services and performance. Well-written guest surveys are invaluable for getting feedback, testimonials, and referrals. Help prospects qualify themselves before signing up. Make sure they understand the rigors, responsibilities, and dangers, as well as the level of exertion, entailed in the experiences you offer.

**2) Exceed Expectations** - Under-promise and over-deliver on a consistent basis with exceptional service. This is what they'll remember and tell their friends about. It is amazing how small details can make a big impression. You work hard and spend big money to get qualified prospects to call your office or e-mail you. How professional, informative, and timely is your response? That first contact can set the tone and significantly impact a purchasing decision.

**3) Practice Safety** - Clients want to know the destination and activities are safe. They will feel more at ease during real or perceived risks if they have been educated about their new activities or environments in advance. Unfortunately, if most human beings' fears or worries are not addressed, their minds will grow weeds, not flowers. Advise on plant, animal, and natural resource cautions. Let them know that there is generally nothing to worry about if they respect the environment and heed your advice. Brief guests on your safety procedures for any excursions without staff away from home base.

**4) Provide Great Food** - Guests must eat well, never be hungry, and have adequate water and drinks. Fresh food with ample portions served at a scheduled time can make any adventure more memorable and satisfying. If meal service is going to be delayed, provide a little snack to tide guests over.

**5) Cater to Sleep Needs** - Guests need and want comfortable and peaceful sleep. Make sure everyone is comfortable with his or her bedding. Cater to individual needs by offering single accommodations. Charging an extra cost is okay. Provide easy access to bathrooms with safety procedures for nighttime use. Separate late evening social areas from sleep areas by distance and/or trees or a hill. Hand out earplugs if necessary.

**6. Think Comfort** - Provide first world standards when possible. Bathroom breaks and bathing are important on a regular basis. Give people every opportunity for comfort: hammocks, beach chairs, portable toilets, whatever you can provide. Never go too long between bathroom breaks. Some guests may have weak bladders and need more frequent breaks to feel comfortable and relaxed. Make sure everyone has adequate water, as well as appropriate clothing and footwear.

**7. Be Sensitive to Capabilities** - Never exceed physical or mental capacities of guests. Always ask groups and individuals if they are comfortable with the activity and exertion level before and during the activity. Be sensitive to the slowest as well as strongest in the group. Splitting the group into two smaller groups is a good option. Rest as needed. I believe in a trip rating or difficulty system that allows guests and outfitters to jointly participate in selecting the most appropriate trip.

**8. Be Fun** - Be friendly, helpful, courteous, and fun! Make sure your staff is there for the guests and not for themselves. Good storytellers, jokesters, and musicians can distinguish your staff and company from other companies. Be sensitive with humor and with families with kids. If you cater to kids, employ staff that loves kids. Guests sometimes

need encouragement or guidance to try an activity. You are the guide and activity director combined. Discuss activities or mini-classes in advance so guests will know what is happening and when.

**9. Provide Information** - An informed guest is safer and more relaxed, and has more fun. Our guests are educated and want to learn about their new environment. Assume that guests know little or nothing about their surroundings. Look for opportunities to provide a minimum of three details about each type of surrounding element during any outing. Be prepared to talk about the plants, animals, birds, trees, rocks, geological formations, fish, marine mammals, and shells. Include information about local culture, economy, and history, too. The more we can share, the more value we are providing our guests.

Like other businesses I know and have worked with, you, too, will experience more repeat clients and referrals by applying these details of great customer service. Your business, in time, will prosper like never before!

### **Article 2: Options for improvement**

- Develop maps with historical, cultural, and geographic information
- Improve marketing for cultural, historical, and recreational experiences
- Identify suitable areas for development and areas to be protected
- Establish a destination theme and market identity
- Encourage communication between tourism industry and wood products industry
- Collect reliable information concerning participation rates, user profiles, economic and environmental effects

### **Article 3: Ten Commandments of Adventure Travel Trade Show Success**

- 1) Have beginner's minds** - Seek out expert advice and information before you exhibit. Take workshops and read all you can on trade show marketing.
- 2) Establish team-created objectives** - Incorporate your most friendly, motivated, and knowledgeable staff. Ensure role-play and practiced boothmanship before show.
- 3) Pre-show mailings and phone invitations to customers and prospects can triple booth attendance** - Multiple personalized letters and postcards promoting special offers redeemable only at your booth works great. Start four - five months before show.
- 4) Arrive before show** - Meet with media, establish sales representation, and network with fellow adventure travel business people. When the show starts you'll be better prepared and rested than most.
- 5) Show management is an asset** - Work with them on providing value to attendees through your travel presentations, workshops, sport simulator and fascinating attractions.
- 6) Invest in quality** - Use exhibit with easy-to-read graphics and bold benefit-oriented copy. Use "defining statement" headline graphics. Prospect should quickly understand what types of activities you offer, where you go and level of adventure, i.e. soft, moderate, high risk.



**7) Smile** - Don't pounce on prospects. Establish rapport before qualifying prospects. Ask open-ended questions, "What do you think about foreign travel and river rafting?"

**8) Use brochures as a disengagement tool** - Use "no's or not interested" as an opportunity to move on to another prospects who's interested in your type of trip or destination.

**9) Take care of yourself** - Schedule your staff so that everyone is well rested. Drink plenty of water. Eat well-balanced meals. Avoid alcohol at all times during show. Wear comfortable shoes. Stretch your muscles while checking out other exhibits.

**10) Follow-up** - Contact key prospects immediately after show with letters, calls and brochures. Continued mailings and contacts increase chances of sales 65%.

## **CONCLUSION**

Keeping in view the growth rate of tourism industry Madhya Pradesh is the second largest Indian State after Kerala. It is endowed with rich and diverse forest resources. The forest area of the state is 95,221 sq. km constituting 31% of the geographical area of the state. It is a reservoir of biodiversity. Thus, it has a potential to boost the Ecotourism industry by facilitating proper Ecotourism infrastructure and services under policy guidelines. This will help to conserve and maintain the biological richness of the areas as well as economic upliftment of the local people by providing employment and opportunities in the field of Ecotourism management. There are various facets of the state, which can attract tourists from the point of view of the ecotourism. One finding of the study is that the peak season for the north-eastern region is October to March which continues till April and the peak seasons for the Pachmarhi region is the summer and the rainy season which is the lean period for the other regions. This fact should be highlighted while the promotion of ecotourism and can be advertised as "**Madhya Pradesh – Destination for all Seasons and all Reasons**".

28.

## POLICY ON ECOTOURISM – A NEED ANALYSIS

A.K. Bhattacharya

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### **Abstract**

*The paper examines various issues related to the policy changes required to promote and institutionalize the ecotourism process. The need for the policy changes and the interface with other related policies have also been analysed.*

### **Background**

Tourism is the faster growing industry in the world, which employs the largest number of people both directly and indirectly. But tourism has often been misunderstood as an elitist activity without realizing its economic, social and civilization significance. The purpose of tourism is varied it can be for pilgrimage, pleasure, experience, education and business. But these are not the exclusive privilege of any class of society but a universal phenomenon. India can become the number one tourist destination in the world according to prediction of the World Travel and Tourism Council (WTTC, 2001). In this context responsible travel to nature that conserves the environment and sustains the well being of local people needs to be emphasized. The ecotourism concept provides an outlet for this concerted action. Any policy in tourism must possess three basic attributes namely

- Environmentally, socially, culturally and economically sustainable
- Educational
- Local participatory

The tourism policy may be analyzed in terms of the above three basic attributes. The other ones being biocentrism and being symbiotic with nature.

### **Problem Situation**

The predicted potential annual growth of tourism in India is 10.1% (WTTC, 2001). The requirement is prioritizing of tourism and investment. But on the other hand the Government spending on tourism is 153<sup>rd</sup> in the world at 0.9 per cent. China spends 3.8 of its budget on tourism and rates fifth in receiving the largest tourist arrivals (31.2 million) after France, U.S., Spain and Italy. India gets only 2.6 million tourists on an average per annum. The mode of tourism followed till date is largely that of mass tourism.

Mass tourism per se had a negative impact resulting from ignoring the sanctity of local environment, flora and fauna and indigenous people. For instance, in some Indian Wildlife Sanctuaries, tourists, often travel in vehicles exhausting thick fumes. Film-shooting camps picnicking, cooking in the open disposing of refuse along with polythene bags, and even throwing away unextinguished cigarette and painting their names on rocks or etch/carve them on tree trunks are other unethical activities indulged in. In this situation the ecotourism policies can act as panacea having economic viability as well as environmental and local community focus. Tourism policies of many countries have adopted Ecotourism approach *in lieu* of traditional tourism noteworthy of them being United Kingdom, United States and Australia.

## **Past Policy Performance**

The ecotourism policies of states such as Switzerland based on the principle of responsible travel to nature has gained worldwide recognition and applause. India needs to follow the ecotourism policies at the earliest for holistic and fact paced development. The tourism policy of 1982 to draft ecotourism policy has made a positive lead from market focus to sustainability and conservation focus. The draft tourism policy is a laudable effort in this regard but the implementation at national, sub-national or local level is still lacking. The platform has been provided by draft policy, only the finishing touches needs to be given through public suggestions.

In November 1982 first Tourism Policy of Government of India was announced. This had marketing as its focus than have a prescription plan for development. In 1992, a National Action Plan for tourism was prepared and in 1996 the drafting of National Strategy for Promotion of Tourism was done. In 1997, a draft new tourism policy according to the ongoing economic policies of the Government along with the trends in tourism development was published for public debate and deliberations. The draft policy is currently under revision.

The tourism policy initiatives have recognized ecotourism as the core tourism policies. But, they have left much to be desired. A comprehensive ecotourism strategy has not been implemented till date. It has been found that there are conflicting policies and regulations with meager community participation in planning. Recognition and value of ecotourism is astonishingly very low. In background of this there are few and insufficient policy initiatives. This has led to uncoordinated and arbitrary decision making. Furthermore, decision-making and role diffusion is more prevalent as a rule than an exception. For example, in the case of protected areas there is centrally controlled policy leading to process delays and red-tapism.

## **Problem Situation**

India attracted 2 million foreign tourists in 2001. (WTTC, 2001). The travel and tourism operators along with other stakeholders have perceived their works form a narrow mindset of short-term commercial benefits. Excessive commercialism, taking place in the absence of effective regulatory mechanisms has led to negative consequences. Environmental degradation along with erosion of traditional social activities has been the major threats. In case of India, it has notably suffered to upland and anaesthetic growth.

## **Need for Analysis**

India has not all geared up to reach its true potential in tourism. The issue paper is an endeavour to go for a comprehensive tourism policy with focus on ecology economics and local participation and benefit sharing. For this the questions that need to be resolved are:

- How can responsible active participation of the local people in planning and implementing tourism promotion schemes be encouraged?
- How can better municipal governance especially in and around tourism centers be promoted?
- How can vandalism be checked and promotion of responsible tourism be done?

The problem addressed in this paper is how best to satisfy the need for a comprehensive tourism policy at national level taking into account all stakeholders in tourism along with conservation and ethical aspect involved in the activity.

The approach of analysis for solving this problem is based on the effectiveness criteria based on following factors.

- Conservation of the sites
- Development of resources and people
- Education about the activity and nature
- Local control and benefit sharing
- Economic benefits to stakeholders
- Bio-centrism
- Satisfaction to tourists

### **Need for changes in the existing Policies**

The ecotourism policy should address the following issues in the existing ecotourism related policies

1. Need for improved planning and implementation of Ecotourism activities at all levels (Local, regional and national).
2. General policies on tourism are insufficient/ inadequate to deal with Community Based Ecotourism. Therefore, policy and legislation must be framed to clarify authority and responsibility of various stakeholders in Ecotourism development.
3. Tourism in wildlife areas in India is controlled and regulated by the Wildlife Tourism policy of Ministry of Environment and Forests, and also used under the stringent provisions of Wildlife (Protection) Act, 1972; the safeguards to protect ecology and the environmental the other sites are provided indirectly in various legislation's of the Central Government viz., Forest Conservation Act, 1980; Environmental Protection Act, 1986; Air (Prevention and Control of Pollution) Act, 1981. But there is no legal mechanism to ensure protection of local culture and communities against the ill-effects of unmanaged and ill- planned tourism. This is accepted fact that tourism in Protected Areas and its surrounds should be developed and the profits earned should be recycled for the benefits of the protected areas and the local people, which need to be done only after a detailed site specific planning.
4. The policy emphasis upon involvement of local community for the development of area. But the specific areas of community participation have to be mentioned categorically. The benefice community will receive and the mode of benefit sharing should also be worked upon.
5. Similarly, the policy talks minimizing the conflicts between resource utilization for tourism and livelihoods of local inhabitants. But what if a conflict emerges? An urgent need is of defining the priorities so that the conflicts should be avoided.
6. The specific role and benefits to most vulnerable part of society at the micro-institutional level must be defined and steps require to ensure their participation in the overall project.
7. Need to bring more elements of private and the agencies in terms of making policies little flexible to attract the more investors in the area.
8. Ecotourism in the Forest Areas (NPs and WLS), should be implemented as a recognized program of the Forest Department with The Private Partnerships (Andhra Pradesh APFDC model for development of Ecotourism can be taken as a model).

9. Implementation of policies which recognizes local people's right in managing areas and gives upto 50% of the income generated by the NPs to the local communities.
10. There must be caution and collaboration among all the stakeholders in order to preserve the environmental heritage along with the sustainable development.
11. Plans should be developed and implemented for continuous research and training related to more effective and environmentally friendly ways of conducting Ecotourism businesses. Strategies for implementing improved practices should be developed at regional and national levels.
12. Ecotourism policy and legislation's need to be supported by research in the following areas:
  - Environmental and social impact assessment of ecotourism projects.
  - Carrying Capacity (Both natural and Social).
  - Baselines surveys to facilitate the monitoring of change.
  - Evaluation/ Research of impact on communities.
13. Proper planning of places considered to be potential Ecotourism sites and strict implementations of guidelines to preserve these areas- essential for Ecotourism to fully develop in the country.

### **Major stakeholders**

The major stakeholders in tourism are :

- State Functionaries (Forest Department, Archaeological Survey of India)
- The local community around the tourist sites
- Resorts owners, managers and tour operators
- Vehicle owners and drivers
- Persons engaged in other small income generating activities

### **Setting the policy Goals and objectives for Ecotourism**

The goal of this policy is to provide a framework to provide a tourism policy as a means of promoting social integration. Along with this conservation of heritage, natural environment and development and promotion of tourist products will also be emphasised.

### ***The objectives of the tourism policy should be to***

- create employment opportunities and bringing about socio-economic benefits to the community.
- facilitate and expand sustainable domestic and foreign tourism in the country.
- minimise negative effects such as cultural pollution and degradation of natural environment.
- increase the tourist satisfaction and making their tourism activity pleasant and memorable.
- create a desirable tourist product supported by infrastructure.
- involve and create synergy between all agencies, public, private and government, in tourism development.
- maintain a balance between the negative and positive impacts of tourism through planning restrictions and education of the people for conservation and development.

### **Measures of Effectiveness**

- Economic benefits and negative impact of tourism through cost benefit analysis or net economic benefits.
- Satisfaction to tourists
- Distributional benefits to the local community near tourist sites.
- Consciousness among tourist about environmental protection.
- Compliance with regulatory requirements of the site.

### **Potential Solutions**

The potential solution is to promote tourism activity that can be responsible travel keeping ecological and social considerations in mind or just to increase the frequency and numbers so that revenue generation is augmented. Accordingly the potential alternatives have to be derived.

### **Policy Alternatives**

**There can be two broad alternatives before the policymakers, which are as follows.**

- A tourism promotion policy to attract more tourists that is to develop and promote tourism within the country and to make India competitive internationally as a destination. This will have earnings as its focus or will go for mass tourism. Given the breathtaking range of tourist products, tourism could become the largest industry in India (WTTC, 2001) and the policy can be focussed along these lines.
- An Ecotourism policy, which will promote sustainable tourism which will be environmentally, socially and economically sustainable as well as educational and locally participatory.

### **Comparison of Future Consequences**

**The comparative statement on these two alternatives can be viewed in terms of the consequences.**

- The social/connotations described by Barbier (1987) who defines social sustainability as “the ability to maintain desired social values, traditions, institutions, cultures or other social characteristics”.
- The environmental impact of tourism.
- The costs of tourism including extensive investment in fixed assets with a low rate of return for infrastructure, transportation, accommodation, cultural institutions, exhibition centres, etc.
- Increased demands on infrastructure like land, water, health services
- Creation of developing positive community relationships
- Disparity and influence of the lifestyle of visitors and community
- The possible conflicts between local community and new users of valued local resources
- The perception of local residents about the channelisation of scarce capital resources on low priority areas like tourism
- Cultural cost of changes in local ceremonial or traditional values
- Loss of privacy for local communities
- Increasing congestion and pollution
- Maintenance of landscape and the ecological balance between man and nature

Based on these consequences the ecotourism policy for India is proposed which will have ecology, economics as well as society at its focus. The Draft Tourism Policy 1997 states that “in the context of economic liberalisation and globalisation being pursued by the country, the development policies of no sector can remain static”. The policy further states that “the emergence of tourism as an important instrument for sustainable human development including poverty alleviation, employment generation, environmental regeneration and advancement of women and other disadvantaged groups in the country” and these can only be achieved by following mantles of ecotourism.

### **Constraints and Political Feasibility**

In the milieu that India is in there will be several constraints and feasibility questions that will crop up. These are :

- Lack of resources for infrastructural development for tourism development
- Unsatisfactory quality of service
- The lack of political will power for the policy makers as ecotourism policy might result conflicts with their populist measures
- The stakeholders shift to ecotourism might be gradual rather than sudden and the time span might run in decades
- Tourism has not been able to counteract poaching Project Tiger bears a case in point
- Management techniques which are less user friendly or control of numbers by closing access or by multiplying the number of attractions and areas or charging higher admission fees are generally not popular with the tourist or the tour operator and are also difficult to implement because of high administrative costs
- The private sector involvement is being promoted but the profit margin is being squeezed under the garb of ecotourism thus this bears an inherent paradox.

### **Implementation Strategy**

The implementation strategy to be followed will be area specific in lieu of universal development plans keeping in mind the unique character of the location and its economic and social environment. This policy has to be followed both at national as well as subnational and local levels. This would help the Government to coordinate with the industry in managing visitors and their activities. NGO's working on socio-economic programmes in forest and remote areas could have a closer coordination with tourism service operators to transfer economic benefits, particularly the handicraft production and marketing sector. The linkages with nations following similar strategies has to be done taking into account geopolitical considerations also. This will catalyze a process of learning from each other's best practices.

India's comparative advantage is its mystical attraction with its ancient civilisation and culture with a history going back to 5,000 years. India had much to offer by way of spiritual and mental rejuvenation. Other attractions can be the world's highest mountains, miles of coastline with excellent beaches, tropical forests and wildlife, desert safari, lagoon backwaters, ancient monuments, forts and palaces, adventure tourism. The tropical forests in Uttaranchal, Madhya Pradesh, Karnataka, Orissa, Kerala and Rajasthan can be developed into major tourist attractions. The Indian tourism has to be promoted taking all these considerations into account.

The principles of management will be scientific planning, effective control and continuous monitoring, development of physical infrastructure, zoning and a management plan for public use of natural sites.

## **Provisions for Monitoring and Evaluation**

The evaluation of the policy can be done through regular feedback from the stakeholders. Ministry of tourism will act as nodal agency for this feedback both at the state and national levels. The regular feedback and inviting suggestions from general public in order to plug the loopholes will act as evaluative means as well as an end in itself. The policy would be taken as a body incorporating proactive intentions will be amenable to periodic reviews.

The tourism industry is generally self-centered and not given to educational, cultural or exchange programmes on welfare basis. The general socio-economic environment, the political system and the overall policy framework influence development of a sector. Tourism policy thus will have socio-political base a statement of intent by the Government, would just form the reference point for action and criticism.

The ecotourism policy possesses a lot of implementation stage lacunae that have to be paid heed to. Moreover, the concept looks satisfying but the socio-economic milieu of India puts a great question mark over the readiness and acceptability of this. Further privatisation leads to alienation of the majority of our population and their deprivation and the employment generation generally seasonal and ill paid. In the face of the unhindered entry of international capital and successive alienation, the problems might be aggravated.

The ecotourism policy thus proposes the development of a code of conduct for the tourist, the industry and administrator. These attempts are in a very nascent stage. The kind of coordination that is required between the environmentalist and economist and societal forces is just beginning to emerge and have still to counter the myths of market forces in the field of tourism. But a beginning already exists.



## **PART-III**

# **JOINT FOREST MANAGEMENT**

29.

## **A STUDY ON JOINT FOREST MANAGEMENT IN ANDHRA PRADESH: INTEGRATING COMMUNITY DEVELOPMENT WITH FOREST MANAGEMENT**

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### **Abstract**

*The JFM process of Andhra Pradesh has been analysed in the paper. Based on the field survey of four Vana Samarakshana Samities (VSSs), the JFM related issues including institutional arrangement, participation, decision making, income and employment, benefit sharing etc have been examined. Various activities viz. protection, plantation, soil and moisture conservation, and other forestry and village resource development activities carried out by the VSSs have been evaluated. The impacts of VSSs on the forest development and community development and the interactions between the VSSs and other stakeholders have been critically analysed. Conclusions have been drawn from the observations and suggestions have been made about the sustainability of the Joint Forest Management Programme in the State. The overall impacts of the JFM activities on both forestry and community development have been found to be positive. Now sustainability of the programme needs attention.*

### **BACKGROUND**

The concept of Joint Forest Management (JFM) envisages protecting and managing the forests with the active cooperation and support of local communities. The National Forest Policy 1988 strongly envisages people's involvement in the development and protection of forests and the Govt. of India has provided impetus to people's movement in forest management by issuing a circular on 1<sup>st</sup> June 1990 in pursuance to the National Forest Policy 1988. Consequent to the formulation of guidelines on participatory management of forests issued by Government of India in 1990, Joint Forest Management as a strategy for rehabilitation of degraded forests was formally adopted in Andhra Pradesh in the year 1993. This type of approach for managing forests was new to the people also. Hence a lot of effort was needed to convince the people about the assurances of the Government on the returns promised to the people, if they agreed to take up Joint Forest Management. All the forest fringe villages were proposed to be organized into Vana Samrakshana Samities for implementation of Joint Forest Management programme for rehabilitation and development of degraded forests. Till now Vana Samarakshana Samities (VSSs) have been formed in about 6602 villages, which covers about 16.65 lakhs area ( 26 percent of state forest area) . About 5 lakh hectares of the JFM area has been so far scientifically treated for improving its productivity and more than 200 NGOs associated at grass root level with the implementation of JFM programme. District level NGO networks for JFM have been set up in 12 districts. More than 13 lakh people are involved in the joint management of forests in the State (APFD, 2001).

The limited number of forest department staff is not in a position to effectively conserve the forest resources. Hence, Joint Forest Management is adopted which involves the local villagers in managing and protecting the forests. The participatory approach to Forest Management has resulted in great success not only in improvement of the forests but also the socio-economic condition of the rural poor associated with the JFM programme. This chapter attempts to analyse the impacts of the joint forest management on the forests as well as on the socio-economic condition of rural people.

Four VSS namely Venkatapuram VSS, Gopalapuram VSS, Setegaripalli VSS and Easgoan No. 9-11 were selected for in-depth study. This study has followed "Systematic Information Collection and Analysis Approach" (SISCA) in collecting secondary information. Available report studies and documents were collected, reviewed and analysed in a coherent manner to analyse the impacts of JFM not only on the forest but also on the people. Primary information was collected through group discussions and observations with the help of checklists. Group discussion was carried out in each VSS with its executive and non-executive members to elicit their perception on the impact of VSS on their livelihood. Forestry professionals working for the success of VSS were discussed to know about their perception and functioning of these committees.

### **Polices of JFM in AP**

The Joint Forest Management (JFM) programme envisages constitution of Vana Samrakshana Samithies (VSS) has certain rights, duties and responsibilities as specified in JFM GO 173. Every household living in the hamlets / villages / cluster of villages, particularly those depending on forest for the daily needs, would have the option of becoming a Member of Samithi. However, all Scheduled Caste / Scheduled Tribe members of the hamlets / villages / cluster of villages would become members of Samithi automatically. Any two adult members could represent the household and out of them one will be a woman.

The members of VSS shall elect a 15 member Managing Committee out of which atleast 5 members shall be women. The following shall be the activities of VSS:

- The members of VSS, individually and collectively shall be responsible to ensure protection of forest against encroachment, grazing, fires and thefts of forest produce.
- They shall carry out development of forests in accordance with the approved Joint Forest Management plan.
- They shall make other villagers aware of the importance of forests.

Members of VSS shall have the power to punish the forest offenders and hand them over to the authorities concerned to take action under the provisions of the relevant forest Acts and Rules.

Along with trees for fuel, fodder and timber, the village community shall be permitted to plant such fruit trees which would fit with the overall scheme of afforestation, such as *Amla*, *Imli*, *Mohua* as well as shrubs, fodder legumes and grasses which would meet local needs, help soil and water conservation and enrich the degraded soil / land. Even local medicinal plants may be grown according to the requirement and preference to beneficiaries

### **Unique features of JFM in Andhra Pradesh**

- People are given 100% rights over the forest produce, unlike in many other States where the people's rights are limited to 25%.
- Transparency in VSS operations by channelling the funds through Joint Account system.
- Involvement of Non Governmental organisations in strengthening the Vana Samrakshana Samithies through motivation, extension, training and other support activities.

### **Impact of JFM**

- Due to protection and management of forest area through JFM the over all vegetation cover and quality of the forests has improved
- Many VSS have been able to witness increased availability of fuel and fodder within two years of taking up the Joint Forest Management programmeme in their villages.
- The involvement of village community in forest management has greatly contributed to the reduction in the incidences of smuggling, fire and grazing.

### Understanding VSS from field

#### About the studied VSS

Three VSSs were studied from the Tirupati Wildlife Circle where as one VSS studied was from the Adilabad Territorial circle. Distribution of the study VSS by range is two from Tirupati, one from Chittoor and one from Adilabad where as three VSS is from Rayalseema and one from Telangana region. All the VSS are formed under AP forestry project. Table 1 presents the administrative division of studied VSS.

**Table 1 - Administrative division of studied VSS**

Characteristics	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No. 9-11VSS
Village	Venkatapurum	Gopalapurum	Setegarpali	Easgaon 9-11
Range	Tirupati	Tirupati	Chithor East	
Division	Chithor East Wildlife Division	Chithor East Wildlife Division	Chithor East Wildlife Division	Adilabad Territorial Circle
Circle	Tirupati Wildlife Circle	Tirupati Wildlife Circle	Tirupati Wildlife Circle	
Region	Royal Seema	Royal Seema	Royal Seema	Telangana
Project	AP forestry	AP forestry	AP forestry	AP forestry

Table 2 presents the characteristics of VSS in terms of forest type and distance from the village. All the forests handed over are in degraded condition with scrub vegetation in them. The distance of the forest lies between half to three kilometres. Table 3 presents the membership pattern of VSS. The membership varies with the size of the forest area and plantation activities carried out in VSS.

**Table 2 - Forest Condition of VSS**

Characteristics	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No. 9-11VSS
Forest type	Scrub Throny bushes	Scrub Throny bushes	Scrub Throny bushes	Scrub Throny bushes
Forest condition during handed over	Degraded	Degraded	Degraded	Degraded
Distance from forest to village	1 km	0.5 km	3 km	1.5 km
Major species	Neem, Sita phal, Sisso, Bamboo, Neredu, Regu	Tamarind and Bushy vegetation	Neem, Teak, Red Sanders, Acacia, Cigara etc.	Bamboo, Eucalyptus, Tamarind, Acacia
VSS Area	<b>300 ha</b>	<b>200 ha</b>	<b>300 ha</b>	445 ha
• Natural forest	110 ha	5.8 ha	248 ha	
• Plantation area	190 ha	194.2 ha	52 ha	
Year of hand over	1996	1995	1998	1996

**Table 3 - Membership pattern in VSS**

Characteristics	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No. 9-11VSS
Household	42	36	84	200
Caste				
• Schedule caste	28		84	
• Schedule tribe	15	36		
• Other caste	37			200
Members				
• Male	44	39	70	176
• Female	36	35	89	168
• Total	<b>80</b>	74	159	314
Managing Committee				
• Male	5	9	6	7
• Female	3	4	6	5
• FemaleTotal	8	13	12	12

### Forest Protection system

Protection from the biotic pressure and natural calamities helps in rehabilitating degraded forest. Table 4 below presents the various protection systems followed by VSS. VSS people follow the watch and ward approach in managing forest. Forests are protected by the members themselves on rotation basis in all the studied VSSs except in the Easgoan village. The Easgoan VSS has employed a watcher at a salary of Rs. 1500 per month for protection of VSS. Members themselves carry out plantation management and protection under the supervision of managing committee and forestry staff. This provides members temporary employment during non-farming seasons. But in Gopalapurum VSS, 20 plantation seedlings were handed over to each of the member households. The protection and management is the responsibility of that household and it has the usufruct right to that product. No tending operations are carried out in all the VSS since their forest is in degraded condition, where as weeding and soil working is carried out upto the third year in plantation area. Peripheral trenches have been constructed in all the VSS lying under the Tirupati Wildlife Circle where as they were lacking in case of Easgoan VSS.

**Table 4 - Forest Protection system of VSS**

Characteristics	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No. 9-11VSS
Protection of forest	Members	Members	Members	Watcher
Plantation mgmt and protection		Equally distribution to member	By managing committee	By member and watcher
Grazing control	Peripheral trench	Peripheral trench	Peripheral trench	Watcher
Tending operations	None	None	None	
Soil working	None	plantation site	Plantation only	Plantation only
Mounding	None	Tamarind	Teak	Bamboo
Fire protection	Fire tracing line	Fire tracing line	Fire tracing line	Fire tracing line

### Soil and Moisture conservation

Soil and moisture conservation activities are imperative to conserve natural resources like ground water and top soil. Soil and moisture conservation mainly includes, gully plugging, construction of checkdams, rock fill dams, plantation on mounds of trenches etc. In addition to this, various water harvesting structures as percolation tanks, contour trenches, peripheral trenches, staggered trenches are constructed for ground water recharges. Table 5 below presents the various soil and moisture conservation activities carried out in each VSS and its impacts on forest and people.

**Table 5 - Soil and moisture conservation activities in VSS**

Name of VSS	Soil and Moisture conservation	Impacts to forest and people
Venkatapurum	<ul style="list-style-type: none"> <li>• Construction of 46 rock fill dams</li> <li>• Construction of continuous contour trenches</li> <li>• Construction of peripheral and stringer trenches</li> <li>• Gap planting in trench cum pits with miscellaneous species</li> <li>• Neem seed dibbling and Agave plantation on contour mounds</li> </ul>	<ul style="list-style-type: none"> <li>• Control of soil erosion</li> <li>• High growth performance of tree species due to ground water recharge</li> <li>• Employment and income for villagers</li> <li>• Improvement of crown cover in forest</li> </ul>
Gopalapurum	<ul style="list-style-type: none"> <li>• Excavation of continuous trenches with agave plantation on the mounds</li> <li>• Construction of checkdam through rough stone dry packing and digging</li> <li>• Peripheral trenches construction</li> <li>• Circular furrow construction along plant for water harvesting</li> <li>• Gap plantations</li> </ul>	<ul style="list-style-type: none"> <li>• Control of soil erosion</li> <li>• Employment and income for villagers</li> <li>• Improvement of crown cover in forest</li> <li>• Decrease in causality of plantation</li> <li>• Ground water recharge</li> <li>• Reduction of grazing pressure</li> </ul>
Setegaripalli	<ul style="list-style-type: none"> <li>• Excavation of continuous trenches with agave plantation on the mounds</li> <li>• Peripheral trenches construction</li> </ul>	<ul style="list-style-type: none"> <li>• Control of soil erosion</li> <li>• Employment and income for villagers</li> <li>• Decrease in causality of</li> </ul>

	<ul style="list-style-type: none"> <li>• Circular furrow construction along plant for water harvesting</li> <li>• Gap plantations</li> </ul>	<ul style="list-style-type: none"> <li>• plantation</li> <li>• Ground water recharge</li> <li>• Control of grazing pressure</li> </ul>
Easgoan No. 9-11	<ul style="list-style-type: none"> <li>• Excavation of gully training structures</li> <li>• Bamboo mounding</li> <li>• Construction of percolation tanks and stringer trenches</li> </ul>	<ul style="list-style-type: none"> <li>• Control of soil erosion</li> <li>• Employment and income for villagers</li> <li>• Decrease in causality of plantation</li> <li>• Ground water recharge</li> </ul>

### Decision making

Timely and good decision making play a vital role in success of any activities. For the selection of the managing committee, members either select or elect the members among themselves with 33 percent of women. In all the studied VSS, managing committees decide the president of the VSS. Community consensus is taken in all the VSS while taking the major decisions. Table 6 presents the decision making system in VSS. For the implementation of any development programmes inside or outside the forest, committee people take the decision and circulate to the members. The decision made by the committee is either circulated through its members or presented during the general committee meetings.

**Table 6 - Decision making system in VSS**

Characteristics	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No. 9-11VSS
<b>Executive body</b>	Consensus	Consensus	Consensus	Consensus
<b>Planning</b>	Consensus	Consensus	Consensus	Consensus
<b>Implementation of programmes</b>	Committee	Committee	Committee	Committee

### Participation

Participation requires that the concerned segments of the population have the mechanisms and structures which enable them to participate in the decision making processes that form the basis of the planning, execution and control of all the activities which affect their lives. Five point rating scale was used to elicit the managing committee perception towards the participation of members in forestry and activities. Very high degree of people participation was assigned with 5 points where as one point for very low participation. Committee perception towards the participation is presented in table 7 below. All the executive members participate in meetings held by the committee where as participation of non-executive members in meetings is around 50 percent. Participation of the people in forestry operations is high because they get the temporary employment from the forestry operations, where as people are reluctant to participate in community development activities. Since people are participating more in labour force activities compared to decision-making processes, this shows the passive trend of people participation in JFM activities.

**Table 7 - People's participation in forestry activities**

Participation	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No 9-11VSS	Average Score
<b>Meetings</b> • Committee • Members	100% 60 %	100% 50%	100% 60%	100% 70%	100 % 60 %
<b>Forestry operations</b>	High (4)	High (4)	High (4)	High (4)	High (4)
<b>Community development</b>	Medium (3)	Very High (5)	Medium (3)	High (4)	High (3.7)

Note: Figure in parenthesis indicates score given by managing committee

### Benefit sharing

The benefits derived from the VSS are fuelwood, non-wood forest products, fodder, medicinal and aromatic plants along with temporary employment. Table 8 presents the benefits derived from the VSS from its sharing mechanism. No forest products are collected in Easgoan VSS. For non-timber species such as medicinal plants and non-wood forest products, people are following hunting and gathering approach. They equally distribute the collected NTFPs amongst the members, who go for collection regardless the amount collected. The wood products are shared on the basis of rules and regulations formed by the members of the VSS. In Gopalapuram VSS, each member household is assigned with the usufruct right of 20 Tamarind plantation. The members had to watch and ward them and collect the benefits from it. This type of benefit sharing mechanism is quite good compared to the other plantations. The performance of plantation is better compared to other plantations because this VSS is less dependent upon Forest Department for protection and maintenance of the plantation.

**Table 8 - Benefits derived from forest and sharing mechanism**

Name of VSS	Benefits	Sharing Mechanism
Venkatapurum	<ul style="list-style-type: none"> <li>• Collection of minor forest products</li> <li>• Wage and employment</li> <li>• Fuelwood, fodder</li> <li>• Sale of Boda grass</li> </ul>	<ul style="list-style-type: none"> <li>• Equally distribution among the collectors in case of minor forest products</li> <li>•</li> </ul>
Gopalapurum	<ul style="list-style-type: none"> <li>• Collection of minor forest products</li> <li>• Fuelwood, fodder</li> <li>• Wage and employment</li> <li>• Usufruct right to 20 Tamarind plantation</li> </ul>	<ul style="list-style-type: none"> <li>• Equally distribution among the collectors in case of minor forest products</li> <li>• Allowed each HH once a week to collect a head load of dry wood</li> </ul>
Setegaripalli	<ul style="list-style-type: none"> <li>• Fuelwood and minor forest products as Honey, Sita phal, Broom sticks, Medicinal plants etc.</li> </ul>	<ul style="list-style-type: none"> <li>• All are allow for collection of dry wood as well as grazing is free inside the forest</li> <li>• Equally distribution among the collectors in case of minor forest products</li> </ul>
Easgoan No. 9-11	<ul style="list-style-type: none"> <li>• No benefits have been collected so far</li> </ul>	



## Impact of VSS

### Forest development

Joint Forest Management as a strategy for rehabilitation of degraded forests is quite successful in the studied VSSs. The development of the forest is assessed in terms of species richness, tree density, crown cover, regeneration, ground water and erosion control. The managing committee members were asked to compare the forest conditions after the initiation of the VSS. A five point scale was developed and members requested to give the number on basis of the forest condition, one for a worsened situation and five for a highly improved one. All the VSS members perceived that forest condition has improved. The plantation activities have increased significantly after the initiation of JFM activities. Table 9 presents the impact of VSS on development of forest.

**Table 9 - Impacts of VSS on forest Development**

	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No 9-11VSS	Average Score
Species richness	Increased (4)	Similar (3)	Increased (4)	Increased (4)	Increased (3.7)
Tree density	Similar (3)	Increased (4)	Increased (4)	Increased (4)	Increased (3.7)
Crown cover	Similar (3)	Increased (4)	Increased (4)	Increased (4)	Increased (3.7)
Regeneration	Increased (4)	Increased (4)	Increased (4)	Increased (4)	Increased (4)
Plantation	Increased (5)	Increased (5)	Increased (4)	Similar (3)	Increased (4.2)
Ground water	Increased (4)	Increased (4)	Similar (3)	Similar (3)	Increased (3.5)
Forest product availability	Increased (4)	Increased (4)	Increased (4)	Similar (3)	Increased (3.7)
Erosion control	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)

Note: Figure in parenthesis indicates score given by managing committee

### Community development

Various community development activities are implemented in VSS to motivate villagers to reduce the cattle numbers and attract them towards more labour oriented forest regeneration work. This was very difficult as urban employment is more attractive and lucrative. Table 10 presents the various community development activities implemented in studied VSS.

**Table 10 Community development activities**

Name of VSS	Activities
Venkatapurum	<ul style="list-style-type: none"> <li>• Corpus fund is provided for continuous education center for creating library facility</li> <li>• Distribution of improved cooking stoves</li> <li>• Jet pump distribution to augment drinking water supply</li> </ul>
Gopalapurum	<ul style="list-style-type: none"> <li>• Construction of community hall</li> <li>• Construction of pipe line culverts</li> <li>• Provided with bore well</li> <li>• Supply of tailoring machine</li> <li>• Financial assistance</li> </ul>

	<ul style="list-style-type: none"> <li>• Tank repair works</li> <li>• Supply of improved cooking stoves</li> </ul>
Setegaripalli	<ul style="list-style-type: none"> <li>• Community hall construction</li> <li>• Distribution of improved cooking stoves</li> <li>• Training and education</li> </ul>
Easgoan No. 9-11	<ul style="list-style-type: none"> <li>• Community hall construction</li> <li>• Distribution of improved cooking stoves</li> <li>• Construction of bridge in village</li> <li>• Water tank construction</li> </ul>

### Income and employment

The income and employment opportunities have increased after the implementation of the joint forest management activities. During the non farm seasons, people employed themselves either in collecting non timber forest product or moved outside the village as migratory labour. Table 11 presents the annual labour use pattern of Setegaripalli VSS. Wood collection time decreases by 25 percent whereas the NTFP collection time increased by 50 percent along with 14 percent increased in work inside forest activity. This shows the positive impact of the JFM in increasing the income and employment of rural people.

**Table 11 - Annual Labour use pattern of Setegaripalli VSS**

		Wood collection	Farm activity	Migratory Labor	NTFP collection	Off farm activity	Forest work	Total
<b>Before VSS formation</b>	Day	160	45	45	55	50	10	<b>365</b>
	Percent	43.8	12.3	12.3	15.1	13.7	2.7	<b>100.0</b>
<b>After VSS formation</b>	Day	70	30	55	105	45	60	<b>365</b>
	Percent	19.2	8.2	15.1	28.8	12.3	16.4	<b>100.0</b>
<b>Change</b>	Day	-90	-15	10	50	-5	50	<b>0</b>
	Percent	<b>-24.7</b>	<b>-4.1</b>	<b>2.7</b>	<b>13.7</b>	<b>-1.4</b>	<b>13.7</b>	<b>0.0</b>

Source: Group discussion, Setegaripalli

### Biotic pressure

One of the major causes of the degradation of the forest is high biotic pressure. The biotic pressure inside the VSS forest is decreased. Table 12 below presents the biotic pressure on studied VSS. Due to construction of the peripheral trenches as well as better protection, grazing, encroachment, illicit felling, fire incidence as well as felling of the green trees for firewood has reduced. Not even a single studied VSS reported about the increase in such incidences. The encroachment of the forest boundary by the villagers is highly reduced due to the initiation of VSS.

**Table 12 - Biotic pressure on VSS**

	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No 9-11VSS	Average Score
Grazing	Reduced (4)	Reduced (4)	Similar (3)	Reduced (4)	Reduced (3.7)
Encroachment	Reduced (5)	Reduced (5)	Reduced (5)	Reduced (5)	Reduced (5)
Illicit felling	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)
Green harvesting	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)
Fire incidence	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)	Reduced (4)

Note: Figure in parenthesis indicates score given by managing committee

### Perceptions about VSS

#### Members' perception

During the group discussion, the members were asked about their perception towards the DFO. They were asked to assess the role and performance of the Range/Section Officer in their forest in terms of their support and co-operation, supervision in forest development activity, technical knowledge and skills, offence booking and financial support for implementation of the micro plan. The responses are presented in table 13. The members were requested to say either excellent, good, acceptable, bad, and worst. As they elicit their perception, excellent was assigned with scoring of five where as one was assigned for the worst. All the VSS perceived that support and co-operation is good as the Section officer and beat officer visit the forest from time to time. The perceive their excellent support in case of offence booking where as poor in case of financial support for implementation of community development activities as well as release of payments in forestry operation works. Technical skills and inputs from them are in acceptable limit.

**Table 13 - Members' perception towards respective Section/Beat Office**

	Venkatapurum VSS	Gopalapurum VSS	Setegaripalli VSS	Easgoan No 9-11VSS	Average Score
Support	Good (4)	Good (4)	Good (4)	Acceptable (3)	Good (3.75)
Supervision	Good (4)	Good (4)	Good (4)	Acceptable (3)	Good (3.75)
Technical inputs	Acceptable (3)	Good (4)	Acceptable (3)	Acceptable (3)	Acceptable (3.2)
Offence booking	Excellent (5)	Excellent (5)	Excellent (5)	Excellent (5)	Excellent (5)
Financial support	Bad (2)	Bad (2)	Bad (2)	Bad (2)	Bad (2)

#### Forest Department Staff

Discussion was carried out with a view to elicit perception about of forest development staff about the VSS staff and functioning. The perception of the staff differs according to their hierarchial position in department. The head of the forest department (Deputy Conservator and above) give a positive view toward the VSS and advocate for the JFM strategy which has achieved a great success in rehabilitating the degraded forest. The middle level staff (Range officer and above) in the department are confused about VSS

and more bound to meet the target set for VSS formation in their jurisdiction. Lower staff, which is the leg of the forest department (Beat guard and above) have negative attitude towards JFM. They perceived that their power and authority has been curtailed due to the initiation of JFM as well as investment in forest is high. Table 14 below elicits the perception of forest Department

**Table 14 - Perception of Forest Department staff about JFM**

Position	Perception
Deputy Conservator and above post	<ul style="list-style-type: none"> <li>• JFM is doing well in rehabilitating degraded forest</li> <li>• Our staff are meant for regulatory approach not for participatory forestry</li> <li>• It is difficult to change our 50 years old mind set</li> <li>• Mind set of lower level staff must be changed for the success of JFM</li> <li>• JFM success story is only because of funding.</li> <li>• Integrated approach towards development in JFM activity in practice is lacking</li> <li>• Commitment and facilities from people as well as lower staff is lacking</li> </ul>
Range Officer and above	<ul style="list-style-type: none"> <li>• JFM is successful only because of funding.</li> <li>• Our beat officer's attitudes must be changed for success of JFM</li> <li>• We are bound to achieve the target set by DFO, so failure of JFM is increasing</li> <li>• JFM shall last till we have donor support</li> <li>• Commitments and facilities from people as well as lower staff is lacking</li> <li>• Good options for the rural poor people for income and livelihood</li> </ul>
Beat officer and above	<ul style="list-style-type: none"> <li>• Govt has shifted the pressure of one patch of forest to other</li> <li>• We are the police of forest</li> <li>• Lack of skill and knowledge about participation</li> <li>• Our prestige has decreased</li> <li>• We are giving forest as well as money for protection</li> <li>• Work load has increased tremendously specially in terms of paperwork due to JFM</li> <li>• Not easy task to convince people, no extra incentives and facilities are provided</li> <li>• Why JFM, if forest cover decreased, we are punished even inside JFM also</li> <li>• My authority and power is curtailed due to JFM</li> <li>• We are accountants and supervisors of JFM. We have no role even in planning of forestry operations.</li> <li>• Less responsibility due to involvement of people in protection</li> <li>• Villagers have got a lottery from VSS. They fell trees with the smugglers and we have to bear the responsibility for such activities.</li> </ul>
Villagers	<ul style="list-style-type: none"> <li>• We don't know what to do with our cattle, we are shifting them from one reserve forest to another to feed them.</li> <li>• I am just a chairman of VSS. I have no authority and power to do anything in forest. I am a puppet of forest department</li> <li>• JFM has provided us employment in forestry operations</li> <li>• We are managers of forest. Why do we need forest staff?</li> <li>• JFM has succeeded because of us. Why do we need them (forest staff) in committee? For providing them with free food during their visit in JFM?</li> <li>• Development of village has occurred due to JFM only</li> <li>• Agriculture yield is increased due to soil and moisture conservation activities</li> </ul>



## **CONCLUSION AND RECOMMENDATIONS**

JFM strategy has proved to be an effective way of conserving our forests and utilise them for sustaining the livelihood of rural poor. The people who survived though selling of fuelwood only have now started several income generating activities as sheep rearing, employment opportunities in forestry operation, sale of forest products and medicinal plants.

Villagers get the opportunity for community development activities such as road construction, electricity lines, drinking water provision, community halls, smokeless stoves etc. Hence, the people have developed high expectations from the forest department.

Although there is a greater participation of people in VSS affairs, it still needs to be strengthened so as to ensure participation of women and other weaker Sections in the decision making process.

Total transparency in functioning of the VSS should be ensured, thus eliminating the scope for mistrust and any resulting conflicts.

Soil and moisture conservation has not only controlled the erosion but has also increased the yield of the crop. So, greater emphasis should be laid on effective Soil and Moisture Conservation works on a watershed basis in VSS forest areas.

Lower level staffs who are responsible for the success of JFM in the region are not taken due care of. Adequate facilities and incentives must be provided to them as well as some training must be provided for their attitudinal changes.

All the VSS are formed under the World Bank AP forestry project. As the project got completed, lots of complaints started coming about neglect of the development and alongside the performance of the VSS started diminishing. Hence due attention must be given to the sustainability aspect of VSS.

30.

## Joint Forest Management - Empowerment Interface: A study from Madhya Pradesh, India

A K Bhattacharya and Bijendra Basnyat

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### **Abstract**

*This paper is outcome of study conducted for Madhya Pradesh Forest Department for assessing the empowerment situation of empowerment. The paper highlights the policy provisions and its implementation status and impact in field for empowering the local communities. The main aim of the Joint Forest Management (JFM) is the sustainable management of forests with active involvement of community where the empowerment is a must. Still, many issues as inclusions, access to information, participation, organizational capacity development, accountability, access to services under the empowerment process remain unaddressed. Majority of the people are unaware with the recent resolutions and provisions. However, there has been a paradigm shift towards empowerment and a large number of people at least feel that they are politically, socially and personally empowered after being involved in JFM activity. The translation of the empowerment into actual practice is going to be a major challenge for the sustainability of the JFM in future.*

### **BACKGROUND**

The Joint Forest Management (JFM) concept envisages the forest dependent people taking an active role, responsibility and power according to mutually agreed upon memorandum of understanding. The primary objective of JFM is to provide a visible role to the local communities in planning, management and protection of forests and to give them a share in the benefits from these forests. On operational parameters, JFM is a concept of developing partnership between forest department and fringe forest user groups on the basis of jointly defined roles and responsibilities. Madhya Pradesh (MP) was one of the first States to adopt JFM in 1991, and with the financial assistance of World Bank<sup>1</sup>, JFM programme in Madhya Pradesh has taken a lead after the issuance of the Govt. of India directives. After the promulgation of mandate of JFM in MP, so far 12023 village forest committees, including 6556 VFCs, 5316 FPCs and 151 EDCs have been constituted. About 42,44,120 ha of forest area is being protected, managed and developed under the umbrella of JFM<sup>1</sup>.

JFM resolution is explicit with regard to empowerment of local communities; it is often experienced that the local people are not able to avail of the opportunity from it due to their own socio-cultural and economic constraints. Empowerment is linked to the 'power', which implies that some would act on others to give them power or enable them to realize their own potential. Equally, access to resources, control of the elements and processes of production, and rights to dispose of products are experienced in face to face relations, but are also part of wider and systematic economic relations<sup>2</sup>. The question arises, is it the inability of the local people to benefit from the enabling environment due to their own social and economic constraints, or the in-built system, mechanisms, processes in the

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<sup>1</sup> MPFD, 2002. JFM at Glance. JFM Cell, Madhya Pradesh Forest Department, Bhopal.

<sup>2</sup> Nelson N & Wright S, 1994. Participation and power. In Nelson, N. and Wright, S. (Eds.), *Power and participatory development: Theory and Practice*. Intermediate Technology Development Group, London

JFM policy and approaches and the behavior or activities of the forest authorities which have made people unable to grab the opportunity. Poffenberger and Betst<sup>3</sup> argue that JFM policies that empower government agencies to direct and control community management efforts generally fail either to enhance or encourage the spread of grass root resource mobilization efforts. There is often lack of enabling environment for disadvantaged groups, which would allow them to speak in the assembly. Furthermore, decision-making becomes a lucrative business for powerful members of the group when commercial opportunities become sufficiently attractive<sup>4</sup>.

Hence, understanding power dynamics is, therefore, very illuminating and likely to advance the understanding of the empowerment processes, levels and issues, and facilitate true empowerment of those who need power in order to be able to exhibit countervailing power to safeguard their interests and concerns. In the above background it is necessary to critically look into the empowerment situation of JFM committees to understand the dynamics of empowerment within the context of JFM, in particular and sustainable forest management in general. Thus, this paper attempts to assess the process of empowerment, which the present JFM strategy has delivered as envisaged in the State JFM resolution.

## **MATERIALS AND METHODS**

The study followed participatory methodology as well as conventional survey techniques in collecting information. JFM policies, rules and regulations were collected and collated to assess their adequacy in assessing the empowerment issues. The primary data were collected mainly through the structured closed-ended questionnaires. The questionnaires were developed in five point Likert and Semantic scale. Higher the value of scale, higher will be the empowerment situation and vice versa. The main aim for the use of the scale was to capture the diversity of the response as well as it makes data analysis and interpretation easier during the preparation of index. The focus group discussions were carried out in each JFMC surveyed to understand the situation of the JFM in general and assess the empowerment situation in particular. The people were requested to list out the factors, which they would like to consider in measuring the empowerment for themselves. As the several factors were listed out, they were again requested to classify these factors into different indicators as discussed above and requested them to provide the importance to each of the criteria such that community weightage on indicators of empowerment can be obtained. The study surveyed 100 respondents each from the VFC and FPC in and around Bhopal, the capital of the State.

The local people other than the executives of the JFM committee were employed for conducting survey. The main purpose of using locals in survey purpose is to avoid the chances of ignorance by locals as well as to get more reliable information. This not only helps to get the valid information but also helps to create awareness about empowerment issues among the people apart. The study followed the following conceptual framework (Figure 1) for assessment the empowerment JFM interface.

The group weightage methods was used to give due attentions on people's factors of choice for the empowerment. Weight on each indicator (Figure 1) was assigned on the basis of outcomes of the group discussion exercise. The participants of group discussions were requested to assign the weight on each of the criteria of empowerment (both

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<sup>3</sup> Poffenberger M & Betst M, 1998. Village Voices, Forest Choices: Indian experiences in Joint Forest Management. Oxford University Press, Mumbai, India.



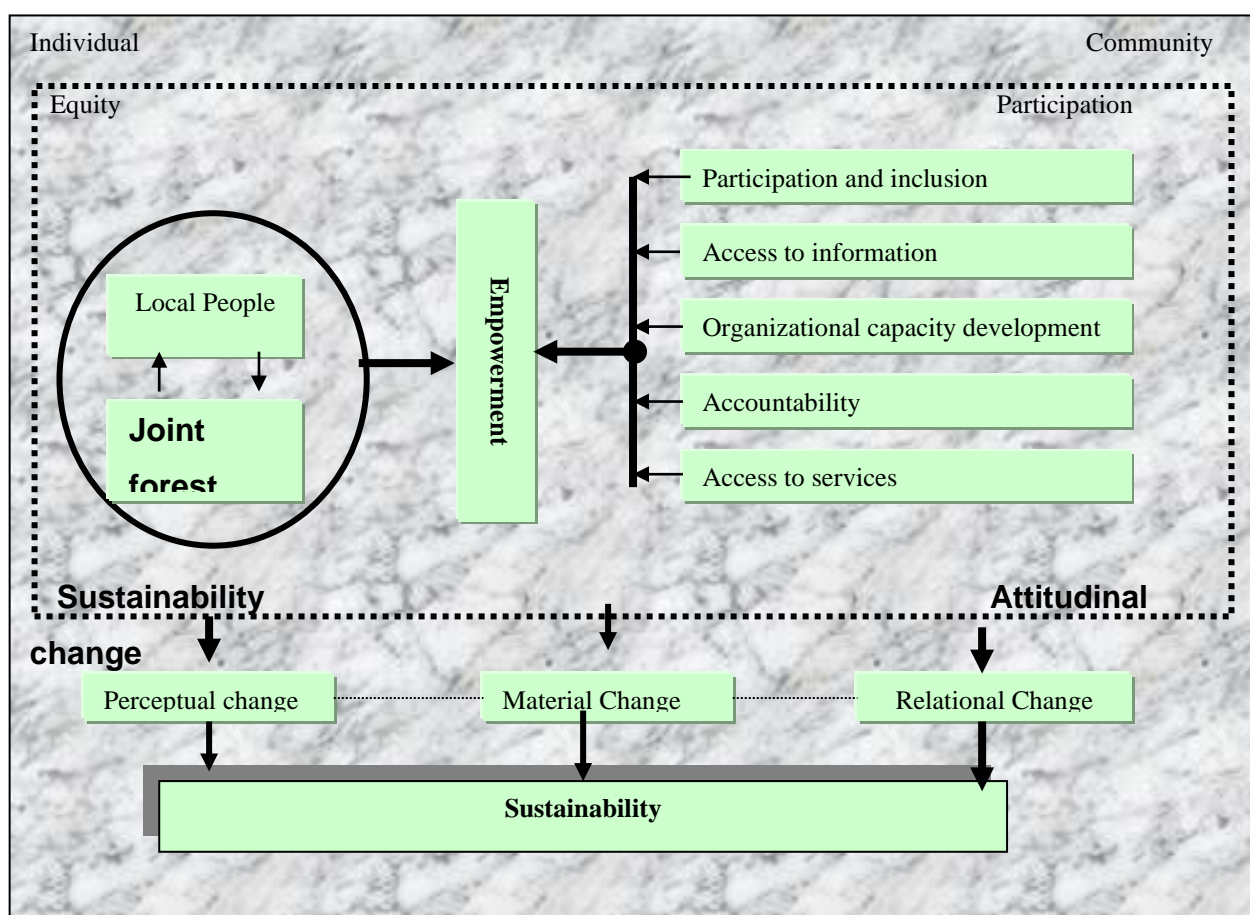
<sup>4</sup> Hunter M, 1996. *Participatory Forestry: The Process of Change in India and Nepal*. Rural Development Forestry, Study Guide 3, Rural Development Forestry Network, Overseas Development Institute, London.

process as well as impact indicators) with minimum five, but in any case, the total score must become 100. This was later on used for calculating the empowerment index. The empowerment index was calculated by following formula. If the weights assigned to indicators are  $W_1, W_2, W_3, W_n$  and value of index are  $I_1, I_2, I_3, I_4$ , the empowerment index will be  $W_1 I_1 + W_2 I_2 + W_3 I_3 + W_n I_n / (W_1 + W_2 + W_3 + W_n)$ . The value of the empowerment index will always be less than 100. Higher the figures, higher will be the empowerment of the community.

The empowerment index (EI) would be

$$EI = \frac{\sum(I_1 * w_1) + (I_2 * w_2) + (I_3 * w_3) + \dots + (I_n * w_n)}{\sum(W_1 + W_2 + W_3 + \dots + W_n)} * 100$$

**Figure 1. Framework for assessment of empowerment**



## POLICY AND LEGAL PROVISIONS

National forest policy 1988<sup>5</sup> laid the foundation for the empowerment of people through forestry. It safeguards the rights and concessions of the forest products to tribal, poor and schedule caste people. It suggests several schemes and programs for the economic as well as social empowerment of the tribal e.g. development of forest villages with revenue villages, family oriented schemes for improving the status of the tribal beneficiaries. The

<sup>5</sup> MEF, 1988. National Forest Policy Resolution, 1988. No. 6-21/89-P.P. Ministry of Environment and Forests, Paryavaran Bhavan, Lodi Road, New Delhi.

formulation of supportive policies by the Central and State governments in early 1990s have accelerated the spread of JFM in India. Giving due acknowledgement of role of local communities, Central and State government have reviewed JFM policies time to time to empower the forest dependent communities both socially and economically.

The JFM resolutions have made gradual amendments a number of times i.e. 1991<sup>6</sup>, 1995<sup>7</sup>, 2000<sup>8</sup> and 2001<sup>9</sup>, for making JFM more participatory, demand driven and empowerment of local people and inclusion of poor by gender, caste and poor people in decision-making forum. Realising the role of the women in the forest management, the 1995 resolution made it mandatory to include one man and one woman from each household as member. Further amendment was made in 2000 with the provision that all the villagers, who are eligible to vote, shall be the members of the general body of the committee. Presence of at least 33 % of women in executive committee, representation of the schedule caste and tribe in proportion to their population and at least one male and female members from the landless communities are the attempts to safeguard the inclusion and interest of deprived community in the decision making forum. Present resolutions have given due recognition for the devolution of the power to the village *Panchayats*. Formation of the JFM committees under the jurisdiction of the *Panchayat* is one of the measures towards it. Besides, the ex-officio representation of the *Sarpanch* has made the JFM more bottom up and participatory. Hence, the present JFM resolution is more focused on equity, empowerment, participation and good governance. It has given due consideration for the accountability aspects as well. It has identified the role of local government in the management of common property resources like forests and its role has been specified. The questions arise on the effective implementation of these directives and policies in the field. Later section deals with these issues.

## RESULTS AND DISCUSSIONS

Approaches of Madhya Pradesh Forest Department (MPFD) for empowering community  
The concept of people participation in forest management is not new. The MPFD has been carrying out various activities to empower the community through JFM and following different approaches for empowerment. The approaches followed by MPFD are discussed below:

**Consciousness raising approach:** This approach mainly emphasizes for raising awareness among communities. Steps taken for the empowerment of the local communities include reorientation from regulatory to participatory functions, capacity building of communities, safeguarding interests of the deprived sections of the society, involvement of women, equitable sharing of usufructs, creation of village development funds, accountability of forest officials towards users, transparency and bottom up micro planning process are the some systems practiced with in Forest Department to empower the local community. Several training modules are developed for the capacity enhancement of the JFM members (Table 1).

**Table 1. Training modules**

Modules	Number
Orientation modules	486
Micro planning	304
Accounting system	284
Total	1074

Source: MPFD 2002<sup>10</sup>

The modules are for operations of JFM, micro planning and accounting system and more than 30,000 peoples have been trained under this model. The training module indicates that most of the people are trained for effective management of the JFM where the modules for skill enhancement and income generating activities are still lacking.

<sup>6</sup> GOMP, 1991. JFM resolution, 1991. Government of Madhya Pradesh, Bhopal, India.

<sup>7</sup> GOMP, 1995. JFM resolution, 1995. Government of Madhya Pradesh, Bhopal, India.

<sup>8</sup> GOMP, 2000. JFM resolution, February 2000. Government of Madhya Pradesh, Bhopal, India.

<sup>9</sup> GOMP, 2001. JFM resolution, September 2001. Government of Madhya Pradesh, Bhopal, India

<sup>10</sup> MPFD, 2002. JFM Statistics. JFM Cell, Madhya Pradesh Forest Department, Bhopal.

Inclusions and participation is one of the major criteria for the empowerment of the people. Table 2 summarizes the representation of the poor marginalized communities in JFM. More than four tenth of the population in JFM are from the schedule tribe people followed by other caste people (39.05%). The tribal communities are more dependent upon the forests for the livelihoods and JFM has been able to address the needs of the tribals as representation of them is high compared with other caste group people. About half of JFMC committees (44.17 %) are either chaired or vice chaired by women. Women representation in decision-making forum is quite significant and JFM has duly addressed the empowerment of women issues as well.

**Table - 2 Representation of marginalized communities in JFM**

	Household	Proportions
Schedule caste	286627	17.78
Schedule tribe	696153	43.18
Other castes	629560	39.05
<b>Total</b>	<b>1612340</b>	<b>100.00</b>
Women as chair/vice chair		<b>44.17%</b>

Source: MPFD 2002<sup>10</sup>

Transparency, accountability and flexibility are the three factors, which contribute to the institutional sustainability of any organization. Table 3 presents the several accountability and transparency mechanisms in the JFMC. The conduction of both executive committee meetings and general assembly meetings were very high but provisions for the tri-monthly transparency mechanism was developed in 70 per cent of the committees. This still questions about the transparency mechanism in JFM. Forest Department mentions about lack of the time, manpower and resources for conducting the activities, however executive Forest Department must be responsible for ensuring the transparency mechanism in JFM and means and measures must be well developed for the proper implementation of it. But the situation of field is not encouraging<sup>11</sup>.

**Table 3. Accountability and transparency mechanism**

	Number	Percent
With EC meeting	11521	92.32
With General assembly	10739	86.05
With provisions for tri-monthly transparency circulars ( <i>Parpipatra</i> )	8630	69.15
With micro plan	1807	14.18
Total	12480	100.0

The institutional sustainability is measured in terms of the bank accounts and operations of village based institutions. Table 4 presents the institutional sustainability of the JFM. Majority (73.7%) of JFM have the bank accounts where as about half (47.9%) of the JFMC have development accounts as well. But, very few (24.7%) JFM have provisions of food bank and saving and credit groups (29.2%). The table reveals that institutional sustainability of the JFM is not encouraging though lots of provisions had been made in JFM resolutions, no mechanism has been developed for making JFM self-sustaining.

**Table 4. Institutional sustainability**

Attributes	Number	Per cent
With development account	<b>5979</b>	47.91
With bank account	<b>9198</b>	73.70
With food bank	<b>3085</b>	24.72
With SHG	<b>3647</b>	29.22
Total	<b>12480</b>	100

Source: MPFD 2002<sup>10</sup>

**Integrated development approaches:** The integrated development approach views development as key to the advancement of family and community. It, therefore, provides a package of interventions to alleviate poverty, meet basic survival needs, reduce discrimination etc. MPFD is promoting village resource development in order to increase the standard of living. Besides, State Government has decided to plough back the entire

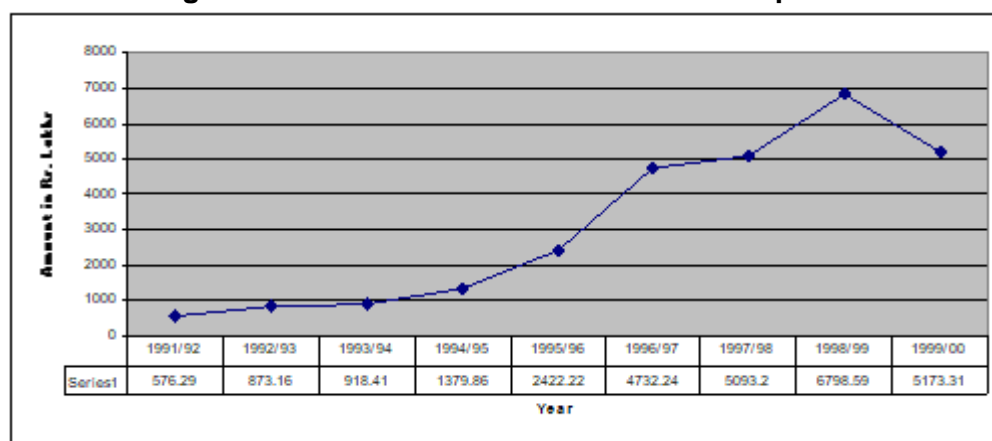
<sup>11</sup> Bhattacharya AK & Basnyat B, 2002. *Empowerment through Joint Forest Management: A study from Madhya Pradesh*. Unpublished Study Report. M P Forest Department, Bhopal, India.



net profit from the trade of NTFP to the village communities and of the total amount, twenty percent for the village resource development or may be paid to the members, as decided by the *Gram Sabha* and thirty percent will be spent in forest development, thus, providing enough scope for the integrated approaches of the development where the micro plan duly addresses the need and problems of the local community and forests together. The recent resolutions duly address these issues as explained in previous sections.

The MPFD expenditure in creation of the infrastructure of JFM is summarized in Figure 2. The expenses in infrastructure increased every year except in 1999-2000. This might be either due to phase out of the MP Forestry project or division of the State to MP and Chattisgarh.

**Figure 2. Investment in infrastructure development**



The number of village assets created for institutional sustainability of the JFM is summarized in Table 5. The village assets created include drinking water, irrigation channel, communication networks, education, energy saving devices, community hall and medical hall. The creation of drinking water facility was high followed by communication and irrigation.

**Table 5. Village Assets created**

S No	Activities	Number
1	<b>Drinking Water</b> Tube-well, Open well, Hand pumps	3009
2	<b>Irrigation</b> Stop Dam, Lift Irrigation, Tank, Tube Well etc.	1621
3	<b>Communication</b> Approach / feeder roads, causeways culverts	1807
4	<b>Education</b> School building, Hostel	652
5	<b>Energy Saving Devices</b> Biogas, Kisan Sigri etc.	155
6	<b>Community Hall</b>	337
7	<b>Medical Camps</b>	409

Source: MPFD 2002<sup>10</sup>

**Economic empowerment:** It focuses on improving people's control over material resources and strengthening economic security through income generations, skill trainings, new technologies development and marketing along with providing ancillary services as health, literacy programs, legal educations and aids. Most of the activities like

fire protection, plantation and harvesting are being implemented through the committees in order to provide income and increase sustained employment. Apart from this, fifty percent of income generated from sale of NTFPs will go to the members of primary NTFP societies. Free *Nistar* facilities and several income generating programs as well as skill enhancement trainings are provided for the economic empowerment of the JFM committees.

All the forest development activities are being implemented through JFM. Table 6 presents the forest development activities and JFMC involvement. Most of the expenses are made in forest development activities followed by the rehabilitating degraded forests. The involvement of local people in forestry development activity has not only provided income to the rural people in terms of temporary wage labor but also created the livelihood opportunity for the rural poor.

**Table 6. Involvement of the JFMC in forestry development activities**

S No	Forest development activity	No of committees /families involved	Area of plantation (ha)	Amount spent (Rs crore)
1	Rehabilitating degraded forests	3000 committees	1,00,000	27.9
2	Sustainable employment through irrigated plantation	1670 families	1,670	10.0
3	Rehabilitating degraded bamboo forests	56 committees	4,700	1.41
4	Other Forest development activities	282 committees	2,050	21.57

Source: MPFD 2002<sup>10</sup>

The benefit sharing mechanism under different forestry development activities is summarized in Table 7. In all the plantation activities, communities are provided with free *Nistar* and minor forest products along with sharing on final harvest of the products which may vary from 10 to 30 per cent depending upon the forest conditions.

**Table 7. Benefit sharing mechanism under different forestry development activities**

S No	Forest development activity	Benefit sharing mechanism
1	Rehabilitating degraded forests	<ul style="list-style-type: none"> <li>• 100 % share in immediate harvest</li> <li>• 30% share in final harvest of timber and bamboo</li> <li>• 100% in minor forest products</li> </ul>
2	Sustainable employment through irrigated plantation	<ul style="list-style-type: none"> <li>• 100 % share in immediate harvest</li> <li>• 30% share in final harvest of timber and bamboo</li> <li>• 100% in minor forest products</li> </ul>
3	Rehabilitating degraded bamboo forests	<ul style="list-style-type: none"> <li>• Watch &amp; ward money to committee</li> <li>• Grass, fodder &amp; MFP (ex – bamboo) to villagers at free of cost</li> <li>• 10% of bamboo at <i>Nistar</i> rates at each rotation</li> <li>• Sustained employment</li> </ul>
4	Other Forest development activities	<ul style="list-style-type: none"> <li>• Budget for fire protection, watch and ward and afforestation being transferred to committees' accounts and protection are carried out by committees</li> </ul>

Source: MPFD 2002<sup>10</sup>

## Community perception on empowerment

The community definition on empowerment has emerged as “the ability to make decision without support or influence from others as well as having sufficient income for sustaining the life through the JFM”. The community definition of empowerment includes all four dimensions of empowerment as individual, social, political and economic empowerment. The participation by gender, caste and social group and economic status is one of the major indicators for the empowerment. The community focused on active participation in all the activities of the JFM (planning, implementing, monitoring and evaluation) with equitable benefit sharing and sustained income from forests as the foremost criteria for the empowerment. Besides, they emphasized on transparency and decision-making processes as also in empowerment. The community perceptions on factors, which must be taken into account for the measurement of empowerment, are summarized in Box 1.

### Box 1 - Community perceptions on indicators of empowerment

- Awareness about the JFM activities
- Ability to express the voices in meetings
- Participation and inclusions of all in JFM development
- Active participation of the people in forest development activities
- Less influence by the Forest Department
- Opportunities and sustained income and employment through JFM
- Capacity to generate own resources for forest development activities
- Availability of information for all
- Accountability of all stakeholders of JFM
- Equitable benefit sharing
- Linkages with other organization established
- Creation of assets for village and community development
- Participatory planning process
- Perceptual and attitudinal change of community towards forests

After listing the factors for empowerment, the participants were asked to classify the above indicators into headings developed in conceptual framework and assigned the weight on it. The community weights on the empowerment are presented in Table 8 below. In both type of JFM, participation and inclusion was one of the major criterion for the empowerment, where they assigned maximum weight for it followed by access to information, material and perceptual change, access to services etc.

**Table 8. Community weightage on indicators of empowerment**

S No	Attributes	VFC	FPC
1	Inclusion and Participation	20	25
2	Access to information	10	10
3	Accountability	5	5
4	Organizational capacity development	5	10
5	Access to services	10	10
6	Perceptual change	10	5
7	Material change	15	10
8	Relational change	10	10
9	Resource sustainability	5	5
10	Organizational sustainability	5	5
11	Economic sustainability	5	5



Total	100	100
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### Empowerment situation

Analysis of the different indices reflects that empowerment situation is not encouraging in both VFC and FPC. But still, the empowerment situation of VFC is high, as compared to that of FPC. This is mainly because both resources as well as efforts are made more in VFC as the main aim of JFM is to regenerate the degraded forests. Similarly, for VFC members livelihood is more dependent on forests as compared to those for FPC members. This might be the reason for better situation of empowerment indices in VFC as compared with FPC. The community focused on active participation in all the activities of the JFM (planning, implementing, monitoring and evaluation) with equitable benefit sharing and sustained income from the forests as the most and foremost criteria for the empowerment. Table 9 summarizes the different indices used for the measuring of empowerment situation of JFM.

The participation index for VFC and FPC are 67 and 51 respectively. The participation index of VFC is high because most of the VFC were constituted five years ago; where as sampled FPC was formed recently. The transparency index was measured in terms of records and minutes keeping, circulation of minutes, knowledge about JFM process, familiarities with government rules and regulations regarding JFM etc. The FPC has the poor transparency index because it was recently formed and many unaware of the activity of it and about is going on in JFM. The accountability index of VFC and FPC are 63 and 58 respectively. Majority of respondents perceived that the accountability index of the MPFD was high compared to their self-accountability. They often argued that MPFD had promoted the JFM and working hard for it rather than villagers. The proper monitoring and supervision by the forest staff had made the JFM successful along with implementation of forest development activity and community development activities.

**Table 9. Indices used for measuring empowerment**

S No	Verifiers	VFC	FPC
1	Participation index	67	51
2	Transparency index	54	28
3	Accountability index	63	58
4	Organizational capacity index	52	20
5	Service index	45	17
6	Biological sustainability	75	54
7	Organizational sustainability	66	32
8	Economic sustainability	43	19
9	Perceptual change	58	26
10	Material change	52	17
11	Relational change	32	12
	<b>Overall empowerment</b>	<b>55</b>	<b>31</b>

Note: High: > 75, Moderate: 75 – 51, Less: 50 – 25, Least: < 25

Until and unless the organization is self sustaining and capable of performing at its own tasks, empowerment of the members is unlikely. The organizational capacity development is influenced the year of operation of JFM committees. The JFM has contributed significantly towards the perceptual and material change in VFC but still has to show impacts on FPC. The relational change in empowerment was not significant in both the JFM committees.

Most of the people from VFC felt that they were politically, socially and personally empowered after the implementation of JFM programme whereas very few perceived that they had been socially empowered after the JFM in FPC. The people felt more

empowered as they were getting lots of support for infrastructural, economic development from MPFD. One of the major thrust areas of the empowerment is the capacity development. The efforts made by MPFD in capacity development are not able to yield desired results in the field. However, there has been a paradigm shift towards empowerment and a large number of people at least feel that they are politically, socially and personally empowered after being involved in JFM activity. The translation of the empowerment into actual practice is going to be a major challenge for the sustainability of the JFM in future.

**Table 10. Community perception on empowerment situation**

S No	Attributes	VFC	FPC
1	Political empowerment	64	37
2	Social empowerment	58	49
3	Economic empowerment	32	17
4	Personal empowerment	46	22
5	Overall empowerment	58	29

## CONCLUSIONS

The formulation of supportive policies by the Central and State Governments in early 1990s have accelerated the spread of JFM in India. Giving due acknowledgement to the role of local communities, Central and State Forest Departments have reviewed JFM policies from time to time to empower the forest dependent communities both socially and economically. In spite of this, there is either no or very little implementation of these directives in the field. The people are unaware about the rules and provisions of the JFM. They are merely forming the groups as request made by the MPFD. Some were organized to derive the benefits from the programs. Lack of transparency, accountability from the Forest Department and low awareness among and poor economic conditions of villagers have created a lot of problems in implementation. The efforts laid by MPFD through various policy reforms and enabling mechanisms have been acknowledged by the committees. But, still the transformation of policy to practice is very less. Majority of the people are unaware with the recent resolutions and provisions. Even the field level beat officers have either little knowledge or no information about the amendments of resolutions. Similarly, the empowerment situation of the JFM community in the field is not encouraging in spite of efforts of government on empowerment. Thus, several enabling mechanisms as training and tours, capacity development, organizational development, excursions and visits must be organized for JFM members to make them aware about the situation as well as of empowerment<sup>11</sup>.

Rural communities are highly heterogeneous in terms of access to resources, decision-making mechanisms and the resultant societal benefits. The elite section of the community highly dominates decision-making forum, as a result of their domination management strategies. As poor families are unable to voice their arguments in favor their active management of forest resources, they are often left out in decision-making, whereas JFM resolution envisages safeguarding their interests. Poor and powerless are involved just to fulfil the quotas, or to count the number in front of visitors. People have, therefore, been questioning over the roles played by them, and questioning their intention and interests, when persons of poor and disadvantage groups are included in the executive committees. Hence, there is either less or passive participation of the local communities, especially poor and marginalized communities in JFM related activities especially in decision-making forum. The empowerment of local community is unlikely until equity, participation and sustainability issues are addressed.

Access to information is one of the major elements of the empowerment. JFM members are unaware about their right responsibilities, roles and duties, and functions in JFM

programmes. Thus, proper mechanisms must be ensured for dissemination of information for all. The best and easiest methods are to read out government policies and programs related to JFM and its resolution in every meeting or displaying of the basic facts and figures in public places.

The main aim of the JFM is the sustainable management of forests with active involvement of community where the empowerment is a must. Still, many issues as inclusions, access to information, participation, organizational capacity development, accountability, access to services under the empowerment process remain unaddressed. However, there has been a paradigm shift towards empowerment and a large number of people at least feel that they are politically, socially and personally empowered after being involved in JFM activities. The translation of the empowerment into actual practice is going to be a major challenge for the sustainability of the JFM in future.

31.

## COMMUNITY PARTICIPATION FOR SUSTAINABLE FOREST MANAGEMENT - LEARNINGS FROM MAJOR EXPERIENCES

A K Bisaria and A K Bhattacharya

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### **Abstract**

*Community participation has been globally accepted as an integral part of the strategy of forest management. The community participation in the forest management in India has gained a significant priority in the National Forest Policy of 1988. Different States adopted the SFM mandate in different ways using different models. The paper has analysed the historical perspective of SFM and examined the major SFM experiences of India. The JFM approach of Madhya Pradesh to achieve has been critically analysed.*

### **INTRODUCTION**

Many approaches have been taken in the past to conserve natural resources- air, water, soil and forests, which are so vital for the sustenance of life on the earth. Forests, being the output of first three resources, reflect the nature of relationship of human beings with the Mother Nature. This output of nature has been under tremendous pressure because of the phenomenon increase in population, human greed, distorted social dynamics and rapid strides of development of physical resources. Thus a paradigm shift is required in the management of these resources.

Productivity of our forests has been declining over the years. To improve upon the productivity, a right mix of technology and orientation is required and for the enhancement of the productivity from an open forest a change in policy, strategy and approach has been felt. It is a recognized fact that the people around the forest area are more dependent on the forests for their day to day needs and with increase in family size and subsequent reduction in the available opportunities for livelihood, the pressure on the open resources has increased manifold. National Forest Policy 1988<sup>1</sup> recognized the dominant role of people in preservation of forests and accordingly adopted a people centered approach. June 1990 circular of GOI<sup>2</sup> gave directives to the States and a momentum was set in for the institutionalization of active involvement of people in conservation of forests at the village level. Different States framed their own guidelines, memoranda within the broad framework of GOI guidelines. Collectively, these trends have been referred to as JFM, which may be formally defined as the sharing of products, responsibilities, control and top down approach for decision making authority over forest lands, between forest departments and local user groups based on a formal agreement. The JFM approach is being adopted as strategy to counter the problem of forest degradation in India, which is closely related to the poverty of forest fringe people. A process of institutionalization has been initiated through the establishment of village level resource management organizations called Village Forest Committee (VFC), Forest Protection Committee (FPC) and Eco Development Committee (EDC). These committees protect a specified area and share benefits in lieu of protection efforts. These processes

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<sup>1</sup> MOEF, 1988. National Forest Policy Resolution 1988, No.6-21/89-p.p. Ministry of Environment and Forests, Paryavaran Bhavan, Lodhi Road, New Delhi.

<sup>2</sup> MOEF, 1990. The Circular Concerning Joint Forest Management. No.6-21/89. Ministry of Environment and Forests. Paryavaran Bhavan, Lodhi Road, New Delhi.

kept on changing with the evolution of concept. How this process of institutionalization affects management of forests on a sustainable basis needs to be monitored in a systematic and practical manner. The concept of sustainability was first placed on the international agenda by the Brundtland report in 1987<sup>3</sup> (WCED), which defined sustainable development as 'meeting the requirements of present generations without compromising the ability of future generations to meet their own needs'. Within forestry the concept of sustainability was for many years equated with the principle of sustained yield. In this context the concept of sustainability first received international attention in the Statement of Forest Principles and Chapter 11 of Agenda 21, which were formulated at the 1992 UN Conference on Environment and Development (UNCED). A Standard definition of sustainable forest management (SFM) has been given by ITTO (1992)<sup>3</sup> which is as follows:

***"Sustainable forest management (SFM) is the process of managing forest to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environments".***

To monitor SFM suitable criteria and indicators are being developed and these are to be normalized under local conditions. Through participatory approach to monitoring and evaluation, JFM institutions can provide valuable insights into the suitability of various criteria and indicators (C & I). It has also been alleged that sudden successes are results of efforts of individual officials and do not reflect the nature of institutional intervention in sustainable forest management. JFM program has created waves of change. To implement it 27 State Governments have issued notifications. The nature of usufruct sharing varies from State to State. The collaborative management regime today encompasses 1.4 lakhs sq. Km of country's forests involving 62890 village level forest committees (Village Level Institution). In view of the extensive institutionalization of In these VLIs, it becomes imperative that specific institution defines broadly that which aspects of forests, their components, processes or functions the VLI intends to preserve over the long term and which and how to utilize.

## **HISTORICAL PERSPECTIVE**

Forests in the beginning were a natural growth, which were being utilized by the local people as per their needs. The Forest Products were in plenty and people were less in number; cattle population was also limited. Gradually, with the beginning of the settlements two discernible trends followed, one was in river valleys, where domestication of plants took place and agriculture started as a major activity and the second was in other areas, where fertile land was not easily available and nomadic and forest based communities started settling. These communities were having a typical societal pattern in which people used to live collectively, they were using natural resources according to their requirements and there was no question of any sort of exploitation. People were dependent on nature and the nature was benevolent. These two parallel trends developed in different geographical areas leading to two different sets of economies. The areas in plateaus and hills developed forest-based economies while those in plains and valleys developed agrarian economy. This sort of development continued until English people entered the scene. They had a different set of economy at their place. From agrarian economy, they had moved to industrialization phase, where why they needed raw materials for their industries and infrastructure development. Large areas of virgin

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<sup>3</sup> Brundtland G (Ed), 1987. 'Our Common Future'. World Commission on Environment and Development. 1987. Oxford University Press, Oxford.

<sup>4</sup> International Tropical Timber Organization, 1992. Criteria for the measurement of sustainable tropical forest management. Yokohama, Japan.

forests came as a reservoir of raw materials. They took forests as a capital and started their exploitation in the name of scientific forestry. The people in forest rich areas were immediate victims from the owners and they became workers. Though the people got alienated but their needs for forest produce were to be there only. However their reverence started fading, their nurturing started declining. British government established a Forest Department in year 1864 by calling a German Forester Dietrich Brandies.

Production intensified so did also the supply for the navy and railways. This led to the shortage of important timber trees of good diameter. This was in fact essence of loss of sustainability. Forest administration strengthened, forest based basic needs were satisfied but only destructively. The concept of sustained yield emerged to ensure uninterrupted supply of timber to royal navy and railways and to achieve this goal; the concept of a normal forests was developed. The two world wars made heavy demand on forests. Timber production fever gained upper hand and forest management, environment and sustainability were taken for granted (Shah 2000)<sup>5</sup>. Zamindari was abolished. The number of landowners increased very significantly and also their demands on forest produce increased concomitantly. Concept of biomass gained ground and fast growing species like Poplar, Eucalyptus, Subabul etc started growing in large areas. To strengthen further the State control on natural resources, nationalization of certain species like Sal, Teak, Tendu leaves ensued. External financing on forest production increased. Nationalization led to over exploitation of forest resources. Forests became more unsustainable and unhealthy. Simultaneously change started taking place globally in which concern for environmental conservation echoed. Social forestry was born. Wasteland development became a priority issue and management was not considered as panacea for all the issues. The role of people started to be recognized beyond the community lands. Participation of people was also sought for the management of government forest area. This was gradually a process from the back to square one but in between lot of damage was done in the form of around 40 percent degraded forests and decline of faith of people in government ownership. Natural regeneration and plantation didn't keep pace with the multiplication of human and cattle population. Migration of rural population to urban areas also didn't mitigate the situation. Instead of it, secondary uses of timber in the form of furniture and construction timber etc increased leading to the commercial felling in the forests. Demand of raw materials like bamboo for the paper pulp production also diminished supply to rural artisans like *Basods*. With conservation act in year 1980 central government extended its control over forestland. Conservation act envisaged that State government couldn't divert any notified forestland for the non-forestry purpose without the specific permission of GOI. Feeling the brunt of biological degradation due to biological intervention, it was gradually realized that biological interventions couldn't be thwarted by rules, regulations and policing and the role of the people in and around the forests is to be considered and their cooperation needs to be elicited and that too on a regular basis and therefore arises the need of well defined institutional system and thus the concept of JFM came into being. JFM approach reported initially in the Arabari forests of south Midnapur division in West Bengal, and appeared after long lapse of time in Haryana, Orissa and Rajasthan, got momentum, when central government came with specific directives in June 1990<sup>2</sup>. The subject of the circular was involvement of village communities and voluntary agencies for regeneration of degraded forest land and it was specifically mentioned in it that access to forest land and usufructory benefits should be only to the beneficiaries, who get organized into a VLI specifically to forest regeneration and protection. It was clearly emphasized that no ownership or lease rights would be given to the beneficiaries or to the voluntary agencies. Appendix to the circular initiated joint management program principles, which included five steps for forming joint management organization.

<sup>5</sup> Shah V, 2000. Role of forests in the twenty first century - A vision. Journal of Tropical Forestry, Vol. 16, pp 1-11.

1. Establishing communication and mutual understanding
2. Forming a management organization
3. Preparing a micro management plan
4. Beat level meeting
5. Community registration and joint management formation

### **ARABARI EXPERIENCE:**

A pilot project was taken up in the Arabari range of East Midnapur Division in the year 1971-72. It involved 618 families of 11 villages, whose dependence on forests, the level of unemployment prevailing and other needs for survival were surveyed and provided for forestry works in the forest area put under their care. By the year 1986, 700 hectares of degraded Sal coppice forests were rejuvenated to mature pole crops and another 385 hectares of well stocked plantation standing on the erstwhile blank area. The government came out with a declaration that 25% of net sale proceeds of the annual coupes would go to the committee members. Other species also recovered along with Sal increasing the income from NWFP collection like that of *Bidi leaf*, Tassar silk, Cocoons, *Mahua flower*, gum, fodder grasses, medicinal herbs etc by rural tribal women of the area. Mean annual income from NWFP collection of a tribal household was Rs. 2523 constituting 22% of total family income and that of a caste household of Rs. 2738 constituting 16% of the total family income. Arabari experience laid the foundation of institutionalization for the protection of forests through communities and consequently sharing mechanism for benefits flowing through such protection.

### **SUKHOMAJRI**

The highly erodible Siwalik hills occupy around 68000 hectare along the northern border of the State of Haryana. The people depend on rain fed agriculture and livestock for their livelihood. Increasing pressure on population has resulted in degradation of vegetation, severe soil erosion, sedimentation of lakes, reservoirs and irrigation facilities, flash flood and landslides. The villagers of Sukhomajri agreed to control grazing in the catchments area, if a dam was built to supply irrigation water. Resource development through small earthen check dam proved to be a good starting point for participation by villages in protecting the catchments. Another immediate benefit proved to be *Bhabar* grass (*Eulaliopsis bilata*) used for rope making and was previously sold to contractors. The growth of this grass increased manifold, besides increase in the fodder grass growth. Economic life of villagers also improved to a significant level; now each villager has a well-built house, cattle, irrigated land and is sending children to school. The involvement of villagers was channeled through the irrigation and forest protection societies later renamed Hill Resource Management Societies.

### **BUDHIKHAMRI**

In Mayurbhanj District near Budhikhamri, biotic interference, which was responsible for domination of Sal to exclusion of all its associates and competitors in the area, has also become subsequently responsible for its degradation and depletion. In the year 1987 efforts were initiated to involve the local people in rehabilitation of degraded forests. The villagers responded and forest protection committees were formed in seven villages. The people had decided to take their requirements on a selective removal basis without affecting the density of standing crop.

### **EKLINGPURA**

Eklingspura about 12 km from Udaipur in the Aravali hills once had a dense growth of *Salai* (*Boswellia serrata*) bearing dry deciduous forest with *Khair* (*Acacia catechu*), *Rhenjha* (*Acacia leucophloea*) and *Anwal* (*Cassia auriculata*). With over exploitation by



grazing, fuel wood removal etc the vegetation got degraded but there was some remnant rootstock. Fodder scarcity in 1988 prompted the *Sarpanch* of the village to organize the people for protecting the forest. Forest department planted 250 ha between 1987 and 1999, and as grass growth improved people resorted to stall feeding for their high yield milch animals. Almost all households joined the informal unregistered village forest protection and management committees. The committee developed a system of contribution and sharing and reward and punishment.

## **MADHYA PRADESH: THE JFM JOURNEY THAT CONTINUES**

Madhya Pradesh having a rich forest cover and large tribal population was not behind to embrace joint management of forests and proved to be a fertile ground to tread the JFM path. A background of development of participatory approaches provides interesting and rewarding experiences.

To reduce pressure on the notified forests, concept of social forestry came into being which envisaged planting of trees on roadsides, canal sides, near railway tracks, available community wasteland and farmland. People's participation was implicit in this concept (NCA, 1976)<sup>6</sup>. A Social forestry project was launched in 1981-82 with financial assistance from USAID that continued up to 1985-86. During eighties this process picked up and at some places like Shivpuri, even notified degraded forests were taken up for planting with people's assistance. Farm forestry on bunds and agro-forestry on village community lands also started though emphasis was only on monoculture. It was notable that women also came forward and in 1983 at Sirsaud in Shivpuri District, a *Mahila Mandal* was formed. A management plan was also drawn out emphasizing sustainability of fuel, fodder and small timber. The concept of institutionalization extended to other districts as well and in 1986 a committee (*Samiti*) was constituted at Balra in Khandwa district.

The process of institutionalization of people's participation in forest area was given a concrete shape in 1988.

According to mid term evaluation reports (MPFD 1985)<sup>7</sup>, the principal objectives of the project to build institutional capacity and participate in the establishment of community plantation were mostly not achieved. To this extent the programme by and large did not go well except in few pockets. The Panchayats at places declined to take possession of community plantations and at places where they came forward could not protect it.

Despite of the fact that Social Forestry is seen as a failure it definitely helped in settling stage for launching participatory management initiatives in Government forests (Shah 1996)<sup>8</sup>. In 1988 the DFO of Noradehi Sanctuary made an attempt to reduce the pressure on forests by establishing cattle camps for animals of forest villages and by providing alternative employment opportunities to the individual- dependent on forests for their livelihood. It was realized that without bringing user discipline optimum utilization of product and services would not be possible. During the same period DFO, Ratlam tried to organize two cattle camps and formed 20 committees of volunteers, who undertook responsibility of forest protection.

The rehabilitation of degraded forests and afforestation in MP, a project assisted by the World Food Programme, was launched on July 1<sup>st</sup> 1990. The major objectives of the project were to oversee the outcome of forestry works, create employment opportunities,

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<sup>6</sup> National Commission on Agriculture, 1976. Report of the Agriculture Commission, Government of India.

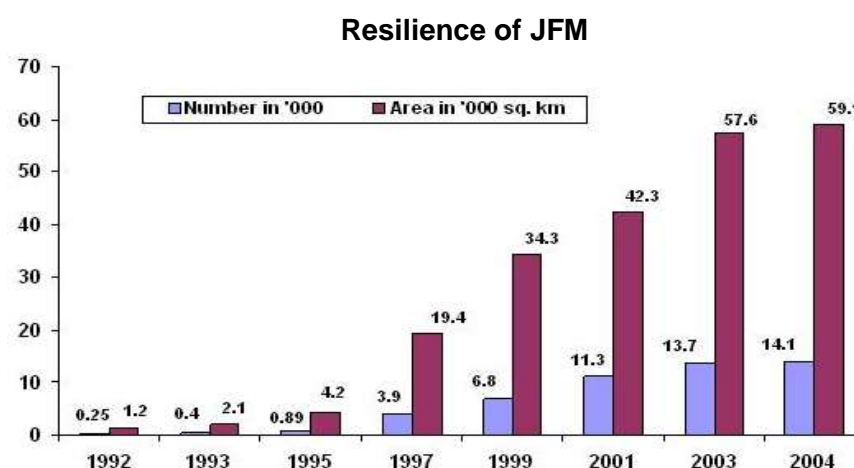
<sup>7</sup> GOMP, 1985. Mid Term Evaluation Report on Social Forestry. Government of Madhya Pradesh, Bhopal, India.

<sup>8</sup> Shah, 1996. Ecological Aspects of Indian Forest Management. In: New voices in Indian Forestry ed. V.S.P Kurup. Society for Promotion of Wasteland Development, New Delhi.

to promote basic services and develop social infrastructure through the use of generated funds invested for the benefits of the local population. According to Mid Term Evaluation Report (GOMP 1995)<sup>9</sup>, the Department for the first time was able to provide villagers the needed social support.

The process of JFM picked up from Harda Forest Division of Hoshangabad District, where local forest officials started dialogue with the communities in 1991. By 1992 more than 150 FPCs had been formed bringing 75% of the divisional forest lands totaling 1.05 lakh hectares under community management.

In 1991 the government of Madhya Pradesh (GOMP)<sup>10</sup> issued a government order (GO) specifying how JFM would be established in the State. The 1991 order stipulated that Forest Protection Committees (FPCs) should be constituted in 'sensitive areas' that have a forest cover over and above 40 percent, and that the FPCs should obtain 20 percent of the net income derived from forest areas so protected. In degraded lands, where the canopy cover is less than 40 percent, village forest protection committees (VFCs) hereafter referred to as VFC should be established, and the forest regeneration activities should be taken up in these areas. VFCs were allocated 30 percent of final timber produce. 30 percent of income obtained from nationalized Non timber forest products (NTFPs) and unrestricted non-nationalized NTFPs. In addition, VFCs were entitled to 100 percent of revenues from intermediate yields such as from thinning and clearing (SPWD 1992)<sup>11</sup>. M.P. Forestry Project - a World Bank financed Rs. 800 crore project in its phase I (1995-99) acted as a catalyst for the institutionalization of JFM. The project had 4 major components viz. Management Development, Forest Development, Extension and Research and Biodiversity conservation. Of the four components, maximum stress was given to the Forest Development component in which around 60% of total project outlay was utilized. This component included major support to JFM. There was sudden splurge in number of committees and area covered as shown in graph.



In 1995, the GOMP<sup>9</sup> amended many provisions of the 1991<sup>10</sup> order. The main changes included non-entitlement of FPC to a percentage of the final timber harvest with only guarantees for FPCs' access to traditional rights. In relation to VFCs, the provision of guaranteeing 30 percent of income from nationalized forest products was revoked and the Working Plans were suspended. Committees were to be constituted in villages or clusters of villagers located within 5 Km of the forest boundary; and provisions were made in these committees to involve Gram Panchayats (local governing institutions), women and the landless in the JFM process. Although the 1995<sup>9</sup> amendment clarifies and further

<sup>9</sup> GOMP, 1995. JFM resolution. Government of Madhya Pradesh, Bhopal, India.

<sup>10</sup> GOMP, 1991. JFM resolution. Government of Madhya Pradesh, Bhopal, India.

- <sup>11</sup> Anon, 1992. Joint Forest Management: Concepts & Opportunities. Proceedings of the National Workshop at Surajkund, August 1992. SPWD, New Delhi.

develops several components of JFM, the revocation of financial and other benefits narrows the scope of the program.

In the revised 2000 resolution<sup>12</sup>, three types of committee, viz. Forest Protection Committees (FPCs), Village Forest Committees (VFCs) and Eco-Development Committees (EDCs) have been recognized. All voters in the village would be the members of the committees. The resolution has taken care of the anomaly that existed between FPCs and VFCs regarding usufruct sharing. While VFCs would get 30% of the net value of the final produce from the coupes in earmarked area, FPC would get 10% of the value of produce obtained from the final felling of timber coupes and 20% from the final felling of bamboo coupes after deducting extraction cost. The EDCs are to be treated at par with FPCs or VFCs, depending upon the health of the forests in which they are situated. In addition to this, 100% intermediate yields are to be given free to VFCs and FPCs along with royalty-free '*nistar*' to all committees. 2001 resolution of GOMP<sup>13</sup> further broadened the scope of participatory forest management towards empowerment. Thus provision for local assistant secretary from the village was incorporated with the idea that the assistant secretary would take over the responsibility of the FD secretary (forest guard/forester) over a period of time. Assistant secretary being a local public man would usher into a new phase of empowerment. Similarly executive committee was made co-terminus with political bodies having a period of 5 year.

With the strengthening of institutions the process has also taken a sea change. Thus in day-to-day forestry operations, villagers are taking active participation considering it as an opportunity to safeguard their livelihood surroundings. Copies of site-specific plans are available with the villagers marking a clear-cut departure from the traditional approach where the villager was considered a mere laborer and a wage earner. It appears that over the last one decade JFM has developed in the right perspective and is gradually becoming a process to attain goal of sustainable forest management. Whatever critics of participatory approach to forest management may argue massive institutionalization of people's participation is getting more and more stabilized after having passed through the transitional phase.

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<sup>12</sup> GOMP, 2000. JFM resolution. Government of Madhya Pradesh, Bhopal, India.

<sup>13</sup> GOMP, 2001. JFM resolution. Government of Madhya Pradesh, Bhopal, India.



32.

## WOMEN PARTICIPATION IN JOINT FOREST MANAGEMENT PROGRAMME - A STUDY FROM MADHYA PRADESH, INDIA

A K Bhattacharya and Rekha Sharma

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### **Abstract**

*This paper attempts to examine the situation of women participation in JFM programme and identify factors, which are hindering or supportive for participation of women in JFM. This paper is the outcome of findings of study conducted in Sidhi District of Madhya Pradesh, where 112 women respondents were consulted in five JFMCs. Based on the field observations, various issues and factors pertaining to women participation in JFM have been examined, analysed and interpreted and the recommendations made.*

### **BACKGROUND**

Women have developed the knowledge, skills and arts in local resources management. They have natural skill at finding suitable resources and in maximizing their uses. Due to familiarity with forest products, the women can easily learn silvicultural techniques and play a vital role in forest management (Chatterjee, 1995)<sup>1</sup>. Realizing the role of women in forest development, Joint Forest Management resolutions have made gradual amendments a number of times for inclusion of poor by gender, caste and economic status in decision-making forum. But, they do not often get proper opportunity for actual implementation of JFM. They are often involved just to fulfill the quotas, or to make good of the number for gender participation. People have been questioning over the roles played by them. Although JFM has explicit provision to include women in the executive committees but the proportion of their representation is often not commensurate to their actual share in the total population in the community. In some instances, only a few established individuals are included, while making no efforts to broaden the women participation base. Therefore, identification and assessment of real situation regarding awareness and interest reflected by the participation of village women towards JFM are essential. Recognizing the importance of women participation in JFM, the study attempts to assess the situation of women participation in JFM program and analyse the factors, which are hindering or supportive for involvement of women in JFM and problems associated with their participation. This paper is outcome of findings of study conducted in Sidhi District of Madhya Pradesh (MP), where 112 women respondents were consulted in five JFMCs (three VFCs and two FPCs).

### **Policy provisions for enhancing women's participation**

The JFM aims at empowering local people for their active participation as partner in the management of forest resources and sharing the benefits derived from its protection and management. It has emphasized on women's participation in JFM and has made reservation for women giving due acknowledgement to their role in forest management. Table 1 compares various resolutions of JFM of M P for enhancing the women participation.

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<sup>1</sup> Chatterjee M & Roy SN, 1995. *Gender Role in JFM: Participant's Perception, Reflection on Gender Issues in JFM*. Indian Forester, Vol.22. India

**Table 1: Comparison of various JFM resolutions of Madhya Pradesh**

Attributes	1991 resolution	1995 resolution	2000 resolution	2001 resolution
Types of JFM	VFC, FPC	VFC, FPC	VFC, FPC, EDC	VFC, FPC, EDC
Membership	One person from each family	One male and one female from each family	All adult members who have rights to vote	All adult members who have rights to vote
Attendance requirement	At least 50 % of adults	At least 50 % of male and female members	At least 50 % of adults	At least 50 % of adults
Executive committee formation	Under the chairmanship of <i>Antyodaya</i> Committee	Under the chairmanship of <i>SarPanch</i>	Election under the chairmanship of chairperson by adult members	As per the <i>Gram Sabha</i> Act, 2001
Size of committee	Minimum of 5 and one from every 10 HH	Not specified	From 10 to 21 members	From 10 to 21 members
Involvement of women in executive committee	-	At least 2 in executive Committee	Minimum 33 % in executive committee and chairperson or vice chairperson of committee must be a woman	Minimum 33 % in executive committee and chairperson or vice chairperson of committee must be a woman

Source: Bhattacharya and Basnyat, 2002<sup>2</sup>

The JFM resolutions have made gradual amendments a number of times for inclusion of poor by gender, caste and economic status in decision-making forum. The first JFM resolution was silent in this regard but later attempts were made to acknowledge their role and safeguard the interest of the deprived community as women, landless people and schedule caste. Presence of at least 33 % of women in executive committee, representation of the schedule caste and tribe in proportion to their population and at least one male and female members from the landless communities are the attempts to safeguard the inclusion and interest of deprived community in the decision making forum. In spite of all these efforts, the lessons from the field suggest that they are involved to fulfill the quotas. They are not aware about the JFM, their roles and responsibilities. Box 1 deals about what JFM committee means for one of the respondents. One of the executive women said, '*Kebal mansaruan se heih poch levat heh mahariyan se kaun poochhata heih?*' (Only males are consulted not the females during the formation of committee).

<sup>2</sup> Bhattacharya AK & Basnyat B, 2002. *Empowerment through Joint Forest Management in Madhya Pradesh: A study on Empowerment situation of JFM*. Unpublished study report. Indian Institute of Forest Management. Bhopal India<sup>a</sup>

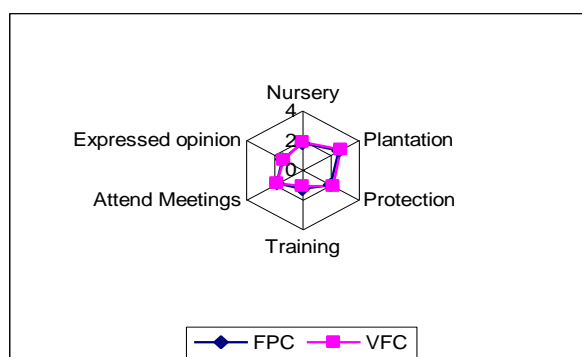
### Box 1 - What JFM Committee Means for Ramkali ?

Ramkali Yadav, aged 30 staying in Barkadola FPC, is a housewife and is executive member of JFMC. Seeing her interest in JFM, she was asked about the JFM committee of her village. She replied, 'Van Samiti was formed in her village two years back but she did not know its type (whether FPC or VFC)'. She was further asked about her understanding about JFMC meeting? For her the JFM committee meeting is gathering of male executive members at Chairperson's house once a month. . She had only one opportunity to participate in those meetings, when the outsider or higher forest officials had come to the village. She did not know what was done in meetings. Instead she searched the answer from the researcher about the meetings. She had many queries in her mind about the JFM meetings. She also tried to find out the purpose of involving women in JFM committees?

### Level and extent of women participation

Rural women, who traditionally have the responsibilities of collecting fuel wood, fodder, are likely to play an important role in changing the quality and quantity of local supplies. Women are not only likely to be victims of increasing scarcity of forest resource, but they are also actively concerned regarding the solutions in creating, locating, and using forest resources and hence they are local experts for the management of forest resources. Thus, attempt was made to study the extent of participation of women in each of forest management activities. The spider diagram (Fig 1) presents the extent of women participation in various types of the programs. Participation of women is high in plantation activities. This might be because the forest development activities initiated in the districts are providing lots of income and wage earning opportunities to women. Protection obtained the second rank; the reason might be the increase in awareness level of women regarding their belongingness to forests, as they are the users as well as managers. Less participation was observed in attending the monthly meetings, the reason being social, cultural and physical constraints. Besides, time was found to be a major constraint. Very few women were able to express the views in the meetings. Participation (inclusion) of women in the capacity building training is very less.

Figure 1: Level of Women Participation



Participation of women in meetings is summarized in Table 2. Above two third of respondents (77.7%) did not even participate in a single meeting of JFM. When asked the reasons for this, one of the old woman said, "It's the duty of the male members to look outside the household and we don't have time to participate in those silly activities as we are busy in rearing our children and cooking food. Thus why should we waste our time?" However, few women complained for the inconvenient timing of the meeting. The meetings are generally conducted at morning or in late evening when women were busy in household chores and do not have time to go there due to busy household chores. One



of the women was highly interested to take active participation in decision-making and asked researcher, "Could you change the timing of meetings at mid day such that we had a leisure time and we would be able to see what was happening in our committee?"

**Table 2: Participation in meeting**

SN	Response	FPC		VFC		Total	
		No	%	No	%	No	%
1	Yes	11	19.0	14	25.9	25	22.3
2	No	47	81.0	40	74.1	87	77.7
	<b>Total</b>	<b>58</b>	<b>100.0</b>	<b>54</b>	<b>100.0</b>	<b>112</b>	<b>100.0</b>

### Factors promoting and hindering participation

Factors promoting the participation in forest management activities were identified and scored. On the basis of scores obtained, mean score for each activity has been calculated, ranked and presented in Table 3. Additional income is the major factor contributing towards the participation of JFMC activities. As discussed above, the incentive of additional income through the income generation activities of JFM contributes significantly towards the participation of women. Access to fuel wood and fodder was second major promoter for women participation in forest management followed by seeing the participation of friends and relatives.

**Table 3: Factors promoting participation**

S No	Activities	Max score	FPC		VFC		Total	
			Avg	Rank	Avg	Rank	Avg	Rank
1	Additional income	3	1.7	3	1.9	3	1.8	3
2	Access to fuel and fodder	3	2.8	1	3.0	1	2.9	1
3	Motivated by participation of friends and relatives	3	1.0	6	1.1	6	1.1	6
4	Protection against deprivation and security to livelihood	3	1.9	2	2.0	2	1.9	2
5	Recognition and respect in community	3	1.0	5	1.1	5	1.1	5
6	Improvement in agriculture	3	1.6	4	1.0	4	1.3	4

The economic factors like delay in return from plantations and lack of timely and appropriate advice from Forest Department were found to be major constraints, which hinder the participation. Another constraint was found to be individual or group domination. Because of social hierarchy, the lower caste women are not allowed to participate. Fourth constraint was identified as lack of awareness. Fifth constraint was identified as non-acceptance of their ideas and opinions. Sixth factor identified as lack of time due to household works where as seventh factor was identified as lack of family support. Table 4 presents the factors, which have been found to hinder the women participation in JFM programme.

**Table 4: Factors hindering participation**

S No	Activities	Max score	FPC		VFC		Total	
			Avg	Rank	Avg	Rank	Avg	Rank
7	Lack of timely technical advice	3	2.33	I	2.49	I	2.43	1
6	Delay in returns	3	2.28	II	2.49	I	2.32	2
1	Individual/group domination	3	2.00	III	2.00	IV	2.00	3
5	Lack of awareness about programs	3	1.96	IV	1.21	V	1.46	4
2	Ideas and opinions are not entertained	3	1.94	V	2.21	III	1.94	5
3	No time for participation	3	1.83	VI	2.08	VI	1.95	6
4	Lack of family support	3	1.66	VII	2.36	II	2.20	7

Force field analysis (FFA) has proven to be helpful in analysing problems and identifying solutions. FFA was used to visually identify and analyze forces affecting women participation so as to plan a positive change. It provides people with opportunities to think of forces (positive and negative) that are affecting the problem in question. The participants of the group discussions were requested to visualize the problem situation in a state of equilibrium maintained by two sets of opposing forces- one favoring change (driving force), and the other opposing them (restraining forces). Table 5 presents the factors influencing on women's participation. High workload, dependence on male, poor decision-making, lack of awareness about the JFM activities, low transparency mechanisms, cultural beliefs, poor family support to women are the restraining forces where as knowledge, awareness and institutional support in forming of SHGs constitute the positive factors.

**Table 5: Driving and restraining forces for women participation**

Rank	Driving Forces	Restraining forces
First	Formation of SHGs and other development programs	Lack of awareness of JFM Program Heavy work load of women
Second	Educational level	Traditional and cultural beliefs
Third	Support of forest officials	Male domination in decision making
Fourth	Wage and employment opportunities	Time of the meetings
Fifth	Benefits available from forests	Transparency mechanisms
		Dependency on male / male domination
		Socio-economic conditions
		Not entertaining women's voices
		Personal factors as shyness, education etc.

Correlation analysis was carried out to find the relationships between socio-economic factors and level of participation in JFM activities. Table 6 presents relationship between participation and socio-economic variables. Education is positively and significantly related with participation whereas age shows negative relationship with participation, hence higher the age, lower will be the participation. The reason might be that older people are less interested in developmental activities and they spend most of the time in

taking care of children. The other independent variables like annual income, land-size, livestock possessions, and occupation did not show any significant relationship with participation, which means that these variables had no influence on the participation in forest management.  $R^2$  value is 0.2704, which shows that all together the independent variables have contributed 20.74 per cent variability in participation in forest management. All these values are significant at 5% level of significance in T-test.

**Table 6: Relationship between participation and socio-economic variables**

S No	Independent variables	Participation
1	Age*	-.2815
2	Education*	.3266
3	Income	.0507
4	Land	-.0072
5	Livestock	.0499
6	Caste group*	-0.3333
7	Family size	0.0371
8	Occupation	0.1174

Note: \* Significant at 5% level

$R^2$  value = .2074 (20.74%)

## CONCLUSIONS AND RECOMMENDATIONS

Women are both users as well as workers of JFM. Their involvement as users in collecting forest products, especially fuel wood and NTFPs is high whereas they are also taking active participation in implementing the forest development activities as plantations, nursery management and forest protection activity.

Most of the women are not aware about the JFM activities in the villages. They do not know when the committee was formed and what type of JFM it was, though they are using the forests for meeting their daily needs. However, the women are, to some extent, aware about the benefits that they derive from the forests in terms of fuel wood, fodder and income generation and it has been observed that there is willingness to accept the JFM.

*Thus, awareness generation should be given priority to make the JFM success through proper dissemination of information, extension activities like posters, campaign, audio-visuals, traditional methods like Nukkad Natak etc, regular and frequent interaction between frontline staff and villagers for highlighting the role of women in JFM and the benefits of JFM to the women specially in terms of the fuel wood, effective information network, and exposure visits, workshops at village and district levels to provide them a platform for exchange of ideas, experience and knowledge etc.*

It has been found that women's involvement in planning, decision-making monitoring of JFM programs is almost negligible, though they contribute significantly in protection as well as utilization of forest. They lack skills regarding implementation of JFM programme. Capacity building is essential for understanding and taking up responsibilities for the implementation of JFM successfully. The issues, which need to be addressed for capacity building, include constitution of committees, maintenance of records and accounts, effective use of forest resources etc. It has been found that there is willingness to participate in training programme and they appreciate that capacity building is required for improving their outputs.

*It is, therefore, recommended that capacity building should be taken up as a continuous process through identifying the thrust areas; special attention should be paid to the capacity building of women in identified potential areas in traditional arts, crafts and skills. Capacity building should also focus on the specific requirements and the strengths of the*

area. Women frontline staff, women representatives and women volunteers from local NGOs, field level institutions like health, education should be regularly involved in the capacity building programme.

Women participation has been found to be high in VFC as compared to FPC. The VFC caters to the basic needs of forest products of family as well as provides more income and employment opportunities compared to FPC. The difference type of benefit sharing mechanisms exists between these two types of JFM, which has ultimately influenced women's participation in JFM. Similarly, it has been found that JFM is successful where the FPC or VFC comprises the tribal members. It is not much successful where FPC / VFC members belong to higher caste because tribals are more dependent on forests as compare to higher caste. Thus due attention must be given to the tribal groups while handing over to forests as well as the micro plan must address the needs of this community. It has emerged that there is almost no involvement of women in the micro planning. The women are largely excluded at the time of preparation of micro-plan. It essential to involve women in micro-planning in order to ensure their participation. The respondent women consider that their needs are not identified and addressed in the micro-plan.

*Therefore, it is recommended that micro-plan preparation should be very intensive, elaborate, interactive and participatory ensuring the participation of all stakeholders, specially the active involvement of women; all problems should be identified and addressed in the micro-plan; all issues should be critically examined and resolved; for preparation of micro-plan proper training should be provided to the frontline staff and the women; the team which is involved in micro-plan preparation should also be involved in the implementation as well as monitoring and evaluation processes.*

It has also observed that before formation of VFC or while preparation of micro plan, Forest Department motivates only few villagers and they subsequently become the chairman and management committee members and these villagers by default happens to be males. After that two women member are inducted into the management committee by the Forest Department in consultation with the chairman and men of the village. There are no formal channels of communication in the FPC/VFPC for disseminating information to rest of the villagers. Thus information remain confined to management committee people who are mostly male and among a few women who come to meetings sit quietly at the back and go back to their homes after meetings are over. Facilitation process is essential to promote the women's participation in the JFM programme. A gap between the frontline staff and the villagers in general and women in particular has been manifested. The frontline staff can play an important role in the facilitation and also educating the men to involve the women in the programme. Through the focus group discussions and the personal interaction with the villagers and the staff during the field survey it has emerged that the old generation traditional foresters do not want to involve people where as new foresters involve people especially in the protection activities, but both the groups are not much interested to involve people at decision making stage.

*Therefore, it is recommended that frequent and live interaction should take place between Forest Department and villagers regarding all JFM activities, and it should be a regular feature through workshops and camp; informal meetings and interaction between the villagers and staffs should encouraged to create a congenial atmosphere for the freedom of expressions and opinions; voices of all members specially the women be heard and follow up be made; women should be encouraged to express themselves and forest department has to break the ice through more frequent and effective interaction, orientation, motivation and more sensitive approach. M P Forest Department has already made a good beginning by appointing women forest guards in large number from the local communities.*

During the interaction with the villagers both men and women expressed that there was a need for the regular capacity building especially for the technical forestry from the Forest

Department for the committee or individual members in the JFM practices. The members including the women need and expect technical guidance for forestry activities envisaged in the micro-plan. One of the reasons for the low participation in JFM has been identified as delayed economic benefits from forestry activities.

*Therefore, it is recommended that regular technical guidance has to be given for forestry activities; special inputs should be imparted for cultivation, primary processing and value addition of NTFP including medicinal plants and agro-forestry activities for enhanced production of grass and fodder for immediate economic return; special attention should be paid for the technical support for the forestry based income generation activities for the women based on the existing requirements.*

It has been observed that the committee members are mainly interested in sharing benefits without sharing the responsibilities. In practice the onus of the illicit felling and other forest offences lie with the forest officials only. The analysis of the various government resolutions on JFM, as explained in Table 1, indicates that although there have been constant efforts towards the empowerment of the village level committees, but still there is no institutionalised mechanism to hold the committee members legally responsible for the forest offences but for the social and moral responsibility. It is practically impossible to take legal action against the committee members. It also emerged that even forest officials were sometimes apprehensive of this fact and this acts as a negative factor for the involvement of the forest official in the JFM programme. The members think that as the Forest Department has the powers to dissolve the executive committee on its non-functioning, similarly the committee should have the powers to take action against the Forest Department if the later is not functioning satisfactorily.

*Therefore, it is recommended that there should be mutual responsibility and accountability for the forest benefits as well as the forest damage; there should be clear guidelines about the accountability, penalties, recoveries and dos and donts with respect to forest offences; the representatives of the Forest department and committees should regularly introspect the strengths and the weaknesses and take actions accordingly; the Forest Department has to take proactive action to identify the issues and apprehensions of the members against both committee and the department.*

In most of the villages it has been observed that VFC/FPC meetings are convened by the Chairman (who always happens to be male alone) or in consultation with a few influential men of the village (who also happen to be the members of executive committee). He decides the date, venue and time of the meeting. Generally these meetings are held in afternoon or evening time when men are free after they return from work. But women at that time are usually away from the village for sale of fuel wood or NTFPs or generally busy with domestic chores. Consequently, they are excluded from the JFM meetings. Regarding the participation of women in the JFM programme it has been observed that the women have to tackle many fronts like the household works, social resistance from men and the elders of the village, illiteracy, lack of exposure, multiplicity of jobs at home and the fields. Thus involving the women actively and positively in the programme is Herculean task, but their involvement in the programme is essential for sustainable development.

*It is, therefore, recommended that special efforts have to be made to involve the women in the JFM programme slowly and gradually, but it has to be taken as a priority; the women have to be involved at all the levels and in all the activities including the patrolling; some of them are already joining the men for patrolling and can prove to be effective against the women offenders; all other departments and NGOs related to the women development should also be involved in the process; facilities and amendments should be extended as per their conveniences, like timing of the meetings may be fixed as per their availability. To make it feasible, short term and long term efforts have to be made to address the issues like socio-cultural set up and the interdepartmental coordination etc.*

33.

## DECENTRALISATION IN NATURAL RESOURCES MANAGEMENT – A REVIEW WITH SPECIAL REFERENCE TO MADHYA PRADESH (INDIA)

A K Bhattacharya and Hasrat Arjjumend

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### **Abstract**

*Decentralisation can have significant repercussions in NRM and allocation, and ultimately macroeconomic stability, service delivery, and equity. The paper describes the issues and complexity of the decentralisation process, presents the lessons learned from the earlier researches and also the experience of the State of Madhya Pradesh about the design and the implementation of the decentralization, and draws implications from this analysis for future research agendas.*

### **BACKGROUND**

Decentralisation is considered as means of bringing a broader section of a given population into public decision-making processes. It is regarded as the most functional vehicle to ensure democracy, ownership, equity, transparency and efficiency in governance. Justifications for decentralisation are built around the assumption that greater participation in public decision-making is a positive good in itself, and that can improve efficiency, equity, development and resource management. Decentralisation is a multidimensional concept, so it could mean different things to different people. Moreover, the decentralisation process too has no blue print given the varied and usually complex political, administrative and social systems in developing countries.

### **DECENTRALISATION DEFINED**

Broadly the decentralisation can be defined as the transfer of planning, decision making or management functions from central or State government and its agencies to field organisations, subordinate units of government, semi-autonomous public corporations, area wide or regional development organisations, specialised functional authorities or non-government organisations (Bhattacharya 2001)<sup>1</sup>. Ribot (2001a)<sup>2</sup> argued that decentralisation is about the transfer of powers and the actors to whom they are being transferred. It is about local democracy, i.e. discretion in the hands of representative, locally accountable authorities. And it is also about citizenship. Most decentralisation theories identify two essential ingredients: (i) local accountability of leaders to their people, enabling greater efficiency and greater equity; (ii) discretionary powers in the hands of local leaders so that their powers have meaning to local people who then have an interest in accountability.

Decentralisation and community driven management acquire special importance in the context of the ongoing process of globalisation and associated economic reforms. While the process of globalisation acts in ways in which the market acquires supremacy to the detriment of people who lose control over their livelihood patterns as well as other choices, the process of decentralisation could act as a countervailing force enabling people to acquire control over decisions that influence their lives in critical areas (Ribot 2001a)<sup>2</sup>. Decentralisation is a complex phenomenon involving many geographic entities,

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<sup>1</sup> Bhattacharya AK, 2001. *Community participation and sustainable forest development: Global Perspective*. Concept Publishing Company, New Delhi.

<sup>2</sup> Ribot J, 2001a. Local Actors, Powers and Accountability in African Decentralisations: A Review of Issues. International Development Research Centre, Canada.

societal actors and social sectors. The geographic entities include the international, national, sub-national, and local. The societal actors include government, the private sector and civil society. The social sectors include all development themes - political, social, cultural and environmental (Work 1998)<sup>3</sup>. By bringing government decision making closer to the citizenry, decentralisation is widely believed to increase public sector accountability, and therefore, effectiveness (Fox and Aranda 1996)<sup>4</sup>. At its most basic, decentralisation aims to achieve one of the central aspirations of just political governance (democratisation), or the desire that human should have a say in their own affairs. In this sense, decentralisation is a strategy of governance prompted by external or domestic pressures to facilitate transfers of power closer to those who are most affected by the exercise of power (Agarwal and Ostrom 1999)<sup>5</sup>. As Crook and Manor (1998)<sup>6</sup> argue, bringing government closer to people increases efficiency by helping to "...tap the creativity and resources of local communities by giving them the chance to participate in development".

Link between poverty and environmental degradation in India has been well explored. Over the last decade there has been an increasing policy acceptance that access to natural resources and decentralised management of natural resources is critical for local development (Agarwal and Narain 1989<sup>7</sup>; Bahuguna 1992<sup>8</sup>; Chambers 1992<sup>9</sup>). Strengthening local democracy, in turn, requires support to people's participation in the management of local resources including natural resources and local institutions. Enabling people's action through local governance institutions in NRM will help overcome social inequalities based on caste and gender and the destruction of natural resource base (Ribot 2001b)<sup>10</sup>. Participation and decentralisation are also believed to promote equity through greater retention and more equal distribution of benefits from local activities. Aid organisations and national agencies charged with managing public resources often assume that greater participation in resource management results in better environmental practices (Poffenberger 1994<sup>11</sup>; Shiva 1989<sup>12</sup>).

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<sup>3</sup> Work R, 1998. Factors to Consider in Designing Decentralised Governance Policies and Programmes to Achieve Sustainable People-Centred Development. Management Development and Governance Division, United Nations Development Programme, New York, February 1998.

<sup>4</sup> Fox J & Aranda J, 1996. *Decentralisation and rural development in Mexico: community participation in Oaxaca's Municipal Funds Program*. Center for US-Mexican Studies, University of California, San Diego.

<sup>5</sup> Agrawal A & Ostrom E, 1999. Collective action, property rights, and decentralisation: comparing forest and protected area management in India and Nepal. (draft mimeo).

<sup>6</sup> Crook RC & Manor J, 1998. Democracy and decentralisation in South-East Asia and West Africa: participation, accountability and performance. Cambridge University Press, Cambridge

<sup>7</sup> Agarwal A & Narain S, 1989. 'Towards green villages: A strategy for environmentally sound and participatory rural development'. Centre for Science and Environment, New Delhi.

<sup>8</sup> Bahuguna VK, 1992. Collective Resource Management. An experience in Harda Forest Division. Regional Centre for Watershed Development, IIFM, Bhopal.

<sup>9</sup> Chambers R & Conway G, 1992. *Sustainable rural livelihoods: Practical concepts for the 21st century*, IDS Discussion Paper 296, Brighton, IDS. pp.7-8.

<sup>10</sup> Ribot J, 2001b. *Integral Local Development: Accommodating Multiple Interests Through Entrustment and Accountable Representation*. International Journal of Agricultural Studies, Governance and Ecology, Vol. 1, No. 34, 2001.

- <sup>11</sup> Poffenberger M, 1994. Resurgence of community forest management in eastern India. In D. Western, M. Wright and S.C. Strum (eds.) *Natural connections: perspectives in community based conservation*, p. 53-79. Island Press, Washington, DC.
- <sup>12</sup> Shiva V, 1989. *Staying alive*. Zed Books, Atlantic Highlands, New Jersey.



## DECENTRALISATION AND NATURAL RESOURCES MANAGEMENT (NRM)

According to Farrington (2000)<sup>13</sup> the current agenda for decentralisation in NRM emerged as part of the general move towards both liberalisation and decentralisation in India from 1991 onwards. Decentralisation and liberalisation policies were introduced as part of a package of reforms supported by mainstream economic arguments. Proponents argued that liberalisation and privatisation would limit the State to a regulatory, policymaking and enabling function. This would reduce opportunities for rent seeking and create room for new economic activity. Political decentralisation, as part of this package, would make local government more responsive to local needs and, thereby, improve the efficiency of the service. It is commonly observed that the decentralisation has not worked in the way that theory had predicted it would; and this failure relates to all sectors including NRM. Reason for this could be time; trial and error has not yet allowed running its course. Another reason is that the theory does not adequately deal with power relations and their institutional manifestations.

The early 1990s witnessed an apparent sea change in government attitudes towards the management of common pool resources (CPR) in India and elsewhere. The State, hitherto controlling and managing most CPR such as forests and water bodies in a paternalistic manner, appeared finally to have opened its doors to people's participation (Lele 2000)<sup>14</sup>. The last two decades have witnessed a paradigm shift in conservation and NRM away from costly State-centred control towards approaches in which local people play a much more active role. These reforms purportedly aim to increase resource user participation in NRM decisions and benefits by restructuring the power relations between central State and communities through the transfer of management authority to local-level organisations. Yet, the reality rarely reflects this rhetoric (Shackleton *et al.* 2002)<sup>15</sup>. International donors have had a growing influence on the content of policy related to natural resources and on the design of the projects themselves. The recommendation that the services be contracted out is evident in the Forest Policy of 1988; the National Forest Action Plans; the JFM Resolution; the Eighth Five Year Plan; the design and reform of the Guidelines for Watershed Management (Farrington 2000)<sup>13</sup>. Although national goals and aspirations are supportive of decentralisation, during its implementation we need to address concerns for inclusiveness, empowerment, accountability and effectiveness. For realising the progressive intent of national policy, elected local government institutions must be helped to become *vehicles for social transformation*, articulating the felt needs of the community, especially those of women and marginalised groups. Livelihood security for the poor would ensure effective participation and better mobilisation of local resources (Ribot 2001b)<sup>10</sup>.

Farrington (2000)<sup>13</sup> has reported that there are three distinct institutional systems that have been explored as having both legitimacy and the potential capacity for decentralisation in NRM: informal or traditional user groups; the State in partnership with local communities; and the Panchayati Raj system of local governance. The three institutional systems are distinct, but they have been widely accepted critical to ensure equitable, efficient and sustainable NRM. For better understanding of the decentralisation – NRM interface, they are to be considered as the basis for looking into the 'process of decentralisation' in different sectors of NRM. Therefore, it is important to understand the three institutional systems first.

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<sup>13</sup> Farrington J, 2000. Decentralised NRM in India. An ODI-TARU Research Plan submitted to Ford Foundation.

<sup>14</sup> Lele S, 2000. *Godsend, sleight of hand, or just muddling through: joint water and forest management in India*. Natural Resource Perspectives, Number 53.

<sup>15</sup> Shackleton S, Campbell B, Wollenberg E & Edmunds D, 2002. *Devolution and Community-Based NRM: Creating Space For Local People to Participate and Benefit?* Natural Resource Perspectives, No.76, March 2002.

## TRADITIONAL OR INFORMAL USER GROUPS

Natural resources are managed by informal or traditional user groups that usually only have *de facto* rights, or are used by communities without any management system at all. These user groups are based on established, often community-based traditions of NRM.

Others may be formed seasonally around specific needs or have mobilised to manage resources in response to scarcities. A proliferation of studies throughout the 1980s and 1990s have pointed to effective traditional or informal user groups managing natural resources through the application of indigenous technical knowledge adapted to specific environments. The conflict between common and statutory rights has been ongoing since the State first claimed ownership and control over natural resources. However, it is not until the last two decades that the State has come under sustained pressure to recognise in their vicinity. Customs of a community when accepted valid give rise to customary rights. Most customary NRM systems have not been given rights status in India. The issue was debated most extensively around the forest laws enacted during the colonial period which do not recognise the rights of communities to access the resources of the forests, but instead treat such access as concessions granted by State. National Forest Policy 1988 tried to redress the situation and it was a dramatic reversal of the Indian Forest Policy 1952.

Panchayat (Extension to Scheduled Areas) Act 1996, popularly known as PESA, is other landmark legislation that recognised the customary rights and control of communities over natural resources in scheduled areas. Scheduled areas are tribal areas delineated in 1874 in two broad regions: the northeast and central India. Many national laws are suspended in these areas in recognition of importance of customary laws and socio-religious practices.

## STATE-COMMUNITY PARTNERSHIP MODELS

The *de jure* rights to most natural resources are owned by State and managed by different departments on behalf of the State. The State has been reluctant to transfer access (and even less ownership) rights over these resources to local communities. Instead the dominant pattern over the last ten years has been for different departments to develop 'partnership' with local communities, or parts of these communities identified as 'user groups' of a particular resource. Examples of former are (i) Joint Forest Management (JFM), (ii) Participatory Watershed Management (PWM), and (iii) Participatory Irrigation Management (PIM); whereas the examples of latter include (i) management of nationalised NTFPs through cooperatives, (ii) management of living aquatic resource in tanks/ reservoirs by 3-tier PRIs, and (iii) management of minor minerals (schedule-2) by Gram Panchayats.

During the last decade India has witnessed a major policy shift in the forestry sector toward a participatorier and less centralised approach to the management of State-controlled forestlands. This shift was reflected in the emergence of Joint Forest Management (Saigal 2000)<sup>16</sup>. On June 1, 1990, India adopted a national Joint Forest Management Resolution. So far 17 States had issued orders enabling JFM. Several provinces had, with bilateral/multilateral funding, also initiated forest sector projects with JFM as the stated cornerstone in all of them (Lele 2000)<sup>23</sup>. Madhya Pradesh was the first State to adopt JFM in 1991, and with the financial assistance of World Bank the State has been implementing Madhya Pradesh Forestry Project. In a radical departure from the previous focus on policing and protection of State-owned forests, the new approach emphasises the shared responsibility for management and sharing of profits with local

<sup>16</sup> Saigal S, 2000. *Beyond Experimentation: Emerging issues in the institutionalisation of joint forest management in India*. Environmental Management, vol. 26, # 3, pp. 269-281.

communities (Joshi 1998)<sup>17</sup>. To call the participation of the local people three types of committees are constituted under JFM. Village Forest Committee (VFC) and Forest Protection Committee (PFC) work in territorial forests, and Eco-development Committee (EDC) works in the fringe area of a protected area. In 2001 the Government of Madhya Pradesh has issued revised Resolution of JFM for calling enhanced people's participation in the conservation and development of forests.

Under Union Ministry of Agriculture and Cooperation, the National Watershed Development Programme for Rainfed Areas was formulated in 1990. After 20 years of implementation of Drought Prone Area Programme the Hanumantha Rao committee submitted recommendations in 1993. Based on those recommendations New Guidelines or Common Guidelines for watershed development were formulated by the union Ministry of Rural Development (GOI 1994)<sup>18</sup>, and participation of local people has been posed as key to the NRM through this 'bottom up planning approach'. Among the centrally sponsored schemes, the Integrated Watershed Development Programme (IWDP) focuses mainly on wastelands and the Employment Assurance Scheme (EAS) on providing employment opportunities. The Drought Prone Area Programme (DPAP) and Desert Development Programme (DDP) are determined by agro-climatic conditions. In order to ensure people's participation in the implementation process the Village Watershed Committee (VWC), Self-Help Groups (SHGs), Women Thrift and Credit Groups (WTCGs) and various User Groups (UGs) are constituted at the village (micro-watershed) level. Government of Madhya Pradesh had conceived watershed management and constituted Rajiv Gandhi Mission for Watershed Management.

The irrigation sector saw a similar, albeit less pervasive and publicised, transition not only in the management of tanks and lift irrigation ('minor' irrigation) but even in the management of canal irrigation. Phrases like 'participatory irrigation management' (PIM) or the more explicit 'irrigation management turnover' (IMT), have attained the same status in irrigation management as that of JFM in forestry (Lele 2000)<sup>14</sup>. PIM programmes only apply to the management of tertiary and feeder canals that have historically been managed by the farmers in many areas in any case; control of the main canal system being retained by the irrigation departments in all States (Brewer *et al.*, 1997)<sup>19</sup>. Government of Madhya Pradesh has been doing it since the enactment of Madhya Pradesh Participatory Irrigation Management Act 1999. On learning from the experiment of Andhra Pradesh, the Madhya Pradesh imported the model of decentralisation of irrigation system in the villages. Since the promulgation of the law, the first election of water user associations (WUAs), the village level farmers' institutions representing a hydrological unit (constituting 1-3 villages), was over in 2001. Every WUA has two operational committees — territorial committee (TC) and management committee (MC). All users of the canal water in the territory of a WUA are the members of TC. TC members elect or nominate the MC members including the president for 2 years. To decide the distribution of water at distributory level, a 3-tier structure of public institutions (comprising WUA, distributory committee and project committee) is responsible. In Madhya Pradesh the non-timber forest products (NTFPs) can be categorised as *nationalised* and *non-nationalised* products based on the State's control on the trade of these products. Major nationalised products are *tendu leaves*, *sal seed*, *harra* and *gum*.

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<sup>17</sup> Joshi A, 1998. Progressive Bureaucracy: an oxymoron? The case of joint forest management in India. *Rural Development Forestry Network (RDFN) paper 24a* winter 1998/99.

<sup>18</sup> GOI, 1994. Guidelines for watershed development. Government of India, Ministry of Rural Development, New Delhi.

<sup>19</sup> Brewer J, Kolavalli S, Kalro AH, Naik G, Ramnarayan S, Raju KV & Sakthivadivel R, 1997. Irrigation management transfers in India: Policies, processes and performance'. Draft report. Colombo: Indian Institute of Management, Ahmedabad and International Irrigation Management Institute.

*Tendu* leaf is the most prominent commodity that has large contribution in State economy as well as villagers' economy. Prior to 1964 *tendu* leaves growing on private lands were sold unplucked (green leaves) to contractors and those that grew on private lands were disposed by the owners of the land. The State took over the trade of *Tendu* leaves by enacting the Madhya Pradesh *Tendu Patta (Vyapar Viniyaman) Adhiniyam* 1964. To improve the condition of collectors the Madhya Pradesh Minor Forest Produce Cooperative Federation was formed in 1984. The State government in 1988 decided to totally eliminate the middlemen, following which a 3-tier cooperative institution was designed. At the first tier the body consists of Primary Forest Produce Cooperative Societies whose members are *Tendu* leaves collectors. The secondary level consists of the District Primary Forest Cooperative Unions. At the apex level of this institution is the Madhya Pradesh Forest Produce Cooperative Federation.

Ostrom (1990)<sup>20</sup> uses the term "common pool resources" to denote natural resources used by many individuals in common, such as fisheries, groundwater basins, and irrigation systems. Such resources have long been subject to overexploitation and misuse by individuals acting in their own best interests. Conventional solutions typically involve either centralised governmental regulation or privatisation of the resource. But, according to Ostrom (1990)<sup>29</sup>, there is a third approach to resolving the problem of the commons: the design of durable cooperative institutions that are organised and governed by the resource users themselves. In the Eleventh schedule of Indian Constitution among 29 subjects given to PRIs to work on is the *fisheries* activities. Under the 3-tier Panchayati Raj the tanks or ponds upto the size of 2 ha would remain in the control of Gram Panchayat; the tanks or reservoirs having their area above 2 ha and lesser than 10 ha will come under the control Janpad Panchayat; and the tanks or reservoirs having an area of 10 ha or above would be under the control of Jila Panchayat. This jurisdiction under the new Panchayati Raj is applicable to the water bodies having ownership of Panchayat, the Irrigation Department or Fisheries Department. The PRIs are regulatory bodies for the release of the lease of these water bodies for cultivation of living aquatic resource (fish and other form of aquaculture). On these tanks/ reservoirs the cooperatives or societies of fisherfolk generally are given leases for a certain period. The societies/ cooperatives in turn pay the royalty to Panchayat or the concerned department.

According to the rules of Government of Madhya Pradesh, for the release of a lease for mining of any minor mineral, the concerned official has to take advice of Gram Panchayat under the Rule - 18 (2) of Minerals & Mining Rules. Minor minerals have been classified into two categories: (1) mineral for village economy, (2) minerals of domestic use. The second category of minor minerals is put in Schedule - 2. In the matter of Schedule - 2 minerals, the mines with Rs. 10 lakhs royalty are transferred to Panchayats. The Government has no share in the royalty as well. Gram Panchayats, Janpad Panchayats and Jila (District) Panchayats will control the mines with the royalty worth Rs. 2.5 lakhs, Rs. 2.5-5 lakhs and Rs. 5-10 lakhs, respectively. Suiting to the local self-governance, these rules have the provisions that panchayat of any level will have to take permission of concerned Gram Sabha under the Rule - 7 before releasing the lease for mining. It is on the discretion of Panchayat to whom the lease for excavating the said minerals could be given. At many places the cooperatives have been working.

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<sup>20</sup> Ostrom E, 1990. *Governing the commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, Cambridge.

## PANCHAYATI RAJ INSTITUTIONS

The common factor perceived in policy circles to be underlying many of the problems outlined above is the absence of a local resource management institution which has statutory rights, is locally accountable, and has mandate to plan independently of departments or projects. Since 1993 attention has focused on the potential of PRIs to fulfill this role. The Eleventh schedule of the constitution lists development areas over which PRIs will be responsible. One of these is that the Gram Panchayats have a mandate to prepare plans for the management and development of the NRM. In PESA there are many clauses that govern that the *Gram Sabha will manage and control the natural resources in territories of the village concerned.*

In India, a process of explicit political decentralisation is enshrined in the Panchayati Raj system (Hobley 1996)<sup>21</sup>. Yet, the generally held view that the panchayat institutions merely reproduce and reinforce the existing power structures is contested; however, by some commentators who argue that these institutions do provide an alternative structure through which local groups can assert their democratic rights (Shiviah and Srivastava, 1990)<sup>22</sup>.

Underlying the decentralisation 'the community participation' in NRM is a phenomenon that involves the shift in power. This occurs within communities, between 'people' and policymaking and resource-holding institutions, and within the structure of those organisations (Nelson and Wright 1994)<sup>23</sup>. According to Yangchen Shupack (1997)<sup>24</sup>, we can identify interpretation of participation in two broad and distinct areas of development. The distinctions between these are neither clear-cut nor mutually exclusive, but they do represent two different purposes and approaches to promoting participatory processes. (i) *Participation as a means*: The participation is seen as a process whereby local people cooperate or collaborate with externally introduced intervention or projects. In this way participation becomes the means whereby such initiatives can be more effectively implemented. People's participation is sponsored by an external agency and it is seen as a technique to support the progress of the programme or project. (ii) *Participation as an end*: Participation is seen as a goal in itself. This goal can be expressed as the empowering of people in terms of their acquiring the skills, knowledge and experience to take greater responsibility for their development or resource management. People's poverty can often be explained in terms of their exclusion and lack of access to and control of the resources that they need to sustain and improve their lives. Participation is an instrument of change and it can help to break that exclusion and to provide poor people with the basis for their more direct involvement in development or resource management initiatives (Yangchen Shupack 1997)<sup>24</sup>. Both types of participation imply the possibility of very different power relationships between members of a community as well as between them and the State and agency institutions. Simply put, the extent of empowerment and involvement of the local population is more limited in the first approach than it is in the second (Nelson and Wright 1994)<sup>23</sup>. With the best of intentions, 'participation' is used to mean "*empowering the weakest and poorest*". Equally, access to resources, control of the elements and processes of production, and rights to dispose of products are experienced in face to face relations, but are also part of wider and systematic economic relations.

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<sup>21</sup> Hobley M, 1996. Institutional change within the forestry sector: centralised decentralisation. *ODI Working Paper 92*, Overseas Development Institute, London.

<sup>22</sup> Shiviah M & Shrivastava KB, 1990. Factors Affecting Development of the Panchayati Raj System. Hyderabad: National Institute of Rural Development.

<sup>23</sup> Nelson N & Wright S, 1994. Participation and power. In Nelson, N. and Wright, S. (eds.), *Power and participatory development: Theory and Practice*. Intermediate Technology Development Group, London.

<sup>24</sup> Yangchen S & Shupack B, 1997. Empowering People - A Guide to Participation. INTRAC, Oxford  
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## EXISTING KNOWLEDGE

Success of decentralisation depends critically on the existence of a congenial macro policy framework that ensures the provision of livelihood security for the poor (Ribot 2001)<sup>2</sup>. He further argues that it was at least possible to examine the laws and changes on the ground in terms of who is attributed which powers. Problems also arise over the choice of powers being transferred. He highlighted the transfer of burdens rather than powers, and of non-commercially valuable uses. Decentralisation may in fact amount to a form of deconcentration or "co-administration", where decentralised elected bodies may be treated as implementing agencies for central agencies. There may also be overbearing oversight, including complex management planning exercises, as well as conditionalities on capacity (Ribot 2001a)<sup>2</sup>. Shackleton *et al.* (2002)<sup>15</sup> drew some policy conclusions on the devolution in NRM as a consequence of decentralisation process in India. Their important observations can be summed up as follows: (i) Most 'devolved' NRM (NRM) reflects rhetoric more than substance, and is characterised by some continuation of substantive central government control and management over natural resources rather than a genuine shift in authority to local people. (ii) The ways in which local people realise the benefits of devolution differ widely, and negative trade-offs, mostly felt by the poor, are common. (iii) States, communities and other stakeholders have different visions of devolution and its mode of implementation. A shared framework, more accountable to local livelihood needs and people's rights to self-determination, is required. Careful re-assessment of the State's claim to be protecting the wider 'public interest' forms part of this process; (iv) More powerful actors in communities tend to manipulate devolution outcomes to suit themselves. Checks and balances need to be in place to ensure that benefits and decision-making do not become controlled by elites.

Even at the rhetorical level, one distinction is immediately visible between the pre-1990 period and now: while academics and activists had clamored for *community management* of *all* natural resources, what has actually been adopted now is *joint management* in NRM sector. The proponents of community management visualised the role of government as simply that of outlining the broad set up (e.g. the *Gram Sabha* to elect a managing committee), drawing initial boundaries, handing over the control of all natural resources within these boundaries to this set up, and subsequently only intervening in inter-village conflicts or in guarding the resource on demand (Agarwal and Narain 1989)<sup>8</sup>. In other words, they envisaged the creation of 'village republics' with very substantial autonomy from the State apparatus.

The participation envisaged is more in execution than in planning, the structures more pup pettish than autonomous. In all States except Gujarat, the Village Forest Committees (or equivalent), for example, have a forest department person as *ex-officio* secretary, and in all States, the committees' decisions are subject to veto by the forest departments. By contrast, departmental plans often cannot be seen, let alone vetoed, by the communities. Each harvest – even if part of an approved management plan – still requires departmental permission; and delays may damage the resource (e.g. through the drying up of bamboo) but there is no penalty for the department (Lele 2000)<sup>14</sup>.

More pragmatically, when State agencies actively begin to pursue participatory programmes, it turns out that local people become a ghostly presence within the planning process. Far from being a transformative process in which local people are able to exert control over decision-making, participation becomes a well-honed tool for engineering consent to projects and programmes whose framework has already been determined in advance (Hildyard *et al.* 1998)<sup>25</sup>. Indeed, a participation that fails to deal with the distribution and operations of power within local communities and the wider society they

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<sup>25</sup> Hildyard N, Hegde P, Wolvekamp P & Reddy S, 1998. *Pluralism, participation and power*. Forest, Trees and People Newsletter No. 35, March 1998.

live in is likely to offer little to marginalised groups. The majority of participatory projects rely on the dubious assumption that simply getting different 'stakeholders' around the table will lead to consensus being reached that is 'fair' to all. This only holds if it is assumed that the participants are equally powerful or if inequalities can be treated as a purely technical-procedural matter (Nelson and Wright 1995)<sup>23</sup>. This is rarely true. India's Ninth Five Year Plan as also the recent Mid-Term Review have noted that proper implementation of development programmes has been hampered by the fact that benefits from these have largely been appropriated by the local elite. Participation of women and members of SC/ST communities in Gram Sabhas (village councils) and Panchayat meetings is favored to ensure representation of interests of the poor (Ribot 2001b)<sup>10</sup>. Hildyard *et al.* (1998)<sup>25</sup> in this perspective suggested that the participation requires social transformation and structural change to the system of social relations through which inequalities are reproduced.

According to Farrington (2000)<sup>13</sup> the argument that decentralisation over NRM can lead to empowerment of the poor is perhaps the most contentious. It cuts right to the heart of the relationship between the natural resources themselves and the power relations through which they are managed. Some observers place more emphasis than others on empowerment as a goal in its own right because of the link between poverty and the lack of natural resource assets. There has been an increasing volume of work over the last few years on the process of political empowerment in the context of Panchayati Raj (Jayal 1997<sup>26</sup>; Mukerji *et al.* 1995<sup>27</sup>; Raj and Mathias 1998<sup>28</sup>).

A study on the governance and participation processes in several local institutions responsible for the management of natural resources revealed that these institutions had more centralised pattern of governance (Arjjumend 2001)<sup>29</sup>. Not only the powers of decision making, holding meetings and determining benefits distribution in the hands of project implementing or sponsoring agencies (mostly State agencies), but the overall control on the institutional processes also rested with them. Participating members, representatives or other beneficiaries had no or little say in the governance. Kumar *et al.* (2001)<sup>30</sup> also emphasised on the preceding phenomenon in the village institutions and found that the decisions taken were rather scarcely decentralised if not centralised at all.

In brief, in order to transform present realities, it is imperative therefore to strengthen decentralisation from below, so that voices of the poor could carry weight in village assemblies and ward council meetings. Apart from social mobilisation, this can be accomplished by strengthening community networks and institutions. Ribot (2001b)<sup>10</sup> suggested that these would build the capabilities of the poor; provide security of livelihood and a safeguard against destitution, hunger, disease and alienation. Initiatives that empower the poor, especially women to manage local resources and local institutions, are steps in this direction. The success of the world's largest experiment in deepening democracy ultimately depends upon the success of these initiatives

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<sup>26</sup> Jayal, 1997. 'The Governance Agenda: Making democratic development dispensable'. Economic and Political Weekly Feb 22, 1997.

<sup>27</sup> Mukerji N, Yugandhar BN, Mukerjee SP and Meenakshisundaran SS, 1995. 'People's representatives and bureaucracy: The interface in Panchayati Raj'. *Occasional Paper Series no. 17*. Institute of Social Sciences, New Delhi.

<sup>28</sup> Raj SL & Mathias E, (eds.) 1998. People's power and panchayati raj: Theory and Practice. Indian Social Institute, New Delhi.

<sup>29</sup> Arjjumend H, 2001. Anatomy of Village Institutions and Their Interrelationships in Bundelkhand of Madhya Pradesh, Samarthan - Centre for Development Support, Bhopal.

<sup>30</sup> Kumar Y, Arjjumend H & Tiwary RN, 2001. Anatomy of emerging village institutions and its implications in decentralised management of development and resources, (eds.) S. P. Jain, *Emerging Institutions for Decentralised Rural Development*, vol. II. National Institute of Rural Development, Hyderabad.



## GAPS IN IMPLEMENTATION AND KNOWLEDGE

Although acronyms, government orders and programmes abound, and many non-governmental activist and advocacy groups have shed their initial skepticism and joined in the implementation of these programmes, the picture on the ground is not that rosy. After the initial hyperbole, progress has in many cases been slow, or has resulted in potentially unsustainable outcomes (Saxena *et al.* 1997<sup>31</sup>; Tiwari 1998<sup>32</sup>). This *gap between rhetoric and reality is prompting re-examinations of NRM in different ways*. It is therefore an attempt to explore 'the game behind the rules' rather than the 'rules of the game' of participatory NRM.

Skeptics legitimately asks 'why States, whose central *raison d'être* is the accumulation of authority, material resources, and legitimacy, should be interested in decentralising and

devolving real power?' (Agarwal 1998)<sup>33</sup>. Are State governments, who themselves complain of insufficient devolution of powers from the central government, willing to devolve some of their own powers to local governments, i.e. to the Panchayati Raj institutions? If no, then joint management must be a 'sleight of hand' carried out by the State to satisfy donors and co-opt activists while retaining primary control over resources and even expanding it in new ways. Yet, we find many State governments, like Madhya Pradesh, embracing and adopting decentralisation in NRM.

In order to address the gaps in implementation and the knowledge in the entire decentralization process, it is necessary to look into the empowerment, equity, efficiency, transparency, etc. (forms, process, extent and implications) embedded in the people's participation which is essential phenomenon of decentralisation in NRM. It is at this end believed hypothetically that there exists a vast gap in the reality and rhetoric of decentralisation in particular context of participatory NRM in the State.

Sufficient numbers of the available studies have been able to establish that in reality, the joint management programmes actually adopted by the States have never approached desired level of devolution of control and integration across resources. In a country like India with a well-entrenched democratic setup and an active civil society, the rent-seeking model of the State has a limited life span. The processes of liberalisation and structural adjustment have temporarily shifted the balance of power towards donor agencies and also given greater legitimacy to the non-governmental sector. But the communities' control over the livelihood resources in the vicinity has loosened drastically. It implies that it is very pertinent to examine the decentralised and participatory NRM with respect to the gaps in the reality and rhetoric of the people's empowerment. Resulting deep understanding on this issue would certainly lead to bringing more sustainability in the participatory frameworks of NRM.

Thus these studies clearly indicate that to ensure the active and functional participation of local communities in the NRM, the people at the grassroots have to be empowered and strengthened and a system of community control over the resources needs to be evolved on equitable basis.

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<sup>31</sup> Saxena NC, Sarin M, Singh RV & Shah T, 1997. Independent study of implementation experience in Kanara Circle. Bangalore: Karnataka Forest Department.

<sup>32</sup> Tiwari M, 1998. '*Participatory forest management in West Bengal: Groundbreaking triumph or dilemma in the 'commons'?*' Paper presented at the Workshop on Participatory NRM, Mansfield College, Oxford University.

<sup>33</sup> Agrawal A, 1998. 'State formation in community spaces'. In *Agricultural Studies, Governance and Ecology*, Vol. 1, No. 34, 2001. Proceedings of Crossing Boundaries: The Seventh Common Property Conference. Vancouver: University of British Columbia, Canada. June 10–14th, 1998.

The gaps in the existing knowledge and implementation of the decentralization process in the NRM can be addressed through following issues

- ◆ Better understanding of decentralisation process in NRM in a holistic view.
- ◆ Strength and weaknesses of the policies, legislations, governance systems and rules and regulations pertaining to NRM.
- ◆ Identification of gaps between policy frameworks and their implementation.
- ◆ Knowledge about the ecological and livelihood implications at the community level of the decentralisation process in NRM.

## **NEED FOR FURTHER ANALYSIS AND INVESTIGATIONS**

However it is just difficult to presume the conclusions from the existing knowledge studies in a socio-economic and politico-cultural milieu, nevertheless the hypothesis exclaimed is strengthened that despite about two decades have passed since the advent of decentralisation process in NRM and repeated calls of people's participation, the local communities have yet not been adequately empowered so as to maintain the natural resources sustainability. More intensive field research need to be undertaken to derive

grave field implications of this sort to uncover various factors, bottlenecks, policy flaws, drawbacks in execution process, and so on which are responsible for non-participation of people and the yet-disempowerment in the decentralised NRM. Thus the gaps in the empowerment actually envisaged and the empowerment actually yielded should be identified to evolve a workable strategy to overcome them. The researches should be able to provide solutions for the grim situations of the people's participation, the processes being overpowered by elites, defeat of the devolution process, hijack of governance and transparency, unaccountable leadership, disempowerment of the empowerment process itself, mismatch of the policy frameworks with the field conditions, lack of appropriate execution strategies, scarcity of motivation at all levels, lack of adequate knowledge and skills, negligence of local needs and aspirations, de-recognition of local wisdom, and so on in the decentralised NRM. A systematic attempt has to be made to contribute towards mapping the process of decentralisation in relation to NRM, which will further help bringing changes in the system and for enabling policy frameworks related to participatory NRM.

For better understanding of the decentralisation process to institutionalise the efforts being made by the Central and the State Government, structured studies and in depth analyses are required

- To locate the essential attributes of the decentralisation framework as envisaged in various international, national and State policy instruments related to decentralised management of natural resources i.e. forests and forest products, watersheds and irrigation, living aquatic resources and minerals.
- To assess the status of devolution at different levels for enacting the decentralisation and participation process in the NRM following the provisions in relevant policy instruments.
- To analyse the shift, accommodation, resistance, etc. in the attitudes and behaviors of various stakeholders involved in the process of decentralised management of natural resources.
- To gauge on the ground the type, extent, quality and implications of different attributes of decentralisation like participation, empowerment, equity, efficiency, transparency, etc. the management of various natural resources; and to ascertain the gaps therein.
- To find out the implications of devolution process (absent or existing in whatever form) in particular context of ecological and livelihood securities.
- To suggest the strategies at different levels for overcoming the gaps in achieving the desirable degree of devolution in the policy frameworks and its execution.

34.

## DECENTRALISATION AND COMMUNITY FORESTRY PROGRAMMES IN NEPAL: EMERGING ISSUES AND CHALLENGES

A K Bhattacharya and Bijendra Basnyat

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### **Abstract**

*This paper critically examines application of decentralisation principle in the community forestry programme of Nepal and discusses the implications of decentralisation efforts. Decentralisation applied in the forestry sector is devolution, which involves the transfer of functions or decision-making authority. The Local Self-Governance Act (LSGA), 1999 provides the framework for decentralised governance in Nepal. While assessing the LSGA 1999<sup>1</sup> and Forest Act (FA) 1993<sup>2</sup>, it emerges that in many instances, forest legislation bypasses the local government (LGs). There exist conflicts and contradictions between the FA 1993 and LSGA 1999 add add further confusion in the community forestry programme. Local government has always stakes on any natural resources lying within its jurisdiction and initiated claiming ownership of the forest situated in their jurisdiction as per LSGA 1999. But local communities or community forestry user groups (CFUGs) reject any move of the government leading towards handing over of the forests to the LGs nevertheless they want active role of the LGs in the community forestry (CF) programme, mainly in user group identification. Sustainable management of the forests is unlikely without the constructive support, cooperation and active role of the LGs. Thus, role clarification between different actors and stakeholders of CFs, especially LGs, user groups and District Forest Officer with regard to CF is essential to put decentralisation in practice.*

### **INTRODUCTION**

Decentralisation and devolution of government services in developing countries have become increasingly common in few past decades. Decentralisation is regarded as the most functional means to ensure ownership, equity, transparency, and efficiency in governance. For Nepal, like many other developed as well as developing countries, decentralisation is one of the fundamental elements of democracy. The present Constitution of Nepal, adopted in 1991 after the restoration of multi-party democratic system, has incorporated decentralisation into the directives of the State policy, which states, "decentralisation should be the means for ensuring optimum participation of people in governance and hence enjoy the benefits of democracy". To implement the guiding principles of the Constitution, His Majesty's Government of Nepal (HMGN) promulgated the LSGA in 1999 and formulated a series of accompanying regulations responding to widespread dissatisfaction to earlier efforts of decentralisation. Decentralisation policy has provided the legal basis for greater citizen participation through establishing local governance and legitimising local resource management organisations. The spirit of LSGA 1999 calls for comprehensive transferring of central decision making power and implementing authority on local level development activities to the LGs, which includes District Development Committees, Municipalities and Village Development Committees (VDCs).

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<sup>1</sup> MOLJPA, 1999 (a). *Local Self-Governance Act- 1999*, Kathmandu, Nepal.

<sup>2</sup> MOLJPA, 1993. *Forest Act- 1993*. Ministry of Law, Justice and Parliamentary Affairs, Kathmandu, Nepal.  
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Interestingly, in the beginning, forests were handed over to the Village Panchayats (now the VDCs) for management. However, having found many traditional forest users excluded because of their residence outside the political boundary leading to non-functional committees and disenfranchised users, FA 1993<sup>2</sup> recognises the primacy of the users over the administrative boundaries (Bhattacharya and Basnyat 2003)<sup>3</sup>. Although this policy and practice have moved away from handing over the forest management to the LGs, the roles and responsibilities of LGs have not diminished. LSGA 1999<sup>1</sup> has delegated LGs specific roles and responsibilities with regard to forestry sector development. As elected units, they have always stakes on any natural resources lying within its jurisdiction. This paper attempts to study the roles and responsibilities of the Community Forest User Groups (CFUGs) vis-à-vis the LGs within the decentralisation framework provided by the LSGA 1999 and the FA 1993.

## DECENTRALISATION AND COMMUNITY FORESTRY

### Decentralisation Initiatives in Forestry

Prior to the issuance of the National Forestry Plan of 1976 in Nepal, the State was entrusted with administration and control of the forests under the Private Forest Nationalisation Act of 1957, followed by FA of 1961. National Forestry Plan of 1976, for the first time, explicitly recognised the important role of local communities in managing forest resources. As a result, the FA of 1961 was amended in 1977 and 1978 to categorise the forests into six types, namely (a) national forests (b) *Panchayat* forests (c) *Panchayat* protected forests (d) religious forests (e) leasehold forests and (f) private forests, and two by-laws on *Panchayat* Forest and *Panchayat* Protected Forests were enacted in 1978. The amendments provided for vesting forest protection in 'Panchayat', the lowest level of the political body, in the form of *Panchayat* forests and *Panchayat* protected forests, which led to the initiation of the CF programme. However, relationship between the local people and the Ministry of Forest and Soil Conservation (MFSC) or its field offices (District Forest Office) remained an indirect one, mediated by Panchayats. To some, it was therefore merely a '*Panchayat*isation' of Forests, and not the CF in letter and spirit. In fact, handing forests over to the *Panchayat* was often seen by traditional users as giving away their forests to those who had no active interest in their management. The problem was that there was a strong official ideology that the *Panchayat* system was a unique and indigenous non-party solution to governance in Nepal. This made it impossible to ignore the village *Panchayats* in CF arrangements. However, delegating full authorities and power to *Panchayats* with regard to the use and management of forests situated in their jurisdiction was not acceptable to the government. As a result, only limited amount of authority was delegated to the *Panchayats* (Basnyat 1999)<sup>4</sup>.

Despite of several legislative changes aimed at facilitating handing over of management responsibility to local communities, handing the forest over to CFUGs directly could not be materialised till the enactment of the FA 1993 which recognised the primacy of the traditional users over the administrative boundaries (Table 1). Likewise, FA 1993 recognised the role of local people in the decision-making and provided them benefits from forest management.

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<sup>3</sup> BHATTACHARYA AK & BASNYAT B, 2003. An analytical Study of operational plan and constitutions at Western Terai of Nepal. *Banko Jankari Vol 13 (1): 3-14.*

<sup>4</sup>BASNYAT B, 1999. *An assessment of Post formation Support for Community Forest User Groups in Nepal (unpublished thesis)*. A case study from Kaski districts. Pokhara. Institute of Forestry. 48 pp

**Table 1: Devolution of authority to LGs versus CFUGs**

Attributes	Past policy (Handing over forests to Panchayats)	Recent policy (Handing over forests to CFUGs)
Handing over of forests	<i>Panchayats</i> (Politico-administrative unit)	Traditional users
Objectives	Sustained yield of single products, particularly fuelwood	Fulfil the basic need of people
Focus	Reducing labour time necessary to gather forest products and increase accessible supply of forest products	Improve the livelihoods of people with active management of forests
Approach	Forest centred	People centred
Forest boundary	Political (Politico-administrative unit)	Social (Traditional users)
Involvement of people	In reforestation through contribution of voluntary labour	Active participation from planning, implementation, and monitoring
Management Authority	Forest committee formed by <i>Panchayats</i>	Users / Users committee formed by the users themselves
Preparation of operation plan	Department of Forest	CFUGs
Protection of forests	<i>Panchayats</i> , salary of forest watcher provided by Department of forest	CFUGs
Relationship with forest users	Indirect, mediated by forest committees and <i>Panchayats</i>	Direct, through CFUGs
Plantations	Compulsory	Optional based on forest conditions
Selecting tree species for plantation	Department of forest	CFUGs
Price fixing	Forest Officials	CFUGs
Sale of forest products outside users	Not allowed	Surplus sale allowed
Role of forest officials	Decisive (Teacher, instructor)	Facilitator
Scientific / sustainable forest management issues (Technical)	Not included	Included
Role of local government	Recognised and active	Not recognised

Source: *Basnyat 2002*<sup>5</sup>

As discussed earlier, CF was initiated with handing over of national forests to LGs with devolving limited authority. However, present CF programme has moved a step ahead by creating new institutions, CFUGs and devolving more authority to them. But still, recent policy reforms and practice in the forestry sector have not recognised role of the LGs although their stake on natural resources have not diminished, but increased after the enactment of the LSGA 1999.

### **Decentralisation and Community Forestry under LSGA: The most recent agenda**

LSGA 1999 has statutorily recognised the role of local self-governance and devolution to make LGs more responsive and accountable to their populace. The preamble to the LSGA 1999 stipulates that it exists to make provisions conducive to the enjoyment of the fruits of democracy through the utmost participation of the sovereign people in the process of governance by way of decentralisation. The preamble further states that the LSGA 1999 aims to

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<sup>5</sup> Basnyat B, 2002. Decentralisation and its implication in Nepal's community Forestry programme: Thesis submitted for Master in Forestry Management to Indian Institute of Forest Management, India. 82 pp

*"Institutionalise the process of development by enhancing the participation of all the people including ethnic communities, indigenous, and down-trodden people as well as socially and economically backward groups in bringing about social equality in mobilising and allocating means for the development of their own region and in the balanced and equal distribution of the fruits of development".*

The spirit of LSGA 1999 calls for comprehensive transferring of central decision making power and implementing authority on local level development activities to LGs. Despite its limitations, LSGA 1999 has a number of positive aspects which were lacking in the previous acts. More significantly, it endorses the concept of local-self governance and devolution and has set out a number of local governance principles (DDCF 2001<sup>6</sup> and DDCF 2003<sup>7</sup>). Some characteristic features of LSGA are as follows:

- Formal recognition of the concept of local self governance
- Devolution of power and responsibilities, means and resources to the sub national authorities;
- Enhancement of capacity of sub national authorities to deliver and implement local projects;
- Delegation of authorities to collect taxes and raise local resources;
- Strong interface between civil society and sub national authorities
- Public private partnership for service delivery.

The following attributes briefly describe the roles and responsibilities of the of the LGs relating to natural resources management in pursuant to the LSGA 1999 (MOLJPA 1999a<sup>1</sup> and MOLJPA 1999b<sup>8</sup>)

- Afforest or have afforestation in barren land, hills, steppe and steep land and in public land.
- Prepare programmes in respect of forests, vegetation, biological diversity and soil conservation and to carry out or cause to be carried out the same.
- Make various programmes on environment protection and to carry out or cause to be carried out the same.
- Formulate and implement projects that can contribute to protect and promote the environment.
- Levy taxes on natural resources utilisation for commercial exploitation of natural resources and heritage within the village development area at the rate approved by the Village Council, not exceeding the prescribed rate
- Sell the forest products such as dried timber, fire woods, branches, splints, twigs, roots, straw, grass etc situated within its area situated within the village development area, etc.

### **Forest Act vis-à-vis Decentralisation**

Almost simultaneous with the development of CF policy in Nepal was an initiative towards decentralisation. The Decentralisation Act of 1983 specifically promoted the user group concept as the most effective approach to the development and management of natural resources and set the tone of legislative development in Nepal, particularly with regard to the government's willingness to devolve authority to local level.

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<sup>6</sup> DDCF, 2001. *Decentralisation in Nepal: Prospects and Challenges Findings and Recommendation of Joint HMGN-Donor Review*. District Development Committee Federation, Kathmandu, Nepal.

<sup>7</sup> DDCF, 2003. *Decentralisation in Nepal: Prospects and Challenges Findings and Recommendation of Joint HMGN-Donor Review*. District Development Committee Federation, Kathmandu, Nepal.

<sup>8</sup> MOLJPA, 1999 (b). *Local Self-Governance Regulations 1999*, Kathmandu, Nepal.

Effective decentralisation involves *devolution* of decision-making to the community and *deconcentration* of operational power to peripheral sub-units (Rondelli 1987)<sup>9</sup>. If it is seen from this perspective, FA 1993 has strictly adhered to the principles of decentralisation. It has decentralised powers and functions relating to management of forest to local communities and recognised CFUGs as self-governing and autonomous entities responsible for managing CF. The FA 1993 has devolved authority for development, protection, utilisation and management together with authorisation of sales and distribution of forest produce independently. Likewise, CFUGs are given powers to fix the price of forest products independently.

The FA 1993 is one of the early acts promulgated by the government, which was incepted following the people's movement for multi-party democracy. The Act, however, still implies that CF rights continue to emanate from the State which, in turn, hands them over to CFUGs. This contradicts to the Constitution of 1990, the preamble of which clearly states that the source of all legal authority in Nepal is "inherent in the people". As CFUGs do not have direct ownership rights of the land and have only *usufruct* rights of management of the trees and the forest products from the land, CFUGs do not have rights similar to what owners of other private property have. According to Forest Department hierarchy, ultimate authority rests with the MFSC, not with the people as stipulated in the 1990 Constitution.

Section 26 (2) of the FA 1993 empowers the District Forest Officer (DFO) to veto any operational plan if it is likely to adversely affect the environment. Section 27(1) further allows the DFO to "take back" the community forests if any activities other than those specified in the operational plan or any activities that adversely affect the environment are carried out (Belbase and Regmi 2002)<sup>10</sup>. Thus handing the forests over to user groups is conditional and the LGs have no legal authorities to reverse DFO's decision. If the DFO withdraws a community forest from an FUG, FUG members can appeal to the regional director and his decision will be final.

From the above discussions it emerges that the form of decentralisation applied in the management of forests is the deconcentration which involves the transfer of functions within the central government hierarchy through the shifting of workload from central ministries to field officers.

### **Contradictions between Forestry and Decentralisation Legislations**

While assessing the LSGA 1999 and FA1993, it seems that, in many instances, forest legislation bypasses the political tiers of the LGs. For example, Section 17 of the FA 1993 states that except when any right or facility has been obtained through a permit or license, or in any other way from HMGN or any authority empowered by HMGN, no person shall be entitled to any right or facility of any type in national forests, whereas LSGA 1999 stipulates that natural heritage is the property of the LGs. Natural heritage usually includes forests, lakes, ponds and rivers.

The other contradictions could be found over the proceeds accrued from the sale of the forest products. Sections 215 and 218 of the LSGA 1999 stipulate that any proceeds accrued from the sale of river sand, stone concrete, soil driftwood and the bone, horn, feather and skin of any wildlife which is not prohibited by prevailing Nepali laws, go to the LGs fund. This violates the definition of forest produce under section 2 (c) of the forest

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<sup>9</sup> RONDELLI DA, 1987. Administrative decentralisation of agricultural and rural development programmes in Asia: A Comparative Analysis. In: RIVERA.W.M and SCHRAM, S.G (eds). *Agriculture Extension Worldwide*, Croom Helm, London, UK

<sup>10</sup> BELBASE N & REGMI DC, 2002. Potential for Conflict: Community Forestry and Decentralisation Legislation in Nepal, Kathmandu, Nepal. International Centre for Integrated Mountain Development (ICIMOD).

act, which includes rock, stone, soil concrete sand, birds, wildlife and their derivatives. Section 25(1) of the act empowers the CFUGs to sell, distribute or use such forest products by independently fixing their prices. Table 2 presents contradictions between forestry and decentralisation legislation in detail.

**Table 2 - Contradictions between forestry and decentralisation legislation**

Issues	FA 1993	LSGA 1999
Ownership of forests	Property of central government and usufruct rights to the users if handed over to community	Property of VDC / DDC
Taxes / levies on forest products	Department of Forest / Ministry of Forests	VDC and DDC
Involvement of LGs	Bypasses the political tiers of VDC and DDC	Gives unchallenged authority over User groups, their decision making authority and project implementation
<b>Right to forest products</b> 1. Fuelwood, dry timber, twigs, bushes 2. Herbs 3. Mines 4. Skin, bone and other materials 5. Resins 6. Drift wood 7. Straw grass 8. Water resources 9. Natural heritage	1. User group 2. User group 3. User group 4. User group 5. User group and HMGN 6. User group 7. User group 8. User group 9. User group	1. VDC 2. DDC 3. VDC and DDC 4. DDC 5. DDC 6. DDC 7. VDC 8. VDC / DDC 9. VDC
Monitoring of community forests	District Forest Office / Range office	VDC / DDC
Conflict resolution	Right to initiate and decide case relating to <i>inter alia</i> , pasture, grass and fuelwood in the VDC	Authority to DFO as long as worth value is less than Rs. 10,000.

Source: Chapagain et al 1999<sup>11</sup>; LSGA-1999<sup>1</sup> and FA 1993<sup>2</sup>

Currently, FA is more powerful and pervasive than the LSGA because in places where the FA and Regulations are inconsistent with the LSGA, forestry legislation prevails. While the various players at the local level – LGs, non-governmental organisations (NGOs), local communities and industries – have the advantage of being closer to the forests than those representatives of central government bureaucracies formulating policies at the national level, the FA 1993 clearly bypasses LGs structures and other important stakeholders. LGs are usually in more direct contact with those stakeholders who reside or work in the forests and depend to varying degrees on diverse forest products. Apart from this, people have indicated that the LSGA 1999 has created uncertainty as to who in the future will provide support services for CFs, which are presently provided by the DFO.



<sup>11</sup> CHAPAGAIN DP, KANEL, KR, & REGMI DC, 1999. Current Policy and Legal Context of the Forestry Sector with reference to the Community Forestry Programme in Nepal. Working Overview. Kathmandu: Nepal-UK Community Forestry Project.

## DECENTRALISATION IN PRACTICE: EXPLORING FROM THE FIELD

This section presents cases of three community forests from Doti district, one from the hill districts in the far western development region of Nepal. This section attempts to assess the application of decentralisation in CF programmes in Nepal. Specifically, it presents the roles and responsibilities of the CFUGs vis-à-vis the LGs within the decentralisation framework provided by the LSGA 1999 and FA 1993. The major method used in the study was survey. The total sample size included 125 members of CFUGs' members and 40 LGs officials. Apart from survey and case studies of the three community forests, the study included focus group discussions and interactive participatory tools.

### Evolution of CFUGs

With a view to find out if LGs had any role in the establishment of the community forests, members of the CFUGs were asked to provide brief history of their CFUGs and to mention specifically who supported for its evolution. CFUGs in all three cases were established due to the efforts of the DFO, but still LGs had important roles to play, particularly in user identification (Table 3). Obviously, identification of the CFUGs member is the first step in the establishment of the CF and failing to resolve this issue in the beginning is to prepare for failure. If the LGs would not have cooperated to identify users and solve issue of ownership of the forests in the beginning, there would be no Chisapani CFUGs.

**Table 3: Evolution of the Sample Community Forests**

CFUGs	Evolution	Role of LGs
Chisapani	Approached by DFO to form CFUG	Supported to settle the dispute on the ownership of the forest which was claimed by a family showing the land ownership card ( <i>Lal Purjaa</i> )
Barmundi	As local residents were using the forests without concern for the future use and protection, DFO convinced local communities to form CFUGs for the sustainable use and management of the forest.	Supported to identify users and form UGs
Kudasain	Same as above	Identification of user groups

### Locals' perception on role of LGs

The CFUGs members were given the following three options and select one with regard to the identification of the CFUGs members. More than 70% respondents opted this role to be given to the LGs and confirmed later on through a large gathering of the local residents participated by users and other stakeholders (Table 4). According to CFUGs members, LGs is in good position to identify users and argued that LGs should mediate with the locals and DFO. To them, LGs should ensure that all have equal rights to access forests and use it sustainably. It seemed that CFUGs members were very much concerned with the fact that no one should be left out from the opportunity to participate in the programme and that no one should be allowed to encroach or have opportunity to intervene the affair unnecessarily.

**Table 4 - Responses about identification of the users**

	<b>Responses</b>	<b>Percent</b>
1.	Let LGs identify users and meeting of the users and other stakeholders confirm them through a gathering	71 %
2	Let DFO be responsible to identify users and LGs to confirm them	9 %
3.	Let local residents identify users, approach DFO and form CFUG and there be no role for the LGs.	20 %

However, CFUGs members would not agree to hand over the forests to the LGs. When asked why they did not want the forests to be handed over to the LGs, responses varied. To some, LGs does politics; for others, LGs would tax high by doing nothing. Table 5 shows the reasons why people do not want the forests to be handed over to the LGs.

**Table 5: Users' reasons for not handing-over the forests to LGs**

	<b>Reasons</b>	<b>Percent</b>
1	Likely lack of transparency and accountability of the LGs	24
2	LGs are likely to act according to the directions / instructions of the leaders belonging to their respective Political Parties.	56
3	Users committees might be accountable to the LGs, and not to the users	42
4	LGs may play the politics	40
5	LGs lack of resources and skills	40
6	LGs may charge unnecessary taxes and other charges from the users	47
7	Users become the tenant of the LGs	38
8	No response / idea	7

*Note: Total does not tally due to multiple responses*

### **Resources Sharing between CFUGs and LGs**

Focus group participants were further requested to depict the extent to which resources sharing have taken place between CFUGs and LGs with regard to the material and financial resources. Though all the CFUGs have some relationship and interactions with LGs but there is weak transfer, sharing or exchange of resources. Table 6 presents the transfer or sharing of resources (material and financial) among three CFUGs / and the LGs studied. Apart from participation in the CFUGs meeting or user committees, LGs shared virtually nothing with the CFUGs. Of the three CFUGs, there was at least some material resources sharing between Barmundi CFUG and LGs. Material resources included sprayers, forest related equipments and so forth. Had there been any sharing of resources between the LGs and CFUG, indeed, the performance would not have been as poor as found during the study.

**Table 6: Resource Sharing between LGs and CFUGs**

	<b>CFUGs</b>	<b>Material resource</b>	<b>Financial resource</b>
1.	Chisapani	Medium Low	Low Low
2.	Barmundi		
4.	Kudasain		

### **Transparency**

With a view to identify how transparently CFUGs are performing and whether members have knowledge of processes involved in the management of CF and how openly are they performing, several questions were asked to the members of the CFs. Responses are presented in Table 6. Chisapani CFUGs was not transparent to the extent that even an office bearer did not know if he / she held any position in the committee, and many users did not know if there existed any user committee during the study period. Although

CFUGs are expected to meet at least three to four times a year to work in the community forests, collect dead woods, forest litter etc, in Chisapani CFUGs, users ceased to follow this due to increased free riding. Many users did not know that the District Soil Conservation Office was paying the salary of the Watchman appointed for protecting tree saplings. Likewise, in Barmundi CFUG too, user committee sometimes met and discussed the issues, and committee members passed decisions to the users, but users could not recall if any general assembly was held after the handing over of the forests. In Kudasain CFUG also, no meeting was held for the last three years.

**Table 6: How transparent are the CFUGs?**

Indicators	Chisapani CFUG	Barmundi CFUG	Kudasain CFUG
1. Organisation of the UG general meeting	100% respondents report holding of no such meeting for last three years	80% respondents say that the meeting is organised at least once a year	100% respondents report holding of no such meeting for last three years
2 UC meeting	No meeting for last three years	Regular	Regular
3. Circulation of the minutes of meeting (UG/UC)	Not applicable	Not circulated	Not circulated
4. Knowledge of the members about the processes involved in the management of CF	75% of the respondents express their unawareness about the processes	45% respondents know the processes.	30% respondents are aware of the processes
5 Participation of local body officials (VDC and Municipality) in the UG/UC meeting	Not applicable	Participate in the capacity of user, no ex-officio representation.	Participate in the capacity of user, no ex-officio representation.
6 Transparency assessment	Low	Fairly	Fairly

### Accountability

Transparency, accountability and flexibility are the three factors, which contribute to the institutional sustainability of any organisation. CFUG is also an institution / organisation which was conceived with a view to manage the forests in the area sustainably so that users would be able to meet their daily needs of forest products at present and make them available for the future generations too. For assessing the accountability, respondents were asked if they could change outcomes / processes (revising operational plan, benefits sharing, punishing the free riders etc). The respondents were aware that they had no authorities to change the processes. Many have now forgotten what was written in the Operation Plan (OP) because it was drafted by the office of the DFO, and hardly discussed after the handing over of the forests. Users understand that writing OP and constitution for community forestry is a prerequisite for CF, but it hardly matters to them after the hand over. DFO reserves right to take back the forests, if users fail to follow the CF norms. However, this study reveals that neither CFUGs members, nor LGs and DFO feel accountable to implement the OP (Basnyat and Bhattacharya 2003)<sup>3</sup>. For many users, the CF was to regulate the free use of forest resources. In short, the study revealed low accountability in the entire three CFUGs studied, on the part of all three major stakeholders, users, LGs and the DFO.

**Table 7 - Accountability status of CFUGs**

Indicators		Per cent
1.	Are users aware of actions carried out as per to the OP?	29
2.	Do users feel necessary to follow OP?	47
3.	Can Users change outcomes / processes in the CF	20
4.	Accountability assessment	Low

### Empowerment

Empowerment process has direct links to benefits sharing. People can be said to be empowered when they have authorities to change or revise earlier CF rules regarding 'when to enter CF', 'what trees to cut', 'how to cut trees and obtain forest resources', and sharing of benefits to facilitate benefit sharing among users. It has been observed that CFUGs have not paid enough attention to empower members and equity aspects at both the household and community levels. Likewise, LGs have ignored or undermined the CFs, despite forests constitute an integral part of the farming systems in Nepal. For LGs, DFO is totally responsible for supervision and monitoring of the CFs. Since organisation of the CFUGs involves several social mobilisation activities and many learning opportunities such as leadership training, group mobilisation and management, fund management and income generating opportunities are made available for the users of CF, users of the CF groups are expected to be empowered. If benefits from the community forestry are to go beyond simple forest regeneration and are to contribute for the livelihoods improvement, then it is essential to ensure equitable management and distribution of benefits.

### PERCEPTION OF OFFICIALS OF LGs WITH REGARD TO THEIR ROLES IN CF

As evident from the responses documented in Table 4 that CFUGs would reject any attempt of government to hand the forests over to LGs. Although above responses of users would be welcome by the Forest Officials not only because it endorsed the ownership of the forests to the MFSC, but also because it pointed out that LGs are not the appropriate unit to be handed over the forests. Understanding the reaction of LGs officials with regard to the operation of the CF would further help the government to strengthen the decentralisation in the forestry sector. Responses of LG officials with regard to how would they like to initiate or see the evolution of the CF programme in their jurisdiction and be implemented are presented in Table 8.

**Table 8: LG Officials' responses with regard to the operation of the community forestry programme in their jurisdiction.**

Reasons		Percent
1	Demarcate the forests appropriate for the development and use as community forests	93
2	Identify users of the forests situated in the LG jurisdiction	100
2	Negotiate with LG officials of the concerned neighbouring LGs if the forests cross the LGs jurisdiction or the users of the forests have been residing in two or more LGs	47
3	Assist the users to formulate Constitution and Operational Plan etc	80
4	Hand the forests over to users	93
5	Supervise and monitor the functioning of the CF and oversee the extent to which the CF Constitution and the provisions outlined in the OP are followed	67
6	Reward to best performers and punish defaulters	80
7	Encourage users for sustainable use and management of the community forests	93
8	Assist Users in marketing the forest products	93

Above responses clearly confirm about the claim of LGs officials for the ownership of the forests and that they are in favour of CF implementation but they would like to hand over the ownership certificate to Users by themselves. Execution of the following three roles by LG would automatically mean the ownership of the forests by the LGs.

1. Demarcate the forests appropriate for the community forestry.
2. Identify users of the forests situated in the LG jurisdiction.
3. Hand over the forest to users.

## **CONCLUSIONS**

In Nepal, recent decentralisation policy has created the legal basis for greater citizen participation through establishing local governance and legitimising local resource management organisations. Although the spirit of LSGA calls for comprehensive transferring of central decision making power and implementing authority on local level development activities to the LGs, viz. DDCs and VDCs, at present, there is a gap between these legal provisions and the actual practice, as has been evident from the observations of the three community forests cases.

In a multi-ethnic, multi lingual and multi religious society such as Nepal, there can be no substitutive for democratic devolution of power where people can manage their affairs themselves without surrendering their rights and responsibilities to the distant central government. Without the democratisation of State institutions, it is not possible to build self reliant and self-determining local entity capable of responding to the increasing demands of diverse groups in a polity. This study argues that any form of decentralisation, be it deconcentration or devolution form, should address the following three major components

- a. Public administration reform
- b. Civil service reform
- c. Local government strengthening

While as an elected LG unit, LG has always stakes on any natural resources lying within its jurisdiction, the current FA 1993 has undermined the role of the LGs. The Local Self-Governance Act (LSGA) of 1999 has added confusion in the forest management. Local communities or user groups want active role of the LGs in the community forestry programme, but reject any move of the government leading toward hand over of the forest to the LGs.

The performance of all the CFs appeared poor. One of the reasons could be low accountability on the part of all three major stakeholders, viz Users, LGs and the DFO, as found in this study. Community forestry groups have not paid enough attention to transparency, empowerment and equity aspects. Likewise, CF groups have not paid enough attention to empower members and equity aspects at both the levels, household and community, and also that the LG has ignored or undermined the CF, although forests matter a lot to all LGs residents as the only source to provide local people to meet their daily needs of forest products, fuelwood and fodder. LGs have initiated claiming ownership of the forests situated in their jurisdiction due to the current LSGA 1999. Role clarification between LGs and DFO with regard to community forestry is most wanting.

It reveals that the LGs are not the best management unit to hand over the forests. But ignoring their roles and responsibilities would be a gross mistake in the development and sustainable management of the forest resources. Sustainable management of the forests is unlikely without the constructive support, cooperation and active role of the LGs. Current incentives and programmes do not allow DFOs to concentrate their efforts

seriously towards community forestry that requires focused technical backstopping, sensitization, and supervision.

Following recommendations/suggestions are made based on findings of study:

- Review both the FA 1993 and the LSGA 1999 in order that the ownership issue of the forest will be solved. Of the total forest areas of the country, demarcate forests into national forests and other community forests, with the support, cooperation and participation of all concerned parties and stakeholders. Let the ownership of the national forests remain with the Government and the ownership of community forest remain with the LGs.
- Establish a Community Forest Division within the LGs, and authorise them to hand over the forest to users.
- Make CF Division of the LGs responsible for technical backstopping, supervision, monitoring and evaluation of the community forests in the district. Delegate full authority to LGs in supervision and monitoring of the community forest.
- Make DFOs responsible for the management, supervision, policing and protection of the national forest only. Delegate full authorities to DFOs and free of interventions from the district political leaders in the name of decentralisation. However, the Department of Forest should have a separate cell / division to support CF to facilitate the efforts of the LGs through appropriate training, workshops, awareness making, management and leadership training.
- Establish a system, which will facilitate the coordination and linkages between the Community Forest Division of the LGs and the DFO. The latter should implement programme to enhance the capacity of the LGs to support the community forests in their jurisdiction.
- MOFS should reward those LGs and CFUGs that display "best practices" of accounting system, decision- making process, and information dissemination with regard to community forestry.

35.

## INDICATORS FOR ASSESSING EMPOWERMENT SITUATION IN JOINT FOREST MANAGEMENT (JFM): RELEVANCY, METHODS AND APPLICABILITY

A. K. Bhattacharya and Bijendra Basnyat

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### Abstract

*This paper highlights the need for assessing the empowerment status of JFM and suggests field level monitoring indicators, approaches and methods based on experience of study conducted in MP for assessing empowerment through JFM. JFM resolution is explicit with regard to empowerment of local communities, but it is often experienced that the local people are not able to avail the opportunity from it due to their own socio-cultural and economic constraints. Hence, it is necessary to look critically into the empowerment situation to understand the dynamics of empowerment within the context of JFM. Indicators and verifiers have been developed on the basis of literature review, consultation with the actors and stakeholders and ground-truthing was done to assess the JFMC members' perception towards the indicators and their applicability. The participatory methods have been followed in developing verifiers and assigning the weightage for each indicator. This will not only help ground-truthing of indicators but also educate people about JFM program.*

### INTRODUCTION

The JFM concept envisages the forest dependent people taking an active role, responsibility and power according to mutually agreed upon memorandum of understanding. It recognizes the livelihood and sustenance needs of the people through the principle of 'care and share'. The aim of the program is to increase community access to forests and rehabilitate the degraded forests. There are 63,618 JFM Committees managing 1,40,953.6 sq kms of forests under the JFM programme in 22 states of the country (MOEF, 2001)<sup>1</sup>. In a radical departure from the previous focus on policing and protection of state-owned forests, the new JFM approach emphasizes the shared responsibility for management and sharing of profits with local communities (Joshi, 1998)<sup>2</sup>. Some of the approaches followed by Madhya Pradesh Forest Department (MPFD) are integrated development approach, economic empowerment, consciousness-raising approach. Though lots of efforts have been made out by MPFD for the empowering of people, still the empowerment situation is not encouraging (Bhattacharya and Basnyat, 2002)<sup>3</sup>. Most important mechanism to empower people is dissemination of information. Reorientation of foresters from regulatory to participatory functions, safeguarding interests of the deprived section of community, creation of village development fund, equitable sharing of the usufructs are some measures to empower the community (Joshi, 2000)<sup>4</sup>.

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<sup>1</sup> MOEF, 2001. *Joint Forest Management: A Decade of Partnership*. JFM Monitoring Cell, Government of India, Ministry of Environment & Forests, New Delhi.

<sup>2</sup> Joshi A, 1998. *Progressive Bureaucracy: an oxymoron?* The case of JFM in India. *Rural Development Forestry Network (RDFN) paper 24a* winter 1998/99.

<sup>3</sup> Bhattacharya AK & Basnyat B, 2002. *Empowerment through Joint Forest Management: A study from Madhya Pradesh*. (Unpublished study report). Madhya Pradesh Forest Department, Bhopal, India

<sup>4</sup> Joshi, NK, 2000. *Empowerment of People through Forestry: A status paper on the JFM UP* in Proceedings of International Workshop – A Decade of JFM Retrospection and Introspection, June 19-20, 2000 organized by Indian Council of Forestry Research and Education, Dehradun, India

The JFM programme aims at empowering local people for their active participation as partner in the management of forest resources and sharing the benefits derived from its protection and management. The villagers themselves are to carry out all the forest development activities under the supervision and monitoring of the Forest Department. Several efforts have been initiated to empower village communities through JFM both socially and economically (Singh and Varalakshmi, 2000<sup>5</sup>; Bhojvaid and Pawar, 2000<sup>6</sup>; Joshi, 2000<sup>4</sup>; Bhattacharya and Basnyat, 2002<sup>3</sup>; MPFD, 2002<sup>7</sup>; Sharma, 2003<sup>8</sup>).

## NEED FOR ASSESSING EMPOWERMENT SITUATION OF JFMC

Empowerment has been defined as the expansion of assets and capabilities of people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives (Naryayan, 2002)<sup>9</sup>. Empowerment refers to the countervailing power of the local people, which means more power to the local people with regard to the forest management, utilization of forest resources and decision-making. Empowerment is a complex concept, because it means different things to different people. For example, it is very likely that the definition of empowerment itself could be different for the staff of the Forest Department and that for the local communities. Thus, there is need of consensus in defining empowerment.

The formulation of supportive policies by the Central and State Governments in early 1990s have accelerated the spread of JFM in India. Giving due acknowledgement to the role of local communities, Central and State Forest Departments have reviewed JFM policies from time to time to empower the forest dependent communities both socially and economically. In spite of this, there is either no or less implementation of these directives in the field. The people are unaware about the rules and provisions of the JFM. Studies indicate that most of the women are not aware about the JFM activities in the villages; and they do not know when the committee was formed and what type of JFM it was, though they are using the forests for meeting their daily needs (Sharma, 2003)<sup>8</sup>. Similar findings have been observed about the awareness level of both JFM members as well its executive (Bhattacharya and Basnyat, 2002)<sup>3</sup>. They are merely forming the groups as request made by the Forest Department. Some were organized to derive the benefits from the programs. Lack of transparency, accountability from the Forest Department and low awareness among and poor economic conditions of villagers had created a lot of problems in implementation (Bhattacharya and Basnyat, 2002)<sup>3</sup>. JFM policies that empower government agencies to direct and control community management efforts generally fail either to enhance or encourage the spread of grass root resource mobilization efforts (Poffenberger and Betest, 1996)<sup>10</sup>.

Rural communities are highly heterogeneous in terms of access to resources, decision-making mechanisms and the resultant societal benefits. The elite section of the community highly dominates decision-making forum, as a result of their domination

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<sup>5</sup> Singh TP & Varalakshmi V, 2000. *Women Self help Group in JFM programs towards Economic Empowerment* in Proceedings of International Workshop – A Decade of JFM Retrospection and Introspection, June 19-20, 2000 held at Indian Council of Forestry Research and Education, Dehradun, India

<sup>6</sup> Bhojvaid PP & Pawar R, 2000. *JFM: The Joint Financial Munching*. In : Proceedings of International Workshop – A Decade of JFM Retrospection and Introspection, June 19-20, 2000 held at Indian Council of Forestry Research and Education, Dehradun, India

<sup>7</sup> MPFD, 2002. JFM at Glance. JFM Cell, Madhya Pradesh Forest Department, MP

<sup>8</sup> Sharma R, 2003. Women Participation in JFM: A study from Madhya Pradesh. (unpublished study report). Indian Institute of Forest Management, Bhopal, India.



<sup>9</sup> Narayan D, 2002. Empowerment and Poverty Reduction: A Sourcebook. Worldbank, ISBN: 0-8213-5166-4 SKU: 15166

<sup>10</sup> Poffenberger M & Betst M, 1996. Grassroots Forest Protections: Eastern Indian Experiences. Asia Forest Network.

management strategies. As poor families are unable to voice their arguments in favor their active management of forest resources, they are often left out in decision-making, where as JFM. Resolution envisages safeguarding their interests. Poor and powerless are involved just to fulfil the quotas, or to count the number in front of visitors. People have, therefore, been questioning over the roles played by them, and questioning their intention and interest, when persons of poor and disadvantage groups are included in the executive committees.

Besides, there is dearth of research and documentation on empowerment issues in the context of JFM. Understanding power dynamics is, therefore, very illuminating and likely to advance the understanding of the empowerment processes, level and issues, and facilitate true empowerment of those who need power in order to be able to exhibit countervailing power to safeguard their interests and concerns.

In the above background it is necessary to critically look into the empowerment situation of JFM committees to understand the dynamics of empowerment within the context of JFM, in particular and sustainable forest management in general. Such an analysis will help will help the staff of intervening agencies, i.e, the Forest Department people from the central to field levels to adjust, adapt and correct intervention approaches and methodologies which are friendly to the current modes and approaches of sustainable forest management in general and empowerment in particular.

## **EMPOWERMENT – JFM INTERFACE**

The concept of people's participation in forest management is not new. The MP Forest Department has been carrying out various activities to empower rural communities through JFM (Basnyat, 2002<sup>11</sup>; Bhattacharya and Basnyat, 2002<sup>3</sup>; MPFD, 2002<sup>7</sup>). The JFM program seeks to develop partnership between local community institutions and Forest Department for sustainable management and joint benefit sharing of public forestlands. Efforts have been made to empower the village communities though JFM both socially and economically. Besides, steps are being taken for the empowerment of the local community which include activities such as reorientation from regulatory to participatory functions, capacity building of community, safeguarding interests of the deprived sections of the society, involvement of women, equitable sharing of usufructs, creation of village development fund, enhanced accountability of forest officials towards users, transparency and bottom up micro planning process. In spite of all these efforts, evidences from the field (Bhattacharya & Basnyat 2002)<sup>3</sup> indicate that the empowerment delivery is not functioning well as it was intended. Hence it is desirable to assess the following issues of the empowerment in JFM.

- The main aim of the JFM is the sustainable management of forests with active involvement of community where the empowerment is a must. Still, many issues as inclusions, access to information, participation, organizational capacity development, accountability, access to services under the empowerment process remain unaddressed.

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<sup>11</sup> Basnyat B, 2002. *Approach Paper for Measuring Empowerment Situation of Joint Forest Management*. (Unpublished study report). Indian Institute of Forest Management, Bhopal, India.

<sup>12</sup> MOEF, 1988. National Forest Policy Resolution, 1988. No. 6-21/89-P.P. Ministry of Environment and Forests, Paryavaran Bhavan, Lodi Road, New Delhi.

<sup>13</sup> MOEF, 1990. The Circular Concerning Joint Forest Management. No. 6-21/89-P.P. Ministry of Environment and Forests, Department of Environment, Forests and Wildlife, Paryavaran Bhavan, Lodi Road, New Delhi.

<sup>14</sup>GOMP, 1991. JFM resolution, 1991, Government of Madhya Pradesh, Bhopal, India.

<sup>15</sup>GOMP, 1995. JFM resolution, 1995. Government of Madhya Pradesh, Bhopal, India.

<sup>16</sup>GOMP, 2000. JFM resolution, February 2000. Government of Madhya Pradesh, Bhopal, India.

<sup>17</sup>GOMP, 2001. JFM resolution, September 2001. Government of Madhya Pradesh, Bhopal, India.

- Various acts, polices, directives and circulars have been formulated to facilitate empowerment of local communities (MOEF, 1988<sup>12</sup>; MOEF, 1990<sup>13</sup>; GOMP, 1991<sup>14</sup>; GOMP, 1995<sup>15</sup>; GOMP, 2000<sup>16</sup>; GOMP, 2001<sup>17</sup>). Gradual amendments have been made in the JFM resolutions a number of times i.e. 1991, 1995, 2000 and 2001 for making JFM more participatory, demand driven and empowerment of local people and inclusion of poor by gender, caste and poor people in decision-making forum, but there is either no or less implementation of these directives in the field (Bhattacharya and Basnyat, 2002<sup>3</sup>; Sharma, 2003<sup>8</sup>).
- The State Government has adopted the JFM as main strategy for sustainable forest management. Still, the local communities are either unaware or less aware of JFM programs and polices and activities carried out in their villages. There is often lack of enabling environment for disadvantaged groups, which would allow them to speak in the assembly. Furthermore, decision-making becomes a lucrative business for powerful members of the group when commercial opportunities become sufficiently attractive (Hunter, 1996)<sup>18</sup>.
- There is either less or passive participation of the local communities, especially poor and marginalized communities in JFM related activities especially in decision-making forum. The empowerment of local community is unlikely until equity, participation and sustainability issues are addressed.

## FRAMEWORK FOR ANALYSIS OF THE PROCESS OF EMPOWERMENT

Empowerment is defined as the transfer of control over decisions and resources for equity, participation and sustainability. The key elements of empowerment are participation and inclusions, access to information, organizational capacity development, accountability, access to services, which ultimately leads to sustainability in terms of natural resources, organizational and economic or financial.

Empowerment may be at individual or collective level, and can be economic, social, or political. The term can be used to characterize relations within households or between poor people and other actors at the global level. There are important gender differences in the causes, forms, and consequences of empowerment or disempowerment. Hence, there are obviously many possible definitions of empowerment, including rights-based definitions.

Taking aforementioned issues into account, the framework for measuring the empowerment has been developed. Studies undertaken in JFM, published and unpublished literatures related to JFM and other social sciences were reviewed in developing the framework. The framework was modified at the later stages based on peer group discussions and learning from the field. Figure 1 presents the framework used for the measuring empowerment. The framework has used two tiers, process and impact function for assessing and developing empowerment indicators in JFM.

Indicators are the means by which the outcomes of the process can be understood in one form or the other measured or explained. Thus, indicators must accurately reflect the changes that have taken place. Keeping this into account, the indicators for assessing the empowerment has been classified into two major categories:

assessing empowerment are perceptual change, material change and relational change, which ultimately lead towards the sustainability of the JFM.

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<sup>18</sup> Hunter M, 1996. *Participatory Forestry: The Process of Change in India and Nepal*. Rural Development Forestry, Study Guide 3, Rural Development Forestry Network, Overseas Development Institute, London

- **Process function indicators** that identify with the process involved in the achievement of objectives of the interventions as well as goal of JFM. The process indicators are participation and inclusions, access to information, access to services, accountability and development of the organizational capacity.
- **Impact function indicators**, which assess the impacts of the process function or impact in relation to the stated objectives. The impact function indicators used for Verifiers are developed to assess the indicators of empowerment. The verifiers provide the platform for collecting and recording information, which after collating provide the basis for interpretations. Two different sets of verifiers have been identified for this purpose.
- **Qualifier verifiers:** The set consists of qualities or traits that are desirable to qualify the indicators. These are the verifiers, which are established through the presence or absence of phenomenon in JFM and require the descriptive explanations. Multiple-choice response is provided for this type of variables.
- **Desirability/assessment verifiers:** The set consists of possible approaches involved in the process, which are ranked in order of desirability. Higher the rank, more will be the degree of the positive verifier and higher the value of indicator. Five point ranking scale will be used for these verifiers and for making empowerment index in later stage. Taking the aforementioned aspects into account, Table 2.1 presents the indicators likely to be used in assessing the empowerment of community through JFM.

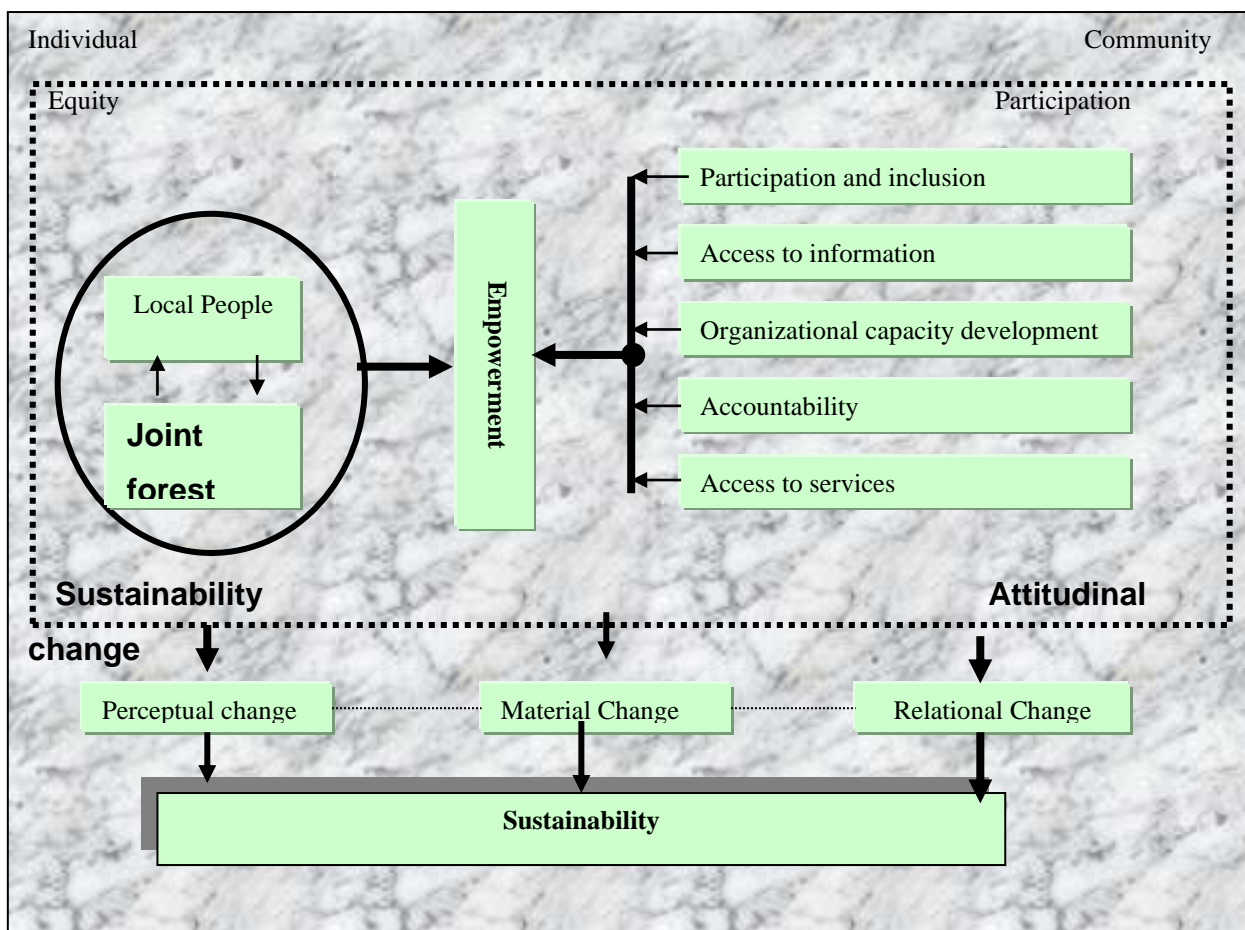
The first tier, process functions, that defines the equity, participation, sustainability and attitudinal change, is the first and foremost outcome of empowerment which includes participation and inclusions, access to services, access to information, accountability and organisational capacity development are the inputs towards for achieving above means. Second tier, the impact functions, which sees individual, social, political and economic empowerment, is the outcome of empowerment which can be assessed in terms of material, perceptual and relational change and overall sustainability of the JFM.

**Participation and inclusions:** Empowerment is the result of participation in decision-making. Empowerment is an important outcome of high level of participation involving control over decision making for a range of activities. Participation and inclusions is manipulated to mean different things to serve different purposes. Genuine popular participation requires that those segments of the population have the mechanisms and structures which enable them to participate in the decision making processes that form the basis for the planning, execution and control of all these activities which affect their lives. Three dimensions of the participation and inclusions are assessed for developing the indicators of empowerment. The first dimension questions about four kinds of participation i.e participation in decision making, participation in implementation, participation in benefiting and participation in evaluation. The second dimensions refer to "who" is included. It is defined in terms of gender, ethnicity and economic status that participate in the JFM. The third dimension is about the nature of inclusions, active or passive, and also how to realise the inclusions. This framework explores all the above dimensions of participation and inclusions in JFM.

**Access to information:** Information is power and one of the foremost elements in empowerment. Empowerment is unlikely until and unless the people are aware of their rights, responsibilities, duties and functioning of their JFMC. The JFM has assigned the roles and responsibilities to its members as well as executives. These indicators attempt to examine the familiarity of the villagers towards it and modality as to how effectively it is being translated and practice in the field.

**Accountability:** Accountability is to hold people responsible for their works. Transparency, accountability and flexibility are the three factors, which contribute to empowerment. These indicators attempt to measure awareness of general members in JFM related activities, follow up of the decision made by committees, mechanism to ensure the transparency and accountability towards its members as well the support they receive from the Forest Department and the level of support. As Forest Department is the principle implementer of JFM, its accountability towards the committee is must for empowerment.

**Access to services:** Empowerment process has direct links to access to services/benefits. Hence, it is essential to ensure equitable management and distribution of benefits and services. Whether all people equally participate in activities associated with benefit sharing or a group of people actively influences the operation and benefits sharing? These issues must be addressed if we really mean for the empowerment. The present framework has used indicators like benefits derived from JFM and its sharing mechanisms, income generating activities, and employment opportunities for assessing the empowerment in JFM.



**Figure 1: Framework for assessment of empowerment**

**Organisational capacity development:** The organisational capacity is one of the major elements in empowerment. The organisations must have adequate resources, skills and capabilities to perform its activities if we really mean for empowerment. If the organisation is not self reliant, empowerment is unlikely. Hence, the capability to perform the mandated objectives, financial management, institutional linkages and coordination mechanisms and capacity development for its members is used for assessing the organizational capacity development.

The outcomes of process indicators are the perceptual, material and relational change, which ultimately leads towards the sustainability.

**Perceptual and attitudinal change:** This attempts to measure changes in the perception and attitudes of people towards the forest and its management. The perceptual change is assessed in terms of self-esteem, confidence, and ability to express their views and change in attitudes towards the forest management.

**Material change:** This attempts to measure the impacts of JFM and uses the quantitative indicators in assessing the impacts, e.g income, employment, basic needs and resources after the implementation of the JFM.

**Relational change:** The relational change is defined as the change in position of the people or community after the implementation of the JFM. The relational changes are measured in terms of change in decision-making power, bargaining power, participation and self-reliance of the JFM committees.

**Sustainability:** The sustainability for the purpose of study is defined as the interactions of human and forests, which depend according to the interface and context. The organizational sustainability, financial sustainability and resource sustainability must be given due consideration in measuring the impacts of empowerment process since the goal of JFM is sustainable management of the forest with active involvement of local community.

Taking the aforementioned aspects into account, Table 1 presents the indicators that may be used in assessing the empowerment of community through JFM.

**Table 1: Indicators for assessing Empowerment Situation**

S No	Indicators	Verifiers
	Participation and Inclusions	<ul style="list-style-type: none"> <li>Representation in committee by gender, ethnicity and economic classes</li> <li>Participation in Planning, Implementation and Monitoring</li> </ul>
	Access to information	<ul style="list-style-type: none"> <li>Record and Minutes Keeping</li> <li>Circulation of the minutes in local languages as well</li> <li>Circulation of orders and guidelines</li> <li>Knowledge of JFM processes</li> <li>Familiarities with government rules and regulations regarding JFM and related acts on natural resources</li> </ul>
	Organizational capacity development	<ul style="list-style-type: none"> <li>Formation of committee</li> <li>Formulation of micro plan</li> <li>Financial management</li> <li>Capacity development</li> <li>Institutional linkages and coordination mechanisms</li> <li>Involvement of Forest Department and other organizations in JFM related activities</li> </ul>

	Accountability	<ul style="list-style-type: none"> <li>• Awareness of right and responsibilities or actions to be carried out</li> <li>• Information about micro plan and its activities</li> <li>• Support from Forest Department</li> <li>• Participation of committee members in JFM activities</li> </ul>
	Access to services	<ul style="list-style-type: none"> <li>• Income generating activities</li> <li>• Implementation of micro plan</li> <li>• Employment opportunities</li> <li>• Tours and trainings</li> <li>• Benefit sharing</li> </ul>
	Perceptual change	<ul style="list-style-type: none"> <li>• Self esteem</li> <li>• Self confidence</li> <li>• Vision for future</li> <li>• Visibility and respects</li> </ul>
	Material change	<ul style="list-style-type: none"> <li>• Income</li> <li>• Resources</li> <li>• Basic needs</li> <li>• Employment</li> </ul>
	Relational change	<ul style="list-style-type: none"> <li>• Decision making</li> <li>• Participation</li> <li>• Bargaining power</li> <li>• Self-reliance</li> <li>• Organizational change</li> </ul>
	Sustainability Biological sustainability	<ul style="list-style-type: none"> <li>• Regeneration (Both present status and potentiality)</li> <li>• Forest condition (stand diversity, density)</li> <li>• Supply demand/gap of forest products (especially NISTAR)</li> <li>• Biotic pressure</li> </ul>
	Organizational sustainability	<ul style="list-style-type: none"> <li>• Conflicts and its resolution mechanism</li> <li>• Meetings/ group discussions/personnel communications</li> <li>• Implementation of decision</li> <li>• Monitoring and evaluation mechanisms</li> </ul>
	Economic sustainability	<ul style="list-style-type: none"> <li>• Fund generation</li> <li>• Income from forest product</li> <li>• Equity and equality</li> </ul>

### Measuring the Indicators

The questionnaires are to be developed in Likert and Semantic scale. Higher the value of scale, higher will be the empowerment situation and vice versa. The main aim for the use of the scale is to capture the diversity of the response as well as it makes data analysis and interpretation easier during the preparation of index. Two types of qualifiers, qualifiers and desirability verifiers are developed for the collection of information. Hence, data analysis is to be carried out according to the type of qualifiers. The method of empowerment index preparation has been dealt with in the following paragraph.

**Step 1: Designing the questionnaire:** The questions are to be designed and classified according to the indicators and verifiers suggested above. Both the qualifiers and desirability verifiers must be present in each indicator. Simple statistical tools, frequency and percentage can be used for explaining the qualifier verifiers where as empowerment

index is to be prepared from the assessment / desirability verifiers. Assessment / desirability verifiers must use Likert scale.

**Step 2: Preparation of index for indicator:** First the index of the verifiers is to be prepared and then the index of indicators can be calculated. The index for each verifier is calculated by following formula. The index is calculated in terms of percent.

$$C_i = \frac{\sum(n_1*w_1) + (n_2*w_2) + (n_3*w_3) + (n_4*w_4) + (n_n*w_5)}{\sum W*N} *100$$

where,  $C_i$  = index of the verifiers

$w_1, w_2, w_3, w_4, w_5$  = scoring of verifiers from 1 to 5 in descending order

$n_1, n_2, n_3, n_4, n_n$  = number of respondent in each scoring

$W$  = Maximum possible Weights

$N$  = total number of respondents.

After obtaining the index of each verifier, the average index value for each indicator is calculated by following formula. The study assumes that each verifier has equal importance in measuring the situation of empowerment, thus equal importance was given to all verifiers.

$$I_i = \frac{\sum C_1 + C_2 + C_3 + \dots + C_n}{N}$$

where,

$I_i$  = Index of criteria,  $C_n$  = Index of each verifiers,  $N$  = Total number of verifiers

**Step 3: Assigning weight to indicators.** The group weightage methods must be used to give due attentions on people's factors of choice for the empowerment. Weights on each indicator (please refer figure 1 for indicators) are to be assigned on the basis of outcomes of the group discussion exercise. The participants of group discussions must be requested to assign the weight on each criteria of empowerment (both process as well as impact indicators) with minimum five, but in any case, the total score must become 100. This is later on used for calculating the empowerment index.

**Step 4: Empowerment index:** The empowerment index can be calculated by following formula. If the weights assigned to indicators are  $W_1, W_2, W_3, W_n$  and value of index are  $I_1, I_2, I_3, I_4$ , the empowerment index will be

$$EI = \frac{\sum(I_1*w_1) + (I_2*w_2) + (I_3*W_3) + \dots + (I_n*W_n)}{\sum(W_1 + W_2 + W_3 + \dots + W_n)}$$

The value of the empowerment index is always less than 100. The higher the figures, higher will be the empowerment of the community. Changes in the index value over time will presents the progress of JFM towards empowering community.

**Step 5: Classification of Empowerment index:** The empowerment index is classified into four major types on the basis of the scoring. Table 2 presents the classification of the empowerment index. Higher the value betters the empowerment and vice versa. This classification was developed on the basis of outcomes of discussion with villagers, JFM members, forest department officials.

**Table 2 Classification of empowerment index**

S No	Index	Scoring
1	Highly empowered	Above 75
2	Empowered	75 – 50
3	Least empowered	50 – 25
4	Not empowered at all	Less than 25

**LESSONS LEARNT: FROM CONCEPTUAL MODEL TO FIELD TESTING**

The above indicators were piloted in two JFM Committees of Madhya Pradesh for reliability and validations. The study surveyed 100 respondents each from Village Forest Committee and Forest Protection Committee in and around Bhopal, the capital of the State. The study followed participatory methodology as well as conventional survey techniques in collecting information. The data were collected mainly through the structured closed-ended questionnaires. The questionnaires were developed in five point Likert and Semantic scale. Higher the value of scale, higher was the empowerment situation and vice versa. The questionnaire and checklist were translated into local languages.

The focus group discussion was conducted with JFM committee before the survey to make people aware with the study purpose as well to assess the general empowerment situation of the committee. This gave a quick glance of the JFM situation in the village but also helped to crosscheck and validate the information collected. With the familiarization about the JFMC, focus group discussions (with women, with JFMC, schedule caste and tribes, JFM members) were carried out separately in each study JFMC to know about the situation of the JFM in general and assess the empowerment situation in particular. The people were requested to list out the factors, which they would like to consider in measuring the empowerment for themselves. First they were asked on what 'empowerment' meant for them? Community definition on empowerment has emerged as *"the ability to make decision without support or influence from others as well as having subsistence income for sustaining the life"*. The community definition of empowerment includes all four dimensions of empowerment as individual, social, political and economic empowerment. The participation by gender, caste and social group and economic status is one of the major indicators for the empowerment. The community focused on active participation in all the activities of the JFM (planning, implementing, monitoring and evaluation) with equitable benefit sharing and sustained income from forests as the foremost criteria for the empowerment. Besides, they emphasized on transparency in decision-making processes as well. Box 1 presents community perceptions on factors, which must be taken into account for the measurement of empowerment.

**Box 1. Community perceptions on indicators of empowerment**

- Awareness about the JFM activities
- Ability to express the voices in meetings
- Participation and inclusions of all in JFM development
- Active participation of the people in forest development activities
- Less influence by the Forest Department
- Opportunities and sustained income and employment through JFM
- Capacity to generate own resources for forest development activities
- Availability of information for all
- Accountability of all stakeholders of JFM
- Equitable benefit sharing
- Linkages with other organization established
- Creation of assets for village and community development
- Participatory planning process



- Perceptual and attitudinal change of community towards forests
- Increase income and employment after being involved in JFM
- Reorganization of voices of the poor in JFM activities
- Self respect increased
- Transparency in decision making processes
- Sustainable management of forest resources
- Fulfillment of ***Nistar***

As several factors were listed out, they were again requested to classify these factors into different indicators as discussed above (table 1; figure 1) and requested to assign the weightage to them in such a way that community weightage on indicators of empowerment can be obtained. The community weightages on the empowerment are presented in Table 3 below. In both types of JFMC, participation and inclusion was one of the major criterion for the empowerment, where they assigned maximum weightage for it followed by access to information, material and perceptual change, access to services etc.

**Table 3. Community weightage on indicators of empowerment**

S No	Attributes	VFC	FPC
1	Inclusion and Participation	20	25
2	Access to information	10	10
3	Accountability	5	5
4	Organizational capacity development	5	10
5	Access to services	10	10
6	Perceptual change	10	5
7	Material change	15	10
8	Relational change	10	10
9	Resource sustainability	5	5
10	Organizational sustainability	5	5
11	Economic sustainability	5	5
	Total	100	100

After completing the focus group discussions, two local people, one male and female, were selected for the household survey purpose based on consultation with the local people during the focus group discussion. The enumerators were then given a half-day orientation on the study objectives and methods for filling the questionnaires. The main purpose of using locals in survey purpose was to avoid the chances of ignorance by locals as well as to get more reliable information. This not only helped to get the valid information but also help to create awareness on empowerment issues among the people apart. The questionnaire filled was then cross checked and edited in the field itself by the researchers in order to avoid the discrepancies and data inconsistencies. The enumerators were requested to visit survey households again if any discrepancies were observed either due to negligence or human error. However, the researcher closely monitored enumerators to get more reliable and accurate information.

A dual approach was used in analyzing the data and information collected during the study. Making things visible was the strategy of data analysis, processing and presentation. Data analysis was carried out according with the type of qualifiers. Simple statistical tools, frequency, percentage were calculated for qualifier verifiers where as empowerment index was prepared from the assessment/desirability verifiers. Analysis of the different indices reflects that empowerment situation is not encouraging in both VFC and FPC. But still, the empowerment situation of VFC is high, as compared to that of FPC. This is mainly because both resources as well as efforts are made more in VFC, as the main aim of JFM is to regenerate the degraded forests. Similarly, for VFC members' livelihood is more dependent on forests as compared to those for FPC members. This

might be the reason for better situation of empowerment indices in VFC as compared with FPC. The community focused on active participation in all the activities of the JFM (planning, implementing, monitoring and evaluation) with equitable benefit sharing and sustained income from the forests as the most and foremost criteria for the empowerment. Table 3 summarizes the different indices used for the measuring of empowerment situation of JFM.

**Table 9 - Indices used for measuring empowerment**

S No	Verifiers	VFC	FPC
1	Participation index	67	51
2	Transparency index	54	28
3	Accountability index	63	58
4	Organizational capacity index	52	20
5	Service index	45	17
6	Biological sustainability	75	54
7	Organizational sustainability	66	32
8	Economic sustainability	43	19
9	Perceptual change	58	26
10	Material change	52	17
11	Relational change	32	12
	<b>Overall empowerment</b>	<b>55</b>	<b>31</b>

Note: High: > 75, Moderate: 75 – 51, Least: 50 – 25, Not empowered: < 25

## CONCLUSIONS

The formulation of supportive policies by the Central and State Governments in early 1990s have accelerated the spread of JFM in India. Giving the due acknowledgement of role of local communities, Central and State Forest Departments have reviewed JFM policies time to time to empower the forest dependent communities both socially and economically. The government has formulated various rules, policies and programs for the empowerment of the forest dependent committees under the Forest Policy, 1988. But very few studies have been conducted to assess the translation of these policies into practice. Hence, there is need to assess the process of empowerment, which the present JFM strategy has delivered as envisaged in the State JFM resolution. Thus the suggested indicators will help to assess and monitor the empowerment situation. The regular monitoring will help to enlist the area where the JFM interventions need to be focused and prioritized. This would help to enhance the success of JFM programs.

Most of the previously developed indicators have often ignored role of local people in developing indicators. They poorly reflect the location specific situation, which affects on the implementation as well as monitoring. Taking above into accounts, the indicators and verifiers are developed through participatory and flexible process based on people's perception rather than from researcher's perception. This approach not only creates the awareness among people about JFM programs but also develop the ownership feelings in JFM process, which ultimately help in empowerment.

The indicators and verifiers for assessing the empowerment were developed based on the community perceptions as well as on the basis of review of the several literatures on empowerment. The use of the focus group technique not only helps to standardize the criteria developed earlier but it also creates awareness among the people about the empowerment. Thus these methods act as catalysts in sensitizing community. This not only creates the platform for the study but also helps to get the more reliable and valid information.

The use of the local enumerators for the community survey helps in getting accurate and reliable information. The people feel very comfortable to share the information with their friends and neighbors rather than with outsiders. This method avoids the chances of ignorance of the villagers. Thus the method on one hand helps to get more accurate and reliable information and on the other also helps to create awareness on empowerment issues.

36.

## EMPOWERING PEOPLE THROUGH JOINT FOREST MANAGEMENT (JFM) – A STUDY FROM MADHYA PRADESH (INDIA)

A K Bhattacharya and Bijendra Basnyat

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### **Abstract**

*JFM emphasises on empowerment of forest dwelling communities both socially and economically. The present study attempts to analyse the government policies, programs and legal provisions regarding the JFM with emphasis on empowerment in Madhya Pradesh context. This paper is organised into four sections. The first section presents about the initiation of the JFM strategy in Madhya Pradesh. Second section deals about the present laws, policies and legal provisions regarding the empowerment. Section three examines the attempts of the government in empowerment through JFM. Finally, section four presents about the empowerment and JFM interface.*

### **BACKGROUND**

The JFM concept envisages the forest dependent people taking an active role, responsibility and power according to mutually agreed upon memorandum of understanding. The primary objective of JFM is to provide a visible role to the local communities in planning, management and protection of forests and to give them a share in the benefits from these forests. On operational parameters, JFM is a concept of developing partnership between Forest Department and fringe forest user groups on the basis of jointly defined roles and responsibilities. JFM in India is gradually emerging as a powerful tool for sustainable forestry. It recognises the livelihood and sustenance needs of the people through the principle of 'care and share'.

The JFM programme aims at empowering local people for their active participation as partner in the management of forest resources and sharing the benefits derived from its protection and management. But limited studies have been carried out to assess the impacts of JFM programs on rural communities in general and empowerment in particular. The present study attempts to analyse the government policies, programs and legal provisions regarding the JFM with emphasis on empowerment in Madhya Pradesh context.

### **EVOLUTION OF JFM STRATEGY**

#### **National Forest Policy**

The serious depletion of forest resources due to biotic and industrial pressure and other reasons made the policy makers review the situation in the late eighties and evolve a new strategy for conservation of forests. The National Forest Policy was revised in 1988, which envisaged community involvement in the protection and regeneration of forests. It accorded highest priority to sustainable management of the forest resources. The National Forest Policy, 1988<sup>1</sup> envisages the cooperation of local people in conservation and development of forests. Accordingly, the Ministry of Environment and Forests,

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<sup>1</sup> MOEF, 1988. National Forest Policy Resolution, 1988. No. 6-21/89-P.P. Ministry of Environment and Forests, Paryavaran Bhavan, Lodi Road, New Delhi.

Government of India, issued instructions to all states on 1 June, 1990<sup>2</sup> that rights of the tribals and other villagers living in and around forests will have first charge on forest. Accordingly, co-operation of the local public is being sought through the system of JFM.

This strategy provides the broad framework for the involvement of local community in forestry development activities. It provides the rights and concessions for the community to meet their requirement of the forest products. The holders of customary rights and concessions in the forest area should be motivated to identify themselves with the protection and development of the forests from which they derive benefits. The domestic requirements and construction timbers should be the first charge on the forest produce. Along with the tribal, it also gives due consideration for the involvement of the schedule castes and poor people.

National forest policy has laid the foundation for the empowerment of people through forestry. It safeguards the rights and concessions of the forest products to tribal, poor and schedule caste people. It suggests several schemes and programs for the economic as well as social empowerment of the tribal e.g. development of forest villages with revenue villages, family oriented schemes for improving the status of the tribal beneficiaries.

### **Ministry of Environment and Forests Circular, 1990<sup>2</sup>**

As per the provisions of National Forest Policy 1988<sup>1</sup>, the Government of India, Ministry of Environment and Forests, vide letter NO.6.21/89-PP dated 1<sup>st</sup> June, 1990<sup>2</sup>, outlined and conveyed to State Governments a framework for creating people's massive movement through involvement of village committees for the protection, regeneration and development of degraded forest lands. This has given impetus to the participation of stakeholders in the management of degraded forests situated in the vicinity of villages. The JFM programme in the country is structured on the broad framework provided by the guidelines issued by the Ministry. Access and control over the resources is one of the prerequisites for the empowerment. This has given adequate emphasis on empowerment of people in following ways -

- It has given due consideration for the involvement of the committed NGOs/voluntary organization for motivating and organizing the village communities for protection, afforestation, and development of degraded forest lands especially in the vicinity of habitations.
- The villagers are entitled to a share in usufructs to the extent and subject to the conditions prescribed by the State government in this regard. Access to the forest products has been provided which is one of the preliminary steps for empowering the villagers.
- The benefits of participation should go to the village communities and not the commercial or other interests to be derived in their names. The selection of beneficiaries should therefore, be done from only those families which are willing to participate through personal efforts.

### **JFM STRATEGY IN MP**

The concept of JFM may be defined as- "The sharing of products, responsibilities, control and decision making authority over forest lands between Forest Department and local user group. It involves a contract specifying the distribution of authority, responsibilities and benefits (MOEF, 1990)<sup>2</sup>." The basic object behind it is to make the local people aware that they are owner of the forests collectively and Forest Department is the

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<sup>2</sup> MOEF, 1990. The Circular Concerning Joint Forest Management. No. 6-21/89-P.P. Ministry of Environment and Forests, Department of Environment, Forests and Wildlife, Paryavaran Bhavan, Lodi Road, New Delhi.

manager. It is important for people to realize the fact that they have stake in the protection and improvement of forests, and that their social and economic life becomes enriched by tangible and intangible benefits flowing from well protected and managed forest tracts near their habitation and all this is possible if they actively participate in forest management. Following three types of the JFM committee exist in India -

**Forest Protection Committees (FPCs):** constituted in all the villages situated within five kilometers from the forest block boundaries of dense forests.

**Village Forest Committees (VFCs):** constituted in all other villages situated within five kilometers from the forest block boundaries of degraded forests.

**Eco Development committees (EDCs):** constituted, for securing the co-operation of the people, in all other villages situated inside the national parks and sanctuaries; and in such villages outside the protected areas which are situated within five kilometers from the boundaries of these areas and which influence the protected area, according to the principles of protected area management; and in all the villages situated within a notified buffer zone of a protected area, where a buffer zone has been notified.

After the issuance of the Govt. of India directives Madhya Pradesh was one of the first States to adopt JFM in 1991<sup>3</sup>, and with the financial assistance of World Bank (GOMP, 2000)<sup>4</sup>, JFM program in Madhya Pradesh has taken a lead. After the promulgation of mandate of JFM in MP, so far 12023 village forest committees, including 6556 Village Forest Committees (VFCs), 5316 Forest Protection Committees (FPCs) and 151 Eco-development Committees (EDCs) have been constituted. About 42,44,120 ha of forest area is being protected (MPFD, 2002)<sup>5</sup>.

JFM is a positive step towards breaking vicious circle of natural resource degradation. It attempts to address the issues by keeping the people at the center stage. The uniqueness of JFM approach lies in reinforcing people by educating and empowering them and providing them opportunities for equity in planning, management and usufructs. Consequently, the JFM programme has been shaped to include such components, which take into consideration many facets of human, and resource development.

## **EFFORTS OF MP STATE GOVERNMENT IN EMPOWERMENT THROUGH JFM**

### **JFM RESOLUTIONS**

In view of the principles laid down by the Government of India, the State Government passed a resolution on 10 December 1991<sup>3</sup> to obtain people's co-operation in areas considered sensitive from the point of view of forest protection. Madhya Pradesh was one of the first States to adopt JFM with the financial assistance of World Bank (GOMP, 2000)<sup>4</sup>. The resolution also prescribes a detailed procedure for this purpose.

The JFM aims at empowering local people for their active participation as partner in the management of forest resources and sharing the benefits derived from its protection and management. It has emphasised that JFM Committees shall ensure equitable distribution of benefits, derived from the allocated forest area and village resources, among its members. The JFM programme in the State was reviewed from time to time in order to further strengthen the programme. To make the provisions of 1991<sup>3</sup> resolution more effective, in 1995<sup>6</sup> a revised resolution was issued by the State Government, which

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<sup>3</sup> GOMP, 1991. JFM resolution, 1991. Government of Madhya Pradesh, Bhopal, India.

<sup>4</sup> GOMP, 2000. JFM resolution, February 2000. Government of Madhya Pradesh, Bhopal, India.

<sup>5</sup> MPFD, 2002. JFM at Glance. JFM Cell, Madhya Pradesh Forest Department, MP.

<sup>6</sup> GOMP, 1995. JFM resolution, 1995. Government of Madhya Pradesh, Bhopal, India.

included elaborate arrangements to ensure participatory micro-planning for the protection and management of forests and a clear approach for an integrated Village Resource Development Programme (VRDP). Again it was amended in 2000<sup>4</sup> and 2001<sup>7</sup> for making JFM more participatory, demand driven and empowerment of local people. Table - 1 compares the empowerment efforts of the State Government in JFM.

### MP GOVERNMENT EFFORTS – FACTORS IN FAVOUR OF EMPOWERMENT

As discussed earlier empowerment is the transfer of control over decisions and resources for equity, participation and sustainability. Following section summarises the empowerment features in the JFM resolutions:

**Table 1 - Comparison of various JFM resolutions of Madhya Pradesh**

Attributes	1991 resolution	1995 resolution	2000 resolution	2001 resolution
Types of JFM	VFC, FPC	EDC, VFC, FPC	VFC, FPC, EDC	VFC, FPC, EDC
Membership	One person from each family	One male and one female from each family	All adult members who have rights to voting	All adult members who have rights to voting
Approach in handing over of forests	Village identified and approached for JFM	Village identified and approached for JFM	Villagers formed the committee and approached DFO for JFM	Villagers formed the committee and approached DFO for JFM
Role of forest officials	Implementer	Implementer	Facilitator	Facilitator
Committee formation	Meeting under the chairmanship of village <i>Antyodaya (people BPL)</i> committee and unanimously passed the proposal by At least 50 % of adults	Meeting under the chairmanship of <i>Sarpanch</i> and and unanimously passed the proposal by at least 50 % of adults (male and female members)	Meeting under the chairmanship of <i>Sarpanch</i> and and unanimously passed the proposal by at least 50 % of adults	As per the <i>Gram Sabha</i> (Village Institution) Act, 2001
Attendance requirement	At least 50 % of adults	At least 50 % of male and female members	At least 50 % of adults	At least 50 % of adults
Executive committee formation	Under the chairmanship of <i>Antyodaya</i> Committee	Under the chairmanship of <i>Sar Panch</i>	Election under the chairmanship of chairperson by adult members	As per the <i>Gram Sabha</i> Act, 2001
Provision for Joint secretary	No provision	No provision	No provision	Provision includes and takes over as Secretary after two years

<sup>7</sup> GOMP, 2001. JFM resolution, September 2001. Government of Madhya Pradesh, Bhopal, India.

Method of formation of executive committee	Consensus and agreed at least by 50% of members	Consensus and agreed at least by 50% of members	Under the approval of the <i>Gram Sabha</i>	Under the approval of the <i>Gram Sabha</i>
Size of committee	Minimum of 5 and one from every 10 HH	Not specified	From 10 to 21 members	From 10 to 21 members
Tenure of executive committee	One year	One year	Two years	Five years
Involvement of women in executive	-	At least 2 in executive	Minimum 33 % in executive committee and chairperson or vice chairperson of committee must be a woman	Minimum 33 % in executive committee and chairperson or vice chairperson of committee must be a woman
Schedule Caste and Tribes	-			Involvement in committee as per their proportion of population
Landless and poor in executive	-	At least 2 in executive	At least 2 in executive	At least 2 in executive
Role of village institutions in forest management	-	-	Duly recognized and made provisions of their inclusion in committee	Duly recognized and made provisions of their inclusion in committee
Micro-planning	-	For forest improvement	For forest improvement as well as economic well being	For forest improvement as well as economic well being
Role of <i>Panchayat</i>	Constitution of committee under chairmanship of <i>Antyodaya / Sarpanch</i>  All members of Village <i>Panchyat</i> and <i>Antodaya</i> Committee are executive members	Constitution of committee under chairmanship of <i>Sarpanch</i>  <i>Sarpanch</i> and <i>Panch</i> are the executive members	Constitution of committee under chairmanship of <i>Sarpanch</i>  Under the jurisdiction of <i>Panchayat</i> and <i>Sarpanch</i> as ex-officio member  Rights to non nationalized MFPs on <i>Panchayats</i> as per <i>Panchayat</i>	Under the jurisdiction of <i>Panchayat (Gram Sabha)</i>  <i>SarPanch, Panch</i> and chairperson of developmental committees of <i>Gramh Sabha</i>  Rights to non nationalized MFPs on <i>Panchayats</i> as



			(Extension to Scheduled Areas) Act, 1996	per Panchayat (Extension to Scheduled Areas) Act, 1996
Rights to members	Usufructs and Minor Forest Products (MFPs)	Usufructs and MFPs	Usufructs, MFPs, income and VRD	Usufructs, MFPs, income and VRD
Responsibilities	Protection	Protection and implementation of micro-plan	Protection, preparation and implementation of micro-plan	Protection, preparation and implementation of micro-plan
Benefits sharing	Equality	Equality	Equality 50 % to the members in cash, 30% in village resource development and 20% in forest improvements from the amount obtained from final felling	Equality 50 % to the members in cash, 30% in village resource development and 20% in forest improvements from the amount obtained from final felling
VFC	<ul style="list-style-type: none"> <li>- Free <i>Nistar</i></li> <li>- 30 % of net income obtained from nationalized minor forest products</li> <li>- 30% share in timber and fuelwood final felling from plantation area</li> <li>- 100 % of the forest produce obtained as result of thinning in timber coups and cleaning of the bamboo clumps</li> </ul>	<ul style="list-style-type: none"> <li>- Free <i>Nistar</i></li> <li>- Full rights over non-nationalized NTFPs, Collect and delivery nationalized NTFPs and receive only collection charges, incentives, bonus, etc.</li> <li>- 30% share in timber/bamboo felling after deducting extraction cost from both plantation and natural forest</li> </ul>	<ul style="list-style-type: none"> <li>- Free <i>Nistar</i></li> <li>100 % of the forest produce obtained from the main felling after deducting extraction cost</li> </ul>	<ul style="list-style-type: none"> <li>- Free <i>Nistar</i></li> <li>100 % of the forest produce obtained from the main felling after deducting extraction cost</li> </ul>
FPC	<ul style="list-style-type: none"> <li>- Free <i>Nistar</i></li> <li>- Benefits derived from protected forest and its distribution will be decided separately by the Forest Department</li> </ul>	<ul style="list-style-type: none"> <li>Free <i>Nistar</i></li> <li>- Benefits derived from protected forest and its distribution will be decided separately by the Forest Department</li> </ul>	<ul style="list-style-type: none"> <li>100 % of the forest produce obtained as result of thinning in timber coupes and cleaning of the bamboo clumps in the degraded bamboo forests, as per the</li> </ul>	<ul style="list-style-type: none"> <li>100 % of the forest produce obtained as result of thinning in timber coupes and cleaning of the bamboo clumps in the degraded bamboo forests, as per the</li> </ul>

			provisions of the micro-plan / working plan after deducting extraction cost 10% of the value of produce obtained from the final felling of timber coupes and 20% of from the final felling of bamboo coupe after deducting extraction cost	provisions of the micro-plan / working plan after deducting extraction cost 10% of the value of produce obtained from the final felling of timber coupes and 20% of from the final felling of bamboo coupe after deducting extraction cost
EDC	-	Free <i>Nistar</i> Decided separately by the Forest Department	Free <i>Nistar</i> EDC situated inside the protected areas is paid the value of the forest produce. Amount paid to EDCs is equivalent to forest produce to be given to FPC situated in the adjoining area EDC situated outside the Protected Areas, receive benefits on the basis of the density of the forests allotted to them	Free <i>Nistar</i> EDC situated inside the protected areas is paid the value of the forest produce. Amount paid to EDCs is equivalent to forest produce to be given to FPC situated in the adjoining area EDC situated outside the Protected Areas, receive benefits on the basis of the density of the forests allotted to them
Contribution in VRD		None	25% as labor contribution as far as possible	25% as labor contribution as far as possible

(GOMP resolutions 1991<sup>3</sup>, 1995<sup>6</sup>, 2000<sup>4</sup>, 2001<sup>7</sup>)

**EDC in protected areas:** During the beginning of JFM, people residing in the fringe of protected areas are not given due consideration in the management of the parks. This had often created a lot of conflicts between the park and people as well as their use rights had been circumnavigated. But the recent resolution (2000) <sup>1</sup> has given due consideration for it and recommended sharing benefits for the EDCs in the vicinity of the protected areas.

**From single member to all adults member:** The membership in the JFM started from the individual members in 1991 where one individual from household represented as member. Realising the role of the women in the forest management, the 1995 resolution made it mandatory to include one man and one woman in the committee. Further amendment made the provision that all the villagers, who are eligible to vote, shall be the members of the general body of the committee.

**Democratic process for committee formation:** The chairman and vice chairman are elected from general adults members in presence of the *Sarpanch* in the very first meeting of the committee. The recent resolution, 2001 has devolved power to *Panchayats* for formation of committee as per the *Gramh Sabha Act, 2001*. It also emphasizes to include at least one woman member as either chairperson or vice chairperson.

**From induced to demand driven approach with due consideration on traditional users:** The JFM resolutions of 1991 and 1995 mentioned that “preliminary meetings will be held in the selected fringe village and concepts of JFM will be explained to the villagers. If the villagers are willing to protect and manage the forest, a meeting will be held under the chairmanship of *SarPanch*, then committee will be formed”. The areas for handing over the forests had already been identified in the above cases and then village meeting were organized. But the JFM 2000 and 2001 resolutions prescribed the different approach of JFM. It is more of demand driven. The role of the forest officials is of facilitator in this case. The concepts of the JFM is explained to villagers and if they voluntarily want to get involved in forest protection, development and management, a formal meeting will be held in the village in the presence of a forest official, in co-operation with the local representatives of the people. An appropriate committee will be constituted, in accordance with the provision for the zone. The habitations or groups of habitations or small villages or their groups, which include such communities which have been managing their affairs traditionally as a village, shall be treated as a village, in accordance with section 4 (B) of the *Panchayat (Extension to Scheduled Areas) Act, 1996*, irrespective of the fact whether that village is situated in a scheduled area (Schedule to the Constitution of India) or not. The committee will be registered by the concerned Divisional Forest Officer (Territorial / Wildlife / Director of a National Park) within one month of the adoption of the resolution, in accordance with section 4 of this resolution. After the formation of the committee, the divisional forest officer (Territorial / Wildlife / Director National Park) in consultation with the executive committee, earmark forest area for different kinds of committees giving due consideration on distance between the forest and the village and the area traditionally used by the villagers for *Nistar* purposes.

**Inclusion of deprived community in decision-making forum:** The JFM resolutions have made gradual amendments a number of times for inclusion of poor by gender, caste and poor people in decision-making forum. The first JFM resolution was silent in this regard but later attempts were made to acknowledge their role and safeguard the interest of the deprived community as women, landless people and schedule caste. Presence of at least 33 % of women in executive committee, representation of the schedule caste and tribe in proportion to their population and at least one male and female members from the landless communities are the attempts to safeguard the inclusion and interest of deprived community in the decision making forum.

**Sectoral to integrated approach in micro-planning:** The Earlier resolutions often saw JFM as sectoral approach of development and empowerment. These suggested for the micro management plan for the forest resource development but not for the village resource development. The main underlying principle was to involve people in the forest conservation. But the JFM 2001 resolution gives due consideration for the integrated approach of development and empowerment. The micro-planning includes provisions both for forest management as well as for village resource development programme. The Forest Department will arrange a fund as well as establish the linkage and coordination mechanism with other institutions for the establishment of the fund. The economic well being of the people is most reflected in the micro-plan. Apart from this, to avoid the duplications of the work and establish good linkages and co-ordination with village level institutions, it has made a provision to include one *woman* member each from self help

group and one beneficiary from each beneficiary group as a member of the Executive Committee.

**Devolving power to Panchayats:** Empowerment is one of the prerequisite in the devolution and deconcentration. The present resolutions are giving due recognition for the devolution of the power to the village Panchayats. Formation of the JFM committee under the jurisdiction of the Panchayat is one of the measures towards it. Besides, the ex-officio representation of the Sarpanch has made the JFM more bottom up and participatory. Rights of the committees related to minor forest produce is made in accordance with the decisions taken by the Government of Madhya Pradesh from time to time related to the provisions of the Panchayat (Extension to Scheduled Areas) Act, 1996.

**Access and control over the forest resources:** All the resolutions have provided the access and control over Nistar to the local community. People irrespective of caste, gender and economic conditions have equal access and control over the forest resources. All the benefits derived from the forests must be shared equally. Equity and participation is the key concept of the empowerment where the present resolution has given due consideration towards it. Special provisions are made in the resolution itself for the equal stake of poor and deprived community in the decision-making forum.

**Economic and social well beings:** The JFM resolutions have provided the communities economic incentives for managing forests. Cent percent share in the products obtained from the silviculture and tending operations to the community as well substantial amount from the final felling have provided villagers the economic incentives through JFM. Apart from above, share of 50 percent income obtained from sale of nationalised minor forest produce to members in cash is helping in poverty reduction and economic empowerment. For the social well beings, all the activities related to forest development are carried out by the villagers themselves had created employment opportunities in the villages. Similarly, JFM resolutions have made provisions to spend at least 30 percent of income from forests in village resource development have provided access to the community development opportunities for the rural people.

**Provision for Joint Secretary:** Past resolutions had made provision only for Secretary in the JFM Committee, where Beat Guard or Forester in-charge of the concerned forest area will be ex-officio Secretary of the Executive Committee. The recent 2001 resolution made the provision of the Joint Secretary who will work with the forest committee secretary for the initial two years and take charge of Secretary. The Secretary used to keep financial record as well as other record of decisions regarding the JFM. The villagers may not be able to approach those officials as and when required due to their high workload and other office works. But this resolution has provided better access to information more easily and at their doorstep.

**Contribution of villagers in Village Resource development:** Ownership is one of the prime concerns in sustainable development. People will not take the ownership until and unless they had their own contribution in the development efforts. Realizing this, JFM resolutions of 2000 and 2001 made the provisions for 25 percent labor contribution in village resource development activities as far as possible.

### **MP government efforts – factors against empowerment**

The present JFM resolution is more focused on equity, empowerment, participation and good governance. It has given due consideration for the accountability aspects as well. In spite of these efforts, still few postulates are either against or not in favor of principle and practice of empowerment.

**Exclusion of children:** The JFM had made the provisions to include all adults as member of JFM. Still, one of the major segments of population, who take active stake in use of forest resources are missing i.e. children of the age class between twelve and seventeen. In a developing country like India, most of the children in rural setting are working as the helping hand of their households and collecting the forest products directly or using the forest for grazing purpose. Present policy does not give due consideration to this aspect. Thus, inclusion issues of empowerment are questionable as one of the major stakeholders is missing in forest management. Thus, membership must be given on the basis of household rather than going for adult members, which will include entire population based on user group concept rather than age class concept

**Equity distribution:** The benefits are shared on the basis of number of memberships. The small households have the less adult members where as big households may have many. Talking from equity issue, the large household will have larger benefits as compared to small houses. The policy does not clearly address this issue. The distribution of the benefits must be on household basis rather than the membership basis.

**Involvement of backward caste still in question:** Most of the provisions are made for ex-officio members from various village level institutions. The number of the members in the committee is fixed for maximum of 21 and minimum of 10. If the village happens to have large number of local institutions, there is always a chance to exclude the poor and marginalized community as the resolution does not categorically mention about the exact number of their representation in decision-making forum.

**Economic empowerment:** The sharing of the resources with the JFM committee is very less. The forest protection is entirely on the shoulder of committee. But the sharing of resources is 100 percent for forest products obtained from the tending and silvicultural operations and 10 percent from the forest protection. Still, the major share of the income for the forest resources is retained by the Forest Department.

## **APPROACHES OF MPFD FOR EMPOWERMENT**

The concept of people participation in forest management is not new. The Madhya Pradesh Forest Department (MPFD) has been carrying out various activities to empower the community through JFM and following different approaches for empowerment. The approaches followed by MPFD are as follows:

**Integrated development approaches:** The integrated development approach views development as key to the advancement of family and community. It, therefore, provides a package of interventions to alleviate poverty, meet basic survival needs, reduce discrimination etc. MPFD is promoting village resource development in order to increase the standard of living. Besides, state government has decided to plough back the entire net profit from the trade of NTFP to the village communities and of the total amount, twenty percent for the village resource development or may be paid to the members, as decided by the *Gram Sabha* and thirty percent will be spent in forest development. Thus, providing lots of the scope for the integrated approaches of the development where the micro plan duly addresses the need and problems of the local community and forests together. The recent resolutions had duly address these issues as already explained in previous sections.

**Economic empowerment:** It focuses on improving people's control over material resources and strengthening economic security through income generations, skill trainings, new technologies development and marketing along with providing ancillary services as health, literacy programs, legal educations and aids. Most of the activities like fire protection, plantation and harvesting are being implemented through the committees in order to provide income and increase sustained employment. Apart from this, fifty

percent of income generated from sale of NTFPs will go to the members of primary NTFP societies. Free *Mistar* facilities and several income generating programs as well as skill enhancement trainings are provided for the economic empowerment of the JFM committees.

**Consciousness raising approach:** This approach mainly emphasizes for raising awareness among communities. Steps taken for the empowerment of the local communities include reorientation from regulatory to participatory functions, capacity building of communities, safeguarding interests of the deprived sections of the society, involvement of women, equitable sharing of usufructs, creation of village development funds, accountability of forest officials towards users, transparency and bottom up micro planning process are the some systems practiced with in Forest Department to empower the local community.

### **ASSESSING EMPOWERMENT FROM FIELD**

With a view to assess the impact of empowerment situation from the field, focus group discussions as well as household survey was conducted with 100 respondents each from VFC and FPC to know about their situation of information.

### **WHAT EMPOWERMENT MEANS TO LOCAL COMMUNITY**

The participants in the group discussions were asked on how would they define 'empowerment' and what were the factors or criteria that would be taken into account for measuring empowerment in their JFM. People were very reluctant to respond but after explaining the purpose of study, people listed some the indicators below to measure their empowerment in community. The community definition on empowerment was able to make decision without support or influence from others as well as having sufficient income for sustaining the life through the JFM. The community definition of empowerment includes all four dimensions of empowerment as individual, social, political and economic empowerment. The participation by gender, caste and social group and economic status was one of the major indicators for the empowerment. The community focused on active participation in all the activities of the JFM (planning, implementing, monitoring and evaluation) with equitable benefit sharing and sustained income from forests as the most and foremost criteria for the empowerment. Besides, they emphasized on transparency and decision-making processes as also in empowerment. The community definition and indicators of empowerment include all four dimensions of empowerment as individual, social, political and economic empowerment. The community perceptions on factors, which must be taken into account for the measurement of empowerment, are summarized in Box 1 below.

#### **Box 1 - Community perceptions on indicators of empowerment**

- Awareness about the JFM activities
- Ability to express the voices in meetings
- Participation and inclusions of all people in JFM development
- Active participation of the people in forest development activities
- Less influence by the Forest Department in forest development activities
- Opportunities and sustained income and employment through JFM
- Capacity to generate own resources for forest development activities
- Availability of information for all
- Accountability of all actors of JFM (Panchayat, FD, EC, members etc.)
- Equitable benefit sharing
- Linkages with other organization for forest development
- Creation of assets for village and community development

- Participatory planning process
- Perceptual and attitudinal change of community towards forests
- Women and disadvantage group are capable to express their views

Inclusions and participation is one of the major criteria for the empowerment of the people. Table 2 summarizes the representation of the poor marginalized communities in JFM. More than Four tenth of the population in JFM are from the schedule tribe people followed by other caste people (39.05%). The tribal communities are more dependent upon the forests for the livelihoods and JFM has been able to address the needs of the tribals as representation of them is high compared with other caste group people. More than four tenth of the JFM committees (44.17 %) are either chaired or vice chaired by women. Women

Table 2 - Representation of marginalized communities in JFM

	Household	Proportions
Schedule caste	286627	17.78
Schedule tribe	696153	43.18
Other castes	629560	39.05
<b>Total</b>	<b>1612340</b>	<b>100.00</b>
Women as chair/vice chair		<b>44.17%</b>

Source: Computed from MPFD, 2002

representation in decision-making forum is quite significant and JFM has duly addressed the empowerment of women issues as well.

Transparency, accountability and flexibility are the three factors, which contribute to the institutional sustainability of any organization. Table 3 presents the several accountability and transparency mechanisms in the JFMC. The conduction of both executive committee meetings and general assembly meetings were very high but provisions for the tri-monthly transparency mechanism was developed in 70 per cent of the committees. This still questions about the transparency mechanism in JFM.

Table 3 - Accountability and transparency mechanism

	Number	Percent
With EC meeting	<b>11521</b>	92.32
With General assembly	<b>10739</b>	86.05
With provisions for tri-monthly transparency circulars	<b>8630</b>	69.15
With micro plan	<b>1807</b>	14.18
Total	<b>12480</b>	100.0

Source: Computed from MPFD, 2002

Forest Department said about lack of the time, manpower and resources for conducting the activities where as executive Forest Department must be responsible for ensuring the transparency mechanism in JFM and means and measures must be well developed for the proper implementation of it. But the situation of field is not encouraging.

Table 4 summarizes the different indices used for the measuring of empowerment situation of JFM. Analysis of the different indices reflects that empowerment situation is not encouraging in both VFC and FPC. But still, the empowerment situation of VFC is high, as compared to FPC. This is mainly because both resources as well as efforts are made more in VFC as the main aim of JFM is to regenerate the degraded forests. Similarly, for VFC members livelihood is more dependent on forests as compared to those for FPC members. This might be the reason for better situation of empowerment indices in VFC as compared with FPC.

**Table 4 –Indices used for measuring empowerment**

SN	Verifiers	VFC	FPC
1	Participation index	67	51
2	Transparency index	54	28
3	Accountability index	63	58
4	Organizational capacity index	52	20
5	Service index	45	17
6	Biological sustainability	75	54
7	Organizational sustainability	66	32
8	Economic sustainability	43	19
9	Perceptual change	58	26
10	Material change	52	17
11	Relational change	32	12
	<b>Overall empowerment</b>	<b>55</b>	<b>31</b>

Note: High: > 75, Moderate: 75 – 51, Less: 50 – 25, Least: < 25

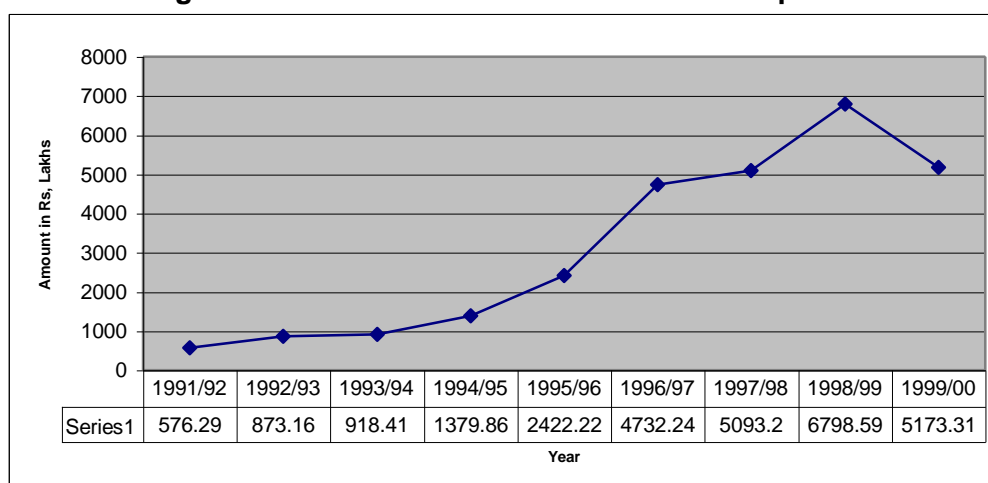
**Table 5 - Institutional sustainability**

Attributes	Number	Per cent
With development account	5979	47.91
With bank account	9198	73.70
With food bank	3085	24.72
With Self Help Groups	3647	29.22
Total	12480	100

The institutional sustainability has been measured in terms of the bank accounts and operations of village based institutions. Table 5 presents the institutional sustainability of the JFM. Majority of JFM has the bank accounts (73.7%) where as about half of the JFM (47.9%) has the development accounts. Similarly, very few JFM have the provisions of the food bank

(24.7%) and saving and credit groups (29.2%). The table reveals that institutional sustainability of the JFM is not encouraging though lots of provisions had been made in JFM resolutions.

The MPFD expenditure in creation of the infrastructure of JFM is summarized in Figure 1. The expenses in infrastructure increased every year except in 1999/00. This was mainly due to two reasons, one is the phase out of the MP Forestry project and other may be the division of the State to MP and Chattisgarh.

**Figure 1 - Investment in infrastructure development**

With the view to assess the empowerment situation in JFM, respondents were asked about their perception on how they felt they were empowered after the JFM. The respondents' perception about their own empowerment index after the initiation of JFM is presented in Table 6 below. Most of the people from VFC felt that they were politically, socially and personally empowered after the JFM where as very few perceived that had



socially empowered after the JFM in FPC. Older the JFM, higher will be the empowerment and vice versa. The people felt more empowered as they are getting lots of support for infrastructural, economic and forest development.

**Table 6 - Community perception on empowerment situation**

SN	Attributes	VFC	FPC
1	Political empowerment	64	37
2	Social empowerment	58	49
3	Economic empowerment	32	17
4	Personal empowerment	46	22
5	Overall empowerment	58	29

## CONCLUSIONS

The formulation of supportive policies by the Central and State Governments in early 1990s have accelerated the spread of JFM in India. Giving the due acknowledgement of role of local communities, Central and State Forest Departments have reviewed JFM policies time to time to empower the forest dependent communities both socially and economically. In spite of this, there is either no or less implementation of these directives in the field. The people are unaware about the rules and provisions of the JFM. Even the field level beat officers have either little knowledge or no information about the amendments of resolutions. Thus proper mechanism and methods must be ensured for making policy to practice.

The JFM programs in the State have been reviewed from time to time in order to further strengthen the programme. To make the provisions of 1991 resolution more effective, in 1995 a revised resolution was issued by the State Government, which included elaborate arrangements to ensure participatory micro planning for the protection and management of forests and a clear approach for an integrated Village Resource Development Programme (VRDP). Again it was amended in 2000 and 2001 for making JFM more participatory, demand driven and enhance empowerment of local people. The present JFM resolution is more focused on equity, empowerment, participation and good governance. It has given due consideration for the accountability aspects as well. In spite of these efforts, still few postulates are either against or not in favor of principle and practice of empowerment as exclusion of children, equity distribution etc. Involvement of backward caste, economic empowerment and legal status of JFM are still in question.

The approaches followed by MPFD for the empowerment of the communities are integrated development approach, economic empowerment and consciousness raising approach. Access to information is one of the major elements of the empowerment. JFM members are unaware with their right responsibility, roles and duties, functions in JFM activity. Thus, proper methods must be ensured for ensuring information for all. The best and easiest methods are to read out government policies and programs related to JFM and its resolution in every meeting or displaying of the basic facts and figures in public places.

The community definition of empowerment was able to make decision without support or influential from others as well as having sufficient income for sustaining the life through the JFM. Their definition includes all four dimensions of empowerment as individual, social, political and economic empowerment. The participation by gender, caste and social group and economic status was one of the major indicators for the empowerment. The community focused on active participation in all the activities of the JFM (planning, implementing, monitoring and evaluation) with equitable benefit sharing and sustained

income from the forest as the most and foremost criteria for the empowerment. Thus, people's indicators for measuring empowerment must be given due priority

One of the major thrust areas of the empowerment is the capacity development. The efforts made by Forest Department in capacity development are not able to yield desired results in the field. However, there has been a paradigm shift towards empowerment and a large number of people at least feel that they are politically, socially and personally empowered after being involved in JFM activity. The translation of the empowerment into actual practice is going to be a major challenge for the sustainability of the JFM in future.

37.

## EFFICACY OF COMMUNITY FORESTRY OPERATIONAL PLANS IN BIO-DIVERSITY CONSERVATION: A STUDY FROM WESTERN TERAI REGION OF NEPAL

Bijendra Basnyat and Dr A K Bhattacharya

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### **Abstract**

*This paper highlights the effectiveness of Operational Plans (OPs) towards bio-diversity as well as its implementation in field based on the review of 76 OPs of Community Forestry User Groups (CFUGs) of Rupandehi, Nawalparasi, and Kapilbastu districts in the Western Terai region of Nepal. The rapid field survey was conducted in six CFUGs of Rupandehi districts where 25 each users and user committee members were interviewed. Despite bio-diversity conservation/wildlife protection is the second objective of community forests, very few OPs included detail methods and activities for bio-diversity conservation. Most of the OPs focused on inventorising growing stocks as required by forest legislation. None of the OPs has detailed inventory of bio-diversity (Wildlife, non-timber forest products and tree species). Significant differences were observed between objectives and actual practice. Majority of users were not aware of provisions made in OPs regarding bio-diversity conservation. The study found District Forest Offices making no significant efforts to orient users on the significance of bio-diversity conservation and its application in CF though CFs provide the platform to conserve bio-diversity outside protected area network. While CF has created a favourable micro-environment for the colonisation of new species of plants and animals naturally as a result of different management interventions (e.g. protecting from fire, grazing, poaching, silviculture and tending operations etc.) being implemented. Still none of the studied CFUGs implemented any activities to conserve bio-diversity (viz. gene pool conservation, identification and conservation of threatened and endangered species, protecting mother tree, maintaining wilderness area etc.). Conditions of bio-diversity has improved to some extent due to management and conservation efforts but no significant changes have taken place at species diversity level. Nevertheless, local people (CFUGs) express their interest and willingness to conserve bio-diversity through community forests and they are looking for institutional support.*

### **BACKGROUND**

In Nepal, community forestry (CF) has become one of the most important programs within the forestry sector. Local communities as forest user groups have been entrusted with the responsibilities of management, development and utilization of the forest resources in their proximity. To date more than 11,000 forest user groups are managing about 9.4 lakhs ha of the Community Forests (CFs) in the country (CPFD, 2002)<sup>1</sup>. CFs as part of National Forests, are handed over to the Community Forest Users' Group (CFUGs) by the District Forest Office (DFO) for development, protection, utilization and management together with authorization of sales and distribution of forest produce independently according to an approved Operational Plan (OPs). OP is the transfer of authority and responsibility for the management of the forests through a management agreement

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<sup>1</sup> CPFD, 2002. Forest User Group Database, Community and Private Forestry Division, Department of Forest and Soil Conservation, Kathmandu, Nepal.

between the Forest Department and Forest Users Group in which terms and conditions are laid out (Forest Act, 1993). OPs describe location, physical conditions, and different management interventions to be applied for the protection and improvement of forest mechanisms for the enforcement of rules.

CF was initiated to protect forests and fulfill the basic needs of the local people and most of the OPs emphasise for the protection of forests to meet their daily needs of forest products by removing dead and dying trees. The protection measures adopted had gradually improved the quality of the forests, which has increased the species richness and overall bio-diversity. Thus, CF provides practical means to conserve bio-diversity outside the protected area but the community forestry program does not encompass potential bio-diversity conservation within objectives of forest management directly. This paper highlights the effectiveness of Operational Plans (OPs) towards bio-diversity conservation as well as its implementation in the field.

## **METHODOLOGY**

The study followed content analysis for assessing efficacy of OPs towards bio-diversity conservation. Content analysis is an approach for analysis of the documents and texts that seek to quantify the contents in terms of predetermined categories in a systematic and replicable manner (Bryman, 2001)<sup>2</sup>. The attributes used for analysis of OPs are its objectives, inventory of bio-diversity, programs and provisions for bio-diversity conservation and adequacy of methods suggested for conserving bio-diversity. The study reviewed 76 OPs (out of total 84 OPs) of Western Terai region of Nepal (Kapilbastu, Nawalparasi and Rupandehi districts).

Rapid field assessment survey was conducted in six CFUGs to study the different programs implemented for bio-diversity conservation and attitudes of people towards bio-diversity conservation. User committee (EC) members and users were interviewed with the help of schedules designed in a five point Likert scale to study impact of CF towards bio-diversity conservation as well as its implementation. Higher the value of scale meant positive result and vice versa. Descriptive statistics such as frequency and mean, were used for analysis of data. Explanation building and making things visible was the main strategy followed.

## **FORESTRY LEGISLATIONS AND BIO-DIVERSITY CONSERVATION**

Conservation of bio-diversity has attracted significant attention at national and international levels over the last one decade. Nepal began establishing a system of conservation reserves in 1970s aimed at conserving a representative sample of existing bio-diversity by protecting representative arrays of ecosystems from human manipulation (Jackson and Angles, 1994)<sup>3</sup>. A great deal of effort has been made over the years in Nepal to protect and manage biological resources and their diversity. Nepal's National Conservation Strategy (1988) emphasizes for the protection of country's bio-diversity. The Master Plan for Forestry sector (1988)<sup>4</sup> and the Constitution of Nepal (1990) have also given due emphasis on conservation of bio-diversity. Nepal Bio-diversity strategy 2002 reflects the Government's commitment to adopt a cohesive and strategic approach to conservation at the landscape (HMGN 2002)<sup>5</sup>.

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<sup>2</sup> Bryman A, 2001. Social Research Methods. Oxford University Press Inc. New York, USA

<sup>3</sup> Jackson WJ & Ingels AW, 1994. Developing Rural Communities and Conserving the Bio-diversity of Nepal's Forests through Community Forestry. In Community Development and Conservation of Forest Bio-diversity through Community Forestry. Proceedings of an International Seminar held in Bangkok, Thailand Oct 26-28, 1994. RECOFTP-12, pp 115-135

<sup>4</sup> HMGN, 1988. Master Plan for the Forestry Sector, Nepal. Main Report. HMGN/ADB/FINNIDA. Kathmandu, Nepal.

<sup>5</sup> HMGN. 2002. Nepal Biodiversity Strategy. His Majesty of Government of Nepal: Website IDO - Book - Forestry for Next Decade 20-03-24

Nepal's current forest legislation, policies, rules and regulations facilitate the integration of the CF, bio-diversity conservation and community development. The forest legislation (1993)<sup>6</sup> and regulations (1995)<sup>6</sup> recognize CFUGs as self-governing and autonomous entities, which also have their own funds. These have empowered CFUGs to carry out all the programs in their CFs including conservation of bio-diversity and community development. Apart from this, the Government has made necessary amendments in its legislation for effective bio-diversity conservation and community development activities. Preparation of the detailed inventory of the forest species and provisions to spend at least 25 percent of the funds generated from the CFs in forest development activities are expected to improve the bio-diversity situation in CFs.

## OPERATIONAL PLANS AND BIO-DIVERSITY CONSERVATION

### Objectives of CFUG management

For bio-diversity conservation, it is necessary that the forest management objectives be guided by the long-term vision for the forest management with the multiple products and services objectives and the current conditions and potential productivity of the forests. These three factors should be considered in deciding the objectives of community forest management. But, as seen below in Table 1, none of the OPs address these issues adequately. Review of OPs indicated that nearly one-third OPs (29.7%) did not include bio-diversity conservation in their objectives. While all OPs mentioned the fulfilment of basic needs of forest products as one of their objectives, wildlife protection/bio-diversity conservation was mentioned in 70.3 percent OPs (Table 1). Other frequently mentioned objectives of OPs were environment stability management (67.2%), soil erosion and control (59.4%) and protection of forest from biotic interference (43.8%). As seen from the table, the major challenge is to facilitate the multiple use management in CFs and maintenance of rich bio-diversity.

**Table 1: Objectives of CFUGs**

SN	Objectives	Number	Percent
1	Fulfill demand of forest products	76	100.0
2	Wildlife protection/Bio-diversity conservation	53	70.3
3	Environmental stability/ management	51	67.2
4	Soil and erosion control	45	59.4
5	Protect forest from biotic interferences	33	43.8
	Total*	76	100.0

Source: OPs of CFUGs, Kapilbastu, Nawalparasi, Rupandehi (2002)

\*Does not tally being multiple variables

### Inventory of bio-diversity

Bio-diversity simply means variety and variability among living organisms and ecological complexes in which they occur. Detailed inventory of the species is one of the pre requisites for bio-diversity conservation. Bio-diversity is totality of genes, species and ecosystems in a region (Prance, 1993)<sup>7</sup>. Table 2 shows whether OPs provide detail inventory of growing stock, Non Timber Forest Products (NTFPs) and wildlife or not.

<sup>6</sup> HMG/MOFSC, 1996. Forest Act 1993 and Forest Regulations 1995 (text in Nepali). HMG/MOFSC/Forestry Development Project, Kathmandu, Nepal

<sup>7</sup> Prance GT, 1993. Bio-diversity: the richness of life. Commemorative Lecture, 1993 International Cosmos Prize, 108 - 122

**Table 2: Inventory of bio-diversity**

Inventory	Growing stock		NTFPs		Wildlife	
	No.	%	No	%	No	%
Included	55	72.4	10	13.2	25	32.9
Not included	21	27.6	66	86.8	51	67.1
Total	76	100.0	76	100.0	37	100.0

**Table 3:  
Growing stock information**

	No. (n=55)	%
Block wise	27	49.1
Species wise	39	70.9
Regeneration	13	23.6
Size class	31	56.4

While CFUG guidelines envisage provisions for detailed inventory of growing stock in their CFs, nearly two-thirds (72.4%) of OPs have included information on growing stock. Table 3 further elaborates this. As seen in Table 3, of the OPs that present information on growing stock, only one quarter OPs (23.6%) provided inventory of natural regeneration. Most of the OPs (70.9%) provide information about the growing stock by species type whereas almost half (49.1%) present the block

specific information.. OPs just covered the broad headings suggested by CFUG guidelines and detailed analysis and interpretation of growing stock information were missing in most of the OPs.

Only ten OPs have listed NTFPs available in their CFs. However, list of species present in the forests is not a full inventory, which should give an estimation of the stocking, and thus appropriate harvesting levels, which are lacking in all the OPs of CFUGs. Similarly, OPs are expected to describe the information with regard to wildlife found in their respective CFs. As shown in Table 3, most of the OPs (67.1%) did not provide any information with regard to the wildlife situation of their CFs. Needless to say, one of the major objectives of CF management is to protect/conservate the wildlife. Those OPs, which provide information on wildlife, just listed down fauna found in the forests. Information on avifauna was found in very few OPs. None of the OPs attempted to identify and describe threatened endemic and abundance species (both plants and animals) present in their CFs though it is one of the essentials for bio-diversity conservation.

### **Programs / Methods for bio-diversity conservation**

CFUGs can improve both quantity and diversity of vegetation in existing forests through protection, establishment and management (Jackson and Ingles, 1994)<sup>3</sup>. Methods for conserving species might be raising plantations, implementation of different silvicultural operations, nursery management, sustainable harvesting practices, enforcement of rules and regulations, identification of rare, threatened and endemic species and protection from biological inferences as hunting, poaching, grazing, fire, illicit felling etc. As stated earlier, none of the OPs have identified the rare, threatened and endemic species of animals or plants. Similarly, it was surprising to find the DFO listing threatened and endemic species of animals or plants found in their area. Obviously, bio-diversity conservation programs cannot be effective unless species having greater economic value and ecological value are protected.

Summarizing the different methods programs or methods suggested for conserving bio-diversity in reviewed OPs, Table 4 assesses their adequacy. Most of the methods suggested are either just mentioned or partially adequate. They have just covered the broad headings suggested by CFUG Development Guidelines, 2002. No detail programs are suggested or prescribed in them. Although OPs have attempted to provide a framework to carry out different forest bio-diversity conservation measures e.g. raise

plantations or carry out different silvicultural operations, such as tending, weeding, singling etc, these were not sufficiently described. Therefore, it is very difficult to understand and implement them. Most of the OPs have followed the descriptive approach rather than prescriptive approach. None of the OPs suggested detailed methods for conducting activities, thus making bio-diversity conservation difficult and complex for general users. Forest user groups often lack adequate skills, knowledge and manpower for the effective implementation of OPs. No special programs have been suggested in OPs for bio-diversity conservation and wildlife protection.

**Table 4: Programs/methods for bio-diversity conservation**

( %)

Programs/methods	Adequate	Partially adequate	Just mentioned	Not mentioned
Protection from fire	3.9	2.6	61.8	31.6
Protection from Grazing	-	3.9	48.7	47.4
Silvicultural operations	5.3	13.2	71.1	10.5
Assisting NR	-	-	1.3	98.7
Nursery management	1.3	1.3	72.4	25.0
Plantation programs	1.3	3.9	68.4	26.3
Identification of rare, endangered and threatened species	-	-	-	100
<i>In situ</i> conservation of NTFPs	-	-	-	100
Protection of wildlife	-	-	27.6	72.4
Rules and regulations	44.7	31.6	15.8	7.9
Harvesting systems of tree species		3.9	2.6	93.4
Harvesting system of NTFPs	-	-	2.6	97.4

### Effectiveness of OPs towards bio-diversity conservation

Table 5 summarizes the effectiveness of OPs towards bio-diversity conservation. Most of the OPs (95%) are effective towards management of tree species. More emphasis is given in managing tree species as CFUGs were making lots of money out of them. Contribution of CFUGs income from the sale of the forest products is around 95 % in western Terai of Nepal (Basnyat, 2003)<sup>8</sup>. 46.1% OPs specifically mentioned the protection of wildlife as one of their objectives, majority of them (67.1%) did not include detail programs and methods for wildlife protection. In short, the parameter “how to conserve wildlife” seems missing in all OPs. As this important dimension is missing, doubts arise about their implementation in practice. Although the majority of OPs (61.8%) mention about NTFP management system, they have been found to be lacking in terms of detailed programs of areas, species, management methods, inputs, outputs, etc. Majority of the OPs is less effective towards the bio-diversity conservation as detailed programs are lacking therein as discussed earlier. However, the users’ concerns towards bio-diversity must be given due acknowledgement for recognizing bio-diversity conservation as the major objectives of CFUGs.

<sup>8</sup> Basnyat B, 2003. Operational Plan and Constitutions of Community Forestry User Groups: A Study from Western Terai Region of Nepal. (unpublished M Sc. Thesis). Indian Institute of Forest Management, Bhopal, India

**Table 5: Effectiveness of OPs towards bio-diversity conservation**

SN	Programs	Growing stock		NTFPs		Wildlife		Overall	
		No.	%	No	%	No	%	No.	%
1	Very effective	20	26.3	-	-	-	-	-	-
2	Effective	52	68.4	2	2.6	4	5.3	5	6.6
3	Less effective	3	3.9	47	61.8	51	67.1	36	60.5
4	Not at all	1	1.3	27	35.5	21	27.6	25	32.9
	Total	76	100.0	76	100.0	76	100.0	76	100.0

## CFUGs AND BIO-DIVERSITY CONSERVATION

### Programs being implemented for bio-diversity conservation

The different programs implemented for the conservation of bio-diversity in studied CFs include protection from fire and grazing, enforcement of rules and regulations, protect wildlife, raise plantation, implement different silviculture operations as weeding, climber cutting, thinning, pruning, tree stand improvement, shrub land improvement etc. Protection from biotic interference and implementation of different silviculture operations are major activities carried out in most of CFUGs. As stated earlier, one of the essentials of bio-diversity conservation is estimation of its population and its status in forest (whether rare, endemic or threatened) such that different management interventions can be carried for conservation of it. Different silviculture operations as weeding, removal of dead, dying, disease trees, climber cutting etc. might have negative impacts towards bio-diversity.

None of the CFUGs have attempted to classify even in growing stock situation also though growing stock inventory was made in all the CFUGs. No specific programs are being implemented for bio-diversity conservation such as gene pool conservation, identification and conservation of threatened and endangered species, protecting or creating wildlife habitat, protecting of mother trees, leaving wilderness area in CF etc. CFUGs has given more emphasis on programs related to the fulfilment of their basic needs rather than for bio-diversity conservation.

### Familiarity with objectives of CFUG

With a view to understand the familiarity of the users with regard to the objectives of CFUGs, users and user committee members were asked to mention at least three objectives of their CFUGs. As Table 6 shows, all users (100%) and UCs (100%) mentioned fulfilment of basic needs for forest products as one of the major objectives of CFUGs. This was followed by the protection of the forest (60% by users and 80% by UCs). Surprisingly, 8 percent users mentioned bio-diversity conservation where as 70.3 percent OPs has included wildlife protection/bio-diversity conservation as their second objective (see Table 1 above). This suggests little familiarity of users regarding the objectives of CFs. Both the users and user committee did not give priority for the conservation of bio-diversity in the forest. Table 6 below summarizes the objectives of CF as mentioned by respondents.

**Table 6: Objectives of CFUG**

Unit: Per cent and N=25

SN	Objectives	First %		Second		Third	
		User	UC	User	UC	User	UC
1	Basic need fulfillment	100.0	100.0		-	-	-
2	Protect forest	-	-	60.0	80.0	-	-
3	No idea	-	-	20.0	-	80.0	40.0
4	Conserve bio-diversity	-	-	8.0	16.0	12.0	24.0
5	Raise plantation	-	-	8.0	4.0	4.0	4.0



6	Implement community development	-	-	4.0	-	4.0	24.0
	Total	100	100.0	100.0	100.0	100.0	100.0

Users' perception on programmes and technological interventions for bio-diversity conservation

When asked the users and UCs if they had implemented any programs for the conservation of the bio-diversity, surprisingly, many respondents asked what is meant by bio-diversity. They were not aware about what the bio-diversity means. For many, bio-diversity meant only trees. The users as well as the user committee neither could tell any single programs implemented in CFs for conserving bio-diversity nor support provided by DFOs in this aspect. Instead, they mentioned about the different protection measures followed by UCs, as a result of which the bio-diversity situation has improved. No doubt that different management interventions followed have either directly or indirectly increased bio-diversity situation. Protection of forest is not sufficient for conservation of bio-diversity. Different interventions are necessary to maintain, conserve or enhance the bio-diversity situation (HMGN 2002)<sup>5</sup>.

With a view to understand the changes in forest event and bio-diversity, respondents were asked about their perception on different events in their community forests. Table 7 presents the different events carried out in CFs. The UC is more familiar about the different programs being implemented compared to users as they are directly involved in the decision making or implementation of the programs. After the development of CF, the events like breaking of rules, forest fire, illegal cutting, poaching etc. have been decreased in forests. It indicates the increased consciousness of people towards forest protection and bio-diversity conservation. As a result of the protection and different management interventions as such as protection of forests, the users as well UC perceived that bio-diversity situation of plants as well as animals have improved.

**Table 7: Events in the community forests**

SN	Forest events	UC	Users	Overall	Interpretation
1.	Breaking of the rule	1.6	2.1	1.9	Decreased
2.	Grazing	2.4	3.5	3.0	No change
3.	Forest fire	2.1	1.9	2.0	Decreased
4.	Illegal cutting	1.5	1.6	1.6	Decreased
5.	Encroachment	1.2	1.5	1.4	Decreased
6.	Poaching	1.0	1.0	1.0	Significantly decreased
7.	Bio-diversity				
	• Plants	4.3	4.1	4.2	Increased
	• Animals	4.4	4.6	4.5	Increased

#### *Attitude towards Bio-diversity Conservation*

Different indicators were used to assess users' attitudes towards the bio-diversity conservation. Table 8 presents the attitudes towards bio-diversity conservation. The users as well as UC strongly argued that bio-diversity should be maintained, conserved or enhanced but they have different opinions regarding the different set of indicators. Most of the users only want to retain the favorable species and wanted to remove the unfavorable species to make the forest more productive. As shown in Table 8, users were more concerned over the conservation of plants than that of habitat improvement of wildlife. They don't emphasize on the conservation of animal diversity. Respondents complain over the damages caused to their standing crops and livestock by wild animals such as Porcupine, Leopard, Monkey and Jackals. Nevertheless, users want to protect birds because they do not harm to the users and add the aesthetic value in the environment.

Table 8: Attitude towards bio-diversity conservation

SN	Forest event	UC	Users	Overall	Interpretation
1	Only favorable species should be retained	4.1	3.8	4.2	Agree
2	Unfavorable species should be removed	2.3	2.9	2.6	No idea
3	In situ conservation of important species (Gene pool conservation)	3.7	4.1	3.7	Agree
4	Ex situ conservation	3.2	2.8	3.2	No idea
5	Some area will be leave as wilderness	4	4.1	4	Agree
6	Practice of sustainable harvesting	4.4	4.6	4.4	Agree
7	Protection of mother tree	3.5	4.1	3.8	Agree
7	Habitat improvement for wildlife	1.9	1.8	1.8	Disagree
8	Bio-diversity should be maintained, enhanced and conserve	4.5	4.1	4.3	Strongly agree

## CONCLUSIONS

Master Plan 1989 has identified DFO as a responsible institution for taking care of all species of flora, fauna and timber species outside protected area but bio-diversity conservation has been one of their least prioritized programs. The DFOs were more concerned to the protection of forest and handing over forests to the users. Unless CFs have special programs for maintenance, conservation and enhancement of the bio-diversity, it is unlikely that the bio-diversity will be conserved through CFs whereas one of the major criterion for sustainable management of forest is the bio-diversity conservation (IIFM, 2001)<sup>9</sup>. The DFO say that the lack of the adequate resources and skills among the staff was the major problems for conserving bio-diversity though investment in forest management was relatively high in Terai compared to the hills.

The maintenance conservation and enhancement of bio-diversity provides conducive environment through adoptive mechanisms and interventions to ensure the activity or resources remain in perpetuity, identifying and checking potential threats (IIFM, 2001)<sup>8</sup>. But none of the OPs had identified different types of herbs, shrubs, climbers, trees, wild animals etc available in forest as well as its status whether they are abundance, rare, threatened or endemic. These informations are not available even in the DFOs also. Similarly classification of forest type is one of the important parameters to assess the change in bio-diversity over the period of time. Most of the OPs classify forest into three types, natural forest, plantation forest and mix forest (mixture of natural stand and plantation forest) but none of them attempts to classify them on the basis of ecological parameters or composition of species. Forest type differs with the altitude, aspects, slope and different technical intervention made, thus with in a CF also, different type of forest can be reported.

Living at subsistence level and practicing agriculture to survive rural communities in Nepal can't afford the luxury of bio-diversity conservation for its own sake (Barney and Dev, 1994)<sup>10</sup>. User groups protect and manage forests in order to satisfy their own needs

<sup>9</sup> IIFM, 2001. Bhopal India Process: Sustainable Forest Management in India. Indian Institute of Forest Management. Bhopal, India

<sup>10</sup> Branney P & Dev OP, 1994. Bio-diversity Implications of Community Management of Forests in Nepal. In Community Development and Conservation of Forest Bio-diversity through Community Forestry. Proceedings of an International Seminar held in Bangkok. Thailand Oct 26 - 28, 1994, RECOFTP pp 136-149

particularly those related to the supply of forest products but not for the conservation of bio-diversity. Hence, majority of CFs emphasizes for the basic need fulfillment of forest products. This may be either due to the lack of knowledge or detail guidelines for the conservation of bio-diversity. Very few OPs have targeted multiple forest management. Some community forestry might have site-specific advantages and can be managed for multiple uses. No special programs are being carried out for bio-diversity conservation. Despite of this, measures for promoting natural as well as artificial regeneration and application of different treatments in favor of useful crop have resulted significant positive impact to increase the number of plant species of herbs, shrubs and thorny bushes favoring and even in number of wild animals. Hence, species diversity has changed. Management operations carried out by the CFUGs are helpful for improving forest condition and enhancement of bio-diversity (Sharma, 1999) <sup>11</sup>. The CF can contribute a lot towards bio-diversity conservation if few additional technological interventions, like listing of threatened species, demarcation of wilderness area etc. are provided for managing forests with long-term visions and goals.

Users don't value equally all species of flora and fauna in the forests (Ghimire, 1999)<sup>12</sup>. Users want to conserve the species, which are most valuable for their uses. The favored vs. unfavored species in the locality will influence the level of conservation of diversity. Most of the people do not want to conserve the animals as they harm crops, livestock or create problems. The interest of conservation differs according to economic and use value of species to their daily life. Hence, bio-diversity conservation is influenced by this factor and it must be given due care.

CFUGs provide practical means to conserve bio-diversity outside the protected area network but none of the studied CFUGs is implementing any activity towards conserving bio-diversity (as gene pool conservation, identification and conservation of threatened and endangered species, protecting or creating wildlife habitat, protecting of mother trees, leaving wilderness area in CF etc). In spite of this, CF has created favorable environment for the colonization of new species of plants and animals naturally as a result of different management interventions (e.g. protecting from fire, grazing, illegal cutting, poaching etc) being implemented. Although remarkable changes have not occurred even at species diversity level, condition of bio-diversity have improved to some extent due to management and conservation efforts. CFUGs have expressed their interests and willingness towards conservation of bio-diversity

<sup>11</sup> Sharma NP, 1999. "Bio-diversity conservation: Prospects and Retrospect in Nepal Community Forest of Nepal" (unpublished M Sc. thesis). Indian Institute of Ecology and Environment, New Delhi, India

<sup>12</sup> Ghimire K, 1999. Impact of Community Forestry on Bio-diversity Conservation: A study from Laxmi Mahila Community Forestry User Group. (unpublished B.Sc. thesis). Institute of Forestry, Tribhuvan University, Nepal

38.

## AN ANALYTICAL STUDY OF OPERATIONAL PLANS AND CONSTITUTIONS OF COMMUNITY FORESTRY USER GROUPS OF WESTERN TERAI OF NEPAL

A K Bhattacharya and Bijendra Basnyat

### Abstract

*The paper attempts to examine constitutions and Operational Plans (Ops) from social, technical, institutional and financial dimensions of community forest management and find similarities, differences and inconsistencies and explore the reasons for the findings of study. This study has reviewed sixty-four constitutions and seventy six OPs of Community Forestry User Groups (CFUGs) in three Terai districts of Western Nepal, namely Kapilbastu, Rupendhi and Nawalparasi under the respective District Forest Offices. The study reveals that constitutions and OPs are almost similar from social, technical, institutional and financial dimension of community forest management and they are even similar in its management objectives and plans of actions. Very little variations were observed between them. The decision making process, benefit sharing mechanisms are ill defined in both OPs and constitutions. Most of them are copied from the previous plans and activities prescribed are either inadequate or just mentioned to meet the topics or headings suggested by CFUG guidelines. Major reasons for this include lack of awareness among users, noncompliance of participatory processes with CFUGs, undefined accountability among stakeholders of CFUGs, lack of adequate technical skills and knowledge among field staffs, inadequate post formation support to CFUGs and present political situation etc.*

### BACKGROUND

The community forestry program is a highly prioritized program of the Ministry of Forest and Soil Conservation (MOFSC). Forest Act 1993 defines the Community Forests as part of National Forests, handed over to the Forest Users' Group (FUGs) by the District Forest Officer (DFO) for development, protection, utilization and management together with authorization of sales and distribution of forest produce independently according to an approved Operational Plan. To date more than 11,000 forest user groups are managing about 9.4 lakhs hectare of the community forest in the country (CPFD, 2002)<sup>1</sup>. The institutional arrangement designed for the promotion of the community forestry are FUGs, which, as autonomous institutions, are registered at the District Forest Office (DFO) with a constitutions and OP. The constitution of FUG is a set of rules, regulations and responsibilities for users as a group. The FUG members should prepare an Operational Plan (OP) on forest management, protection, harvesting, utilization and sanctioning the rules based on the objectives of forest management. But in many cases, constitutions and OPs are prepared as the part of the community forestry hand over process and lacks forest management purposes. Most of the OPs are said to follow a standard format with the general rules and technical prescriptions being written by forestry technicians instead of the users. Very few variations are observed in the constitutions and OPs of the CFUGs. Similarly, experiences from the field suggest that most of the OPs and constitutions do not reflect local needs and desires. They are almost similar in terms of their management

<sup>1</sup> CPFD, 2002. *Forest User Group Database*, Community and Private Forestry Division, Department of Forest and Soil Conservation, Kathmandu, Nepal.

objectives though these are expected to be site specific, based on forest type and conditions and local people demands. Thus, this paper attempts to examine constitutions and OPs from social, technical, institutional and financial dimensions of community forest management and find similarities, differences and inconsistencies and explore the reasons for the findings of study

## METHODOLOGY

The study reviewed 76 OPs and 64 constitutions through 84 CFUGs were formed in Western Terai (Kapilbastu, Nawalparasi and Rupandehi). The analysis of all the OPs and constitutions were not possible as they were not available in respective District Forest Offices. The study followed both a descriptive as well as an explorative research design. Data were collected by reviewing OPs and constitutions. The OPs and constitutions were analysed from social, technical, institutional and financial perspectives. The systematic information collection and analysis approach, consultative approach and participatory approach were followed for data collection. Content analysis method was followed for analysis of OPs and constitutions. After preliminary analysis of OPs and constitutions, findings were shared with forest officials to receive their reaction and comments on the findings of the study and explore further reasons regarding findings of study. A dual approach was used in analysing the data and information collected during the study. This implies the use of both quantitative and qualitative methods of analysis. Explanation building and making things visible was the main strategy followed for data analysis, processing and presentation.

## RESULTS AND DISCUSSION

Most of the OPs (92.7%) and constitutions (80.5%) from the Western terai districts (Kapilbastu, Nawalparasi and Rupandehi) were analysed. Few OPs and constitutions were left out of the analysis, as these were not available in DFO office. Table 1 presents the number of OPs and constitutions reviewed for the purpose of the study.

**Table 1 : Number of OPs and constitution reviewed**

S No	Districts	Ops			Constitutions		
		Total	Analyzed	%	Total	Analyzed	%
1	Kapilbastu	11	11	100.0	11	11	100.0
2	Nawalparasi	29	28	99.6	29	17	65.7
3	Rupandehi	42	37	88.1	42	36	85.7
	Total	82	76	92.7	82	64	78.0

The CFUG guidelines recommend list of activities to be included in the OPs and constitutions. The study attempts to examine as to what extent the broad headings suggested by community forestry guidelines have been followed in OPs and constitutions of CFUGs. Most of the constitutions (about 95.5%) did not meet all the parameters suggested in CFUGs guidelines. Only three CFUGs had covered all the headings of CFUG guidelines. Table 2 compares the constitutions and CFUGs guidelines. Similarly, almost all OPs (97.1%) had not met most of the parameters suggested by CFUG guidelines. Only one CFUG had met almost all parameters suggested in CFUG guidelines. While Government has been reviewing the community forestry policy and legislations periodically to make CF participatory, CFUGs have not been responsive in

incorporating these changes by amending their OPs and constitutions. OPs were prepared for, and remain valid for, a given period of time only. The age of documents might be one of the reasons why OPs and constitutions do not fulfil all the criteria suggested in CFUG guidelines.

**Table 2: Constitutions and CFUG guidelines, 2002**

S No	Parameters	Constitutions		OPs	
		No.	%	No.	%
1	Almost all are met (> 90%)	3	4.7	1	1.3
2	Most are met (75- 90 %)	30	46.9	30	39.5
3	Majority are met (50-74%)	28	43.8	25	32.9
4	Few are met (25- 49%)	3	4.7	20	26.3
	<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>76</b>	<b>100.0</b>

Source: Constitutions of CFUGs, Kapilbastu, Nawalparasi and Rupandehi

Details of types of objectives of OPs are presented in Table 3. Very few OPs (5.3%) have classified short and long-term objectives, whereas block specific management objectives are provided in 13.2% of OPs only. None of the OPs in Nawalparasi District attempted to classify block specific objectives, or long and short-term objectives.

**Table 3: Specifications of Objectives**

S No	Specification of objectives	Kapilbastu (N=11)		Nawalparasi (N=28)		Rupandehi (N=37)		Total (N=76)	
		No.	%	No	%	No	%	No.	%
1	With block wise objectives	-	-	-	-	10	27.8	10	13.2
2	With long term objectives	2	18.2	-	-	2	5.6	4	5.3
3	With short term objectives	2	18.2	-	-	2	5.6	4	5.3

Source: OP of CFUGs, Kapilbastu, Nawalparasi, Rupandehi (2002)

The main aim of the OPs is to carry out forest development activities as per the need of the community as well as on the basis of forest conditions. However, this issue has not been addressed in most of the OPs. Very little variation was observed in the objectives of the community forests despite the differences in forest conditions, per capita availability of forest, physiographic differences of the district, socio-economic situation of the users and dependency on forest. They lacked vision for managing forest sustainably. Surprisingly, almost all OPs and Constitutions had similar objectives. However the purpose of an OP is to provide the systems or processes for managing the forests while the purpose of constitution is to provide the set of rules and regulations to be observed by the users for managing their forests but the study (Table 3) shows that there are no significant differences in objectives of OPs and constitutions. The main CFUG objective for managing forests is to fulfil the users' demand of forest products, followed by soil conservation and environmental stability and management. The forest conditions have either no, or very little, role in determining the objectives of CFUGs as they are almost all the same for all forest types and conditions. It is not clear on what basis these objectives were suggested. For effective management, the objectives should be classified into short term and long term as suggested by CFUG guidelines. However, this is almost lacking in most of CFUGs' existing documents. Income generation, livelihood enhancement and initiation of enterprise development were not priorities.

**Table 3: Comparison of objectives of OPs and constitutions**

Objective	OPs		Constitutions	
	Percent	Rank	Percent	Rank
Fulfill demand of forest products	100	I	98.4	I
Soil and erosion control	64.5	II	59.4	III
Environmental stability/environment management	51.3	III	67.2	II
Wildlife protection	46.1	IV	70.3	IV
Protect forest from biotic inferences	32.9	V	21.9	VII
Scientific management of forest	31.6	VI	43.8	V
Raise plantations	25.0	VII	34.4	VI

Source: OPs and Constitutions of CFUGs, Kapilbastu, Nawalparasi and Rupandehi

The different silvicultural operations along with forest types have been summarised in Table 4. The most preferred silvicultural operation in all forest types is pruning followed by cleaning and thinning. The forest types did not influence the selection of the silvicultural operations and even thinning and singling have been prescribed in natural forests. This reflects that most of the OPs were being copied and did not consider forest types or management objectives while prescribing different silvicultural operations. Many possible silvicultural operations have not even been considered e.g. coppicing, pollarding, foliage lopping, seedling felling, shelterbelt felling etc in suggesting the silvicultural operations. When this finding was discussed with forest officials, they responded that OPs were prepared by CFUGs and DFO staff had no role in its preparation and amendment. CFUG members denied this; they said, "Our forest range officers wrote the OPs for us. We lack knowledge and skills on technical forest management". They added that they usually agreed to whatever the forest technicians suggested. Whatever the reasons might be, the question is whether these activities would really help in sustainable management of forests?

**Table 4: Silvicultural operations prescribed for CFUGs**

S No	Silvicultural Operations	Natural (N=18)	Plantation (N=20)	Mixed (N=29)	Not stated (N=9)	Total (N=76)
1	Thinning	61.1	100.0	86.2	44.4	78.9
2	Pruning	94.4	100.0	89.7	55.6	89.5
3	Cleaning	88.9	85.0	79.3	55.6	80.3
4	Singling	66.7	40.0	48.3	22.2	47.4
5	4D removal	94.4	65.0	65.5	44.4	69.7
6	Climber cutting	11.1	-	-	-	2.6
7	Protecting natural Regeneration	5.6	-	-	-	1.3
8	Selection felling	38.9	5.0	10.3	11.1	15.8
9	Tree Stand improvement	22.2	-	6.9	-	7.9
10	Shrub land improvement	22.2	-	6.9	-	7.9

Source: OP of CFUGs, Kapilbastu, Nawalparasi, Rupandehi (2002)

Silvicultural operations, when mentioned, are not sufficiently detailed and are too complex to understand for general users as they do not directly relate to management objectives. Table 5 presents the adequacy of planned activities suggested for different silvicultural operations. Most of the OPs only mention about the activities to be implemented in particular blocks in particular year, but do not mention inputs, outputs and methods for conducting such activities. Although silvicultural operations must be prescriptive but most of them are descriptive.



**Table 5: Adequacy of methods suggested for silvicultural operations**

S No	Silviculture operation	Adequate		Partially adequate		Just mentioned		Total	
		No.	%	No	%	No	%	No.	%
1	Thinning	9	15.0	4	6.7	47	78.3	60	100.0
2	Pruning	14	20.6	6	8.8	48	70.6	68	100.0
3	Cleaning	14	23.0	7	11.5	40	65.6	61	100.0
4	Singling	11	30.6	4	11.1	21	58.3	36	100.0
5	4D removal	8	15.1	13	24.5	32	60.4	53	100.0
6	Climber cutting	-	-	-	-	2	100.0	2	100.0
7	Protecting NR	-	-	-	-	1	100.0	1	100.0
8	Selection felling	1	8.3	3	25.0	8	66.7	12	100.0
9	Tree Stand improvement			1	16.7	5	83.3	6	100.0
10	Shrub land improvement			1	16.7	5	83.3	6	100.0

Source: OP of CFUGs, Kapilbastu, Nawalparasi, Rupandehi (2002)

The Forest Act, 1993 has given authority to sell and distribute forest products like timber, fuelwood, fodder, non-timbers etc. independently. They can generate as well as utilize the funds in various ways. Sources of funds of FUGs include income from various sources such as grants, assistance or donations received from HMG, NGOs or projects, revenues received from the sale and distribution of forest products, revenues collected through fines and penalties, and any amount received from any other sources (Forest Act, 1993). FUGs are free to use their funds in forest development activities, community development and social welfare. It is mandatory for FUGs to spend at least 25% of their income in forest development activities from income generated CF activities, and FUGs are allowed to spend the rest of the income in other community development activities. The proportion of expenditure mentioned in constitutions of CFUGs is summarized in Table 6. Most of the constitutions (64.1%) make no mention of the proportions of expenditure towards different activities even though the Forest Act categorically mentions that at least one quarter of fund generated from the implementation OPs must be spent on forest development activities.

**Table 6: Proportion of expenses in different activities**

SN		Forest development		Community development		Other activities	
		No.	%	No	%	No	%
1	Not stated	41	64.1	41	64.1	41	64.1
2	Less than 25%	4	6.3	12	18.8	20	31.3
3	26-50%	6	9.4	7	10.9	3	4.7
4	Above 50%	13	20.3	4	6.3		0.0
	<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>

Source: Constitutions of CFUGs, Kapilbastu, Nawalparasi, Rupandehi (2002)

Forest users were not clear about the concept of forest development activity; planners and policy makers also had different opinions with regard to approaches and methods for forest development. While policy makers would not care to distinguish gross or net income and also what forest development activity would include whether protection costs or management cost or inclusive of both, users tended to include everything in the forest development activity from the salary of watchers to harvesting forest products and transportation cost. Forest development activity should be guided by the long-term vision for the forest balanced with the multiple product and services objectives and the current condition and potential productivity of the forests. These three factors should in effect

define what is necessary to do in terms of management activities and these can be costed. It is this amount that should be spent on 'forest development activities'.

Involvement of NGOs in OPs and constitutions: Most of the stakeholders of community forestry are emphasising for involvement of NGOs in forest management activities. Some of the multilateral and bilateral projects of Nepal (Nepal Australia Community Forestry Project, Nepal Swiss Community Forestry project (NSCFP) have already involved the NGOs in forestry activities. The main reasons for involving them is because of their skills and expertise in social mobilisation, high accountability and transparency, and service delivery mechanisms to address the needs and concerns of people. However, many forestry professionals are questioning for it? 'Do NGOs have adequate technical skills in forest management?'; 'Should they be entrusted with forest management planning or not? Who should monitor them and how?'

Box 1 presents some concerns about NGOs involvement in forest management.

### Box 1: Should we involve NGOs in forest management?

An NGO (Everest Community Development Forum, actual name disguised for the sake of identity) supported to prepare OPs in six CFUGs in two VDCs of Nawalparasi district. Of the six OPs, two OPs were approved by the DFO on the same day and the other four after a few days interval. The OPs were almost similar in terms of their management objectives, the silvicultural operations suggested and the number of blocks despite the forest areas varying from 14.5 to 63.5 ha. All the six CFUGs were formed in natural forests and proposed thinning in the OPs. Although the DFO could return these OPs for revisions and improvements, she/he simply deleted thinning and made a few similar corrections to OPs with a view to encourage the NGOs and to support local people to manage their natural resources (forests) sustainably. Nevertheless, seeing the OPs, many questions arise, "Who prepared these OPs? Do these OPs reflect needs of users in reality? Are users aware about the different commitments and activities proposed in the OPs? Do users own the OPs? Is it fair to involve NGOs in forestry activities? Most of these questions remain unsolved.

Table 7 presents the general impression of CFUG constitutions and OPs. Almost half of the constitutions (46.9%) were found adequate and complete in terms of their purpose. Almost half the OPs (39.5%) were adequate in serving their purpose.

**Table 7: General impression of constitutions**

S No		Constitutions		OPs	
		No	%	No.	%
1	Adequate	30	46.9	30	39.5
2	Poor	23	35.9	31	40.8
3	Inadequate	11	17.2	15	19.7
	<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>76</b>	<b>100.0</b>

Source: *Constitutions of CFUGs, Kapilbastu, Nawalparasi and Rupandehi*

Constitutions were analyzed according to the adequacy of information provided in terms of the social, institutional and financial dimensions of community forest management. Only two constitutions provided adequate information on the social dimensions of forest management where as the majority of constitutions (53.1%) were partially inadequate in institutional dimensions. The situation of the financial dimension was very poor. Three fifths (60.9 %) of CFUGs just mention the topics but lack details. In short, the majority of constitutions lack adequate details in social, institutional and financial dimensions of community forest management. Table 8 presents the assessment of constitutions.

**Table 8: Assessment of constitutions**

S No		Social		Institutional		Financial	
		No.	%	No	%	No.	%
1	Adequate	2	3.1	12	18.8	21	32.8
2	Partially adequate	20	31.3	34	53.1	4	6.3
3	Inadequate	42	65.6	18	28.1	39	60.9
	<b>Total</b>	<b>64</b>	<b>100</b>	<b>64</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>

Source: Constitutions of CFUGs, Kapilbastu, Nawalparasi and Rupandehi

Table 9 presents the assessment of OPs in terms of social, technical, institutional and financial dimensions. An assessment of OPs from a social perspective reflects that almost all OPs (96.1%) provided inadequate information in social dimensions where as almost half of the OPs (46.1%) were deficient with regard to information in the technical dimension of forest management. Similarly, half (53.9 %) and about two thirds (72.4%) of OPs did not provide adequate information for managing community forests from institutional and financial dimensions respectively. The study infers that most of OPs lack adequate details in the technical, social, institutional and financial dimensions of forest management.

**Table 9: Assessment of OPs**

S No	Assessment	Social		Technical		Institutional		Financial	
		No.	%	No	%	No	%	No.	%
1	Adequate	1	1.3	14	18.4	7	9.2	14	18.4
2	Partially adequate	2	2.6	27	35.5	28	36.8	7	9.2
3	Inadequate	73	96.1	35	46.1	41	53.9	55	72.4
	<b>Total</b>	<b>76</b>	<b>100</b>	<b>76</b>	<b>100.0</b>	<b>76</b>	<b>100.0</b>	<b>76</b>	<b>100.0</b>

## CONCLUSIONS

### GENERAL

The general conclusions drawn are as follows –

**Provisions for guidelines for management:** OPs and constitutions have provided broad framework and plans of actions for managing forests as well as groups. Constitutions provide several means and mechanisms for ensuring transparency, accountability and participation of users. Similarly, OPs deal with several forest management measures to be followed in CFUGs and harvesting methods. As a result, forest cover has increased significantly apart from enhancing livelihoods and community development opportunities.

**Users' efforts:** The users have fair knowledge about forest management practices as well as skills. They have attempted and tried to document the list of activities to be carried out for improving forest conditions as well as meeting the daily needs of forest products. Similarly, users as well as user committees have very less knowledge about financial management system in CFUGs. But still, they are keeping most of the records, doing annual audits as well as maintaining the accounts. Thus, users' efforts must be acknowledged for managing the Nation's green wealth.

**Defined role and responsibility:** The constitutions have defined roles and responsibilities of users and users' committees in managing community forests. These list out forest offences, methods for controlling offences. Most of the constitutions have provided job description or brief terms of reference for office bearers to ensure accountability towards their work.

**SPECIFIC**

Following specific conclusions were drawn on the basis of review of OPs and constitutions.

**Descriptive vs. prescriptive:** Most of the OPs are descriptive rather than prescriptive. They only suggest a list of activities to be carried out in CFUGs but do not quantify those activities e.g. 'a plantation will be carried out in the barren area left after the final felling of the crops'. The area for plantations is hardly mentioned. Looking for plantation details in OPs for aspects such as species and plantation management system would be expecting too much. In the absence of these details, users would always have reasons for poor/non-performance. It is extremely difficult for them to implement OPs without suggestions and advice of forestry professionals, official or otherwise. Most of the activities are often implemented as per the wishes of the forest officials, committee and users and not based on scientific principles of forest management. Box 2 presents nursery, income generating and plantation programs in two CFUGs in Nawal Parasi.

**Box 2: Nursery, Plantation and Income generating programs**

*There is no need for nursery, plantation and income generating programs in CF at present but users can decide programs later on the basis of their needs with approval from the District Forest Office. (Buddha Tal Mahila CFUG OP, Nawal Parasi)*

*A plantation will be established in barren areas and areas cleared after different silvicultural operations in the forests by involving each and every user group household every year. Fallow area in the forest will be identified for income generating activities such as bamboo plantation, vegetable farming for low-income groups and different programs for skill development. (Basdar CFUG OPs, Nawalparasi, Bardghat, Basabasi, Badhari Dubauliyay )*

*Note: District/Range/Beat/VDC*

**Similarity of OPs and constitutions within Range or Ilaka Level:** The OPs and constitutions are very similar in terms of contents, forest management prescriptions and words within each Range Post or *Ilaka* level. This reflects the poor planning processes as well as less accountability of user groups towards OP in the formulation process, although the Community Forestry Guidelines clearly mention the need to address the interests of all the different stakeholders of CFUGs. The needs of forest products vary by different socio-economic conditions of communities. Similarly, forest management systems and prescriptions would be expected to differ on the basis of forest types and conditions. However, the constitutions and OPs grossly fail to address these issues adequately. Reasons for this might be either the high workload of the Forest Officials in Terai regions or that the same Range Officer or his subordinate staff were involved in the preparation of OPs for all FUGs under his jurisdiction, thereby making his work simpler and easier by having the same OPs and constitutions for the entire area in which he worked.

**Non-adherence of community forestry principles:** The Community Forestry Guidelines, 2002 provide a broad frame work as a format for the preparation of the OPs. Most of those studied are not in the prescribed format. The majority of the OPs failed in quantification aspects, i.e. 'which', 'when', 'where', 'how much' activity or programs are to be carried out? Some OPs even fail to address all the board headings, such as

biodiversity conservation measures, community development activities, monitoring and evaluation measures, programs for poor and marginalized people etc. Some of the OPs even violate or are contrary to the principles of Community Forestry. A few CFUGs (seven out of 37 OPs analyzed) of Rupandehi have provisions for remunerating forest officials as well as users. Should the forest officials get additional benefits by working for CFUGs or not? Box 4 presents the allowance rate for working in different officials.

**Box 3: Who should look after this matter?**

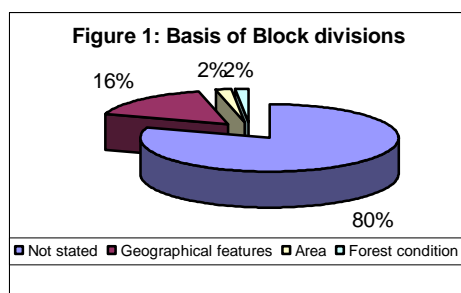
*Operational Plan of Bankotti CFUG, Rupandehi mentions the following provisions for payment of allowances to forest officials and committee members for working for CFUG.*

Forest Officer (Gazetted)	Rs. 200/day
Forest Ranger	Rs. 150/day
Forest Office Assistant	Rs. 100/day
Forest Guard	Rs. 75/day
Committee meeting allowance	Rs. 100/meeting

**General vs. Site Specific:** Most of the OPs were general rather than site specific. The main aims of the OPs were to carry out forest development activities according to the needs of the community as well as on the basis of forest conditions. However, these issues were not addressed in most of OPs. Almost all OPs had similar objectives, forest protection measures and forest improvement activities though these would be expected to vary somewhat from forest to forest, village to village and between different groups of people.

**Lack of vision for the long-term management of the forest:** Almost all CFUGs lacked long-term visions for forest management. Most of forests handed over to users in the Terai are said to be productive forests but still CFUGs are managing them for meeting their daily needs. 'Should we manage the Terai forests for fulfilling the daily needs or initiate commercial management of forests?' Long-term vision of CFUGs should be managing forests for meeting the multiple benefits desired by its users in a sustainable way. This might be a patchwork of coupes producing different products and services at different stages of development. A vision for forest management either way was almost lacking.

**Objectives and activities are often inconsistent:** The objectives of most of the OPs are inconsistent with its activities. Some objectives in OPs are to conserve biodiversity, conserve soil and water, protect the environment etc., but very few mention about implementation aspects to achieve these objectives. Some OPs express that protection will be carried out for biodiversity conservation but none mention any activities for the soil and moisture conservation.



**Basis for block divisions is unclear:** The basis of block management should demonstrate the balance between the mix of objectives for multiple products and services, with the current status of the forests and the long-term vision for the forest. But, most of the OPs do not mention about the basis for the block divisions and its although the Community Forestry guidelines, 2002 categorically request this. The same forest management and treatment practices have been prescribed in blocks on a rotational basis even though blocks have different forest types or different

topography. Figure 1 presents the basis of block divisions in western Terai.

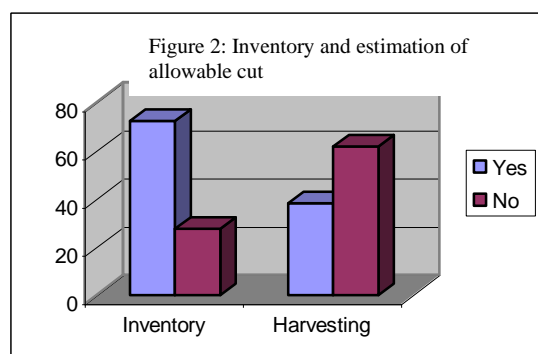
**Productivity assessment:** Forest productivity is a critical factor for sustainable management of the forests as well as for fulfilling the needs of the local community. Most of the OPs have some information from forest inventory but lack detailed analysis by blocks, size and species etc. Although some OPs present per hectare density or growing stocks of the forests, very few provide details on the annual increment and allowable cuts in the forests. Assessing the productivity of forests is, therefore, difficult for harvesting purposes. Thus, this raises questions about the adequacy of inventories and the adequacy of data for predicting growth rates and whether the community forestry inventory guidelines (2000) are being followed.

**Poor and ill-defined benefit sharing mechanisms:** The benefit sharing mechanisms are not well defined in OPs of CFUGs. Most of the OPs either mention the prices that users have to pay for forest products, generally for timbers while remaining silent for non-timber forest products, or mention that forest products are to be distributed as per the decision of the committee. No mechanisms are prescribed for the equitable distribution of forest products or for addressing the different needs and interests of different users in the group.

**Neglect of the needs of marginalized, poor and forest dependent communities:** The most of the OPs fail to address the needs of the marginalized, poor and forest dependent communities as no specific programs have been developed or implemented for enhancing their livelihoods. Most of the OPs still emphasize timber management rather than managing for non-timber forest products.

**Poorly addressed social dimensions of forest management:** Almost all the OPs seem weak in addressing the social dimensions of forest management. Surprisingly social and human resource capital development through trainings, skill enhancement, group cohesion or conflict resolution mechanisms etc are not mentioned in any of the OPs. The OPs are found to focus more on natural and financial capital development rather than on social and human capital development.

**Lack of focus on harvesting plan:** The majority of the OPs do not give details about harvesting plan and schedules. Neither do they assess the demand and supply situation of forest products or mention ways and means to meet demand and supply gaps. Most of the OPs describe the sale price of the forest products - mainly timber. With regard to the sources of forest products, almost all OPs state that the products would be obtained from dead, dying, diseased or fallen trees with the approval from the respective forest offices. The collection of only these 4 D trees may not be the best way to manage many of these forests productively. Figure 2 compares the inventory results and provisions for allowable cut from forests.



**Poor Linkages and coordination mechanisms with different actors and stakeholders:** Although the CF Guidelines expect OPs to identify relevant organizations with whom CFUGs need to establish linkages and coordination and also processes/mechanisms to achieve these linkages, almost all OPs are silent with regard to linkages and coordination mechanisms. None identified potential stakeholders for their CFUGs.

**No Provisions for involvement of local government:** While the Local Self Governance Act 1998 has duly acknowledged the role of local government in natural resource management, there is no provision to involve local government bodies in the majority of CFUGs' constitutions.

**Political representation vs. interest group representation:** Interestingly, the majorities of CFUGs' constitutions have provisions for the representation of all political parties and settlements in their respective executive committees but are silent with regard to the representation of different interest groups and people from disadvantaged caste groups.

**Too simple but too complex to understand:** The OPs are too simple for providing a framework to carry out different forest development activities e.g. raise plantations or carry out different silvicultural operations, such as tending, weeding, singling etc. However, users have either no or very little knowledge about their OPs. Most of the OPs, although suggest detailed methods for conducting activities, are not quantified, thus making forest development activities difficult and complex for general users. Forest user groups often lack adequate skills, knowledge and manpower for the effective implementation of OPs. Hence OPs are too simple but too complex for general forest users to understand.

**Interpretation of the findings of the study :** This section attempts to explore possible reasons for the findings of the study based on interactions and discussions with forest officials and discussions with CFUG members in selected FUGs.

**Participatory processes not followed:** One of the reasons for the poor quality of OPs is the lack of participatory processes during the preparation of OPs. OPs are drafted either by DFO staff or by a few committee members. When asked who were involved in drafting OPs, committee members replied that they had formed a *Sarwaldalya Samiti* (all political parties representation) for this purpose to reflect voices of all. On the other hand, DFO staff emphasized the role of users. They argued that their job was to facilitate the drafting of OPs and not to write OPs for the forest users. Box 5 below presents how users of CFUG, *Sainamaina* forests prepared the OP for their community forest. Surprisingly, even the secretary of this CFUG did not know what was written in OP.

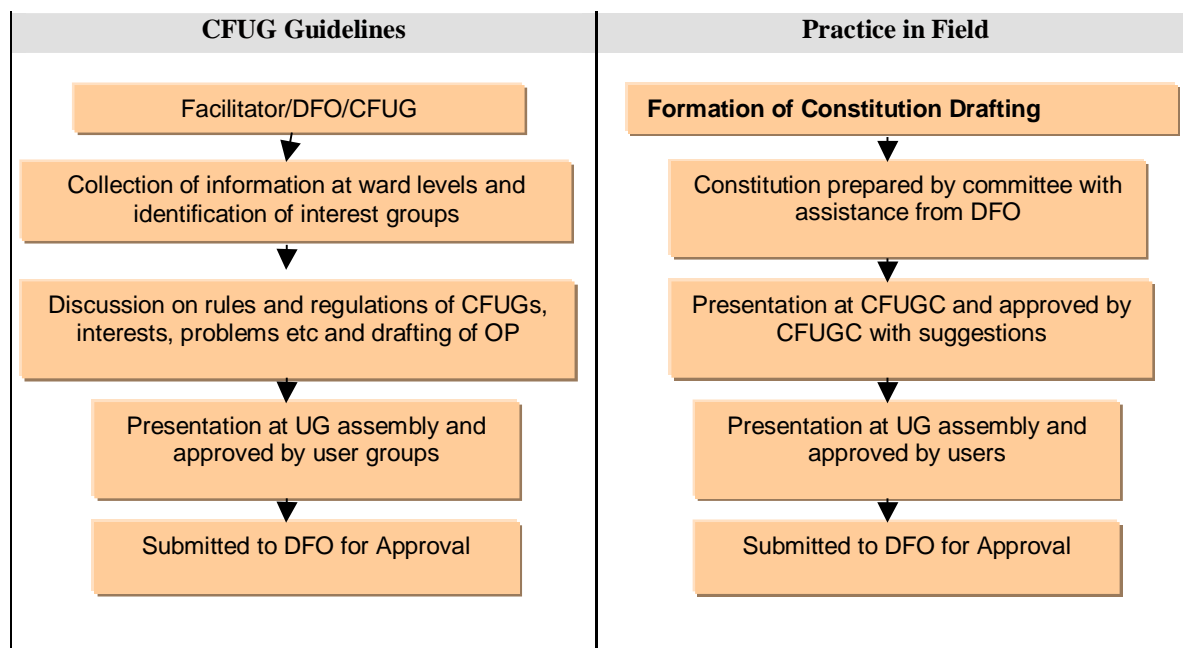
#### **Box 4: Only Ranger knows what is written in our OP**

*Inspired by the performance and activities of the neighboring Charpala CFUG, residents of Sainamaina village of Parroha VDC, of Rupandehi district wanted to manage a community forest in their village too. Villagers had seen how Charpala had been contributing significantly to the development of their village and helping people to meet their needs for forest products. This made some highly motivated people approach the DFO for handing over the forests lying in their village to them and for assistance to manage the forests under the community forestry program. As per their request, the DFO asked the Ranger to help them to prepare a constitution and an OP in order that the forests could be handed over to the users. The Ranger was very cooperative and friendly. Subsequently, the Ranger organized several meetings to prepare the Constitution and the OP, and to carry out forest inventory exercises. Since locals knew well that these were the requirements that had to be fulfilled for the handing over of the forest to them, they participated actively with the Ranger in all the activities. Finally, with the formation of CFUG, the forest was handed over to the users in 2001. The secretary of the CFUG was very active and appeared to know what she was required to do. However, when she was asked to explain the main features of the constitution and OP, what is written in them, and what users were expected to do, to the surprise of the Researcher, she bluntly replied 'ask the Ranger' (sitting next to the Researcher) because she had not seen yet what were written in both OP and the Constitution. She was quick to remark that they were written by the Ranger. "Although*

*these were discussed during meetings, she added, “ I can’t recall now”. Please ask your friend who is sitting next to you.*

Box 6 compares CFUG constitution and OP preparation processes with the guidelines suggested for handing over forests to user groups. While policy-makers emphasize participatory management of forest and have recently reviewed various rules and regulations, CFUGs seem to follow top-down approach. Most of the users perceive their CFUGs as committee forests rather than their own forests.

#### Box 5 Constitution Preparation process



**Inadequate knowledge and technical skills:** Lack of adequate knowledge and technical skills is another reason responsible for poor OPs and constitutions. For some rich and influential people in the villages of the Terai the forests could be priority, but perhaps not so in the case of hills. Likewise, community forestry in Terai districts is not a priority program of the Department of Forests. Therefore, access of forest technicians working in the Terai to training on community forestry is poor. They have very few opportunities to participate in training on community forestry development. Thus, they have to rely on their own knowledge and previous plans, even though the quality of these might not be up to standard. When a facilitator’s knowledge and skills for preparing constitutions and OPs are inadequate, it is difficult to expect a good quality constitution and OP from them. Likewise, technical forest staffs are weak on skills such as social mobilization and participatory processes.

**Users’ commitment towards managing the forest sustainably:** Experiences have shown that the commitment of the users towards managing the forests sustainably influences the quality of the OPs and constitutions. Two Boxes -7 and 8 illustrate two extreme cases affecting the quality of OPs and constitutions: One CFUG prepared one of the best OPs and constitutions; and the other just copies the OP and Constitution prepared by others.



**Box 6: Thanks to Computer: It made my life better**

*Mr. Ram Badhur (hypothetical name), Ranger of District Forest Office, Rupandehi prepared and amended seven OPs for CFUGs during his service during the last two years. However, all seven OPs are almost similar in terms of their objectives and activities suggested. They have the same language. The differences, if any observed at all, were in the deletion of a few objectives, changes in the sequential order and the inventory of the growing stock. He is very smart to thank the computer to make his life easier and faster.*

**Box 7: Innovation counts**

*Mudhuvan CFUG, of Kapilbastu had one of the best OPs and constitutions among the three study districts. Instead of adopting others' OP and Constitution straight, users wanted to learn what others were doing and benefit from others experiences so that they would not be repeating the same mistakes again. In their search to prepare the most innovative and practical OP and Constitution, they found the guidelines suggested by the Nepal Swiss Community Forestry Project better and they used these guidelines as a model and adapted it to their local situation with the support of the Ranger. Madhuvan CFUG OP and Constitution are complete.*

**Low accountability:** One of the reasons for poor quality of OPs and constitutions is low accountability of users as well as all other actors and stakeholders of community forestry.

**Peace and security situation of country:** The peace and security situation also influenced the quality of OPs, particularly for the CFUGs being formed more recently. Traveling to villages and visiting forests has now become risky for forestry professionals due to current increasingly Maoist insurgency.

## RECOMMENDATIONS

Based on findings of study, this section recommends the methods and strategy for enhancing the quality of OPs and constitutions in Western Terai.

**Following participatory processes in letter and practice:** One of the most prominent reasons for poor quality of OPs and constitutions is the rhetoric use of participatory process and tying up of group formation and handing over of CFUGs activities together. This study recommends to follow sincerely a participatory processes for community forestry development as suggested by community forestry guidelines, 2002.

**Experiential learning process for capacity development of users:** The user groups require training in OP and constitution preparation processes. The training should be divided into different modules/packages on the basis of stages. Selected individuals from different CFUGs should be trained in each module for about a week where theoretical knowledge, examples and case studies would be provided, as well as applied to participants' situations. After training, the users should return to the field to practice their first module with support from facilitators. Then, they would have a second module, with field practice and so on, so that at the end of the training course, they would have prepared OPs and constitutions through involvement of all segments of the community during their field practice. This method would not only develop the skilled manpower for annual planning and future OP amendments, but also help to address the needs and problems of CFUGs.

**Development of detailed guidelines for OP and constitution preparation:** The detail guidelines for OPs and constitutions preparation should be prepared as most of the OPs have not adequately addressed the social, technical, financial and institutional dimensions of forest management. The guidelines developed by other forestry projects such as EFEA/NEWERA, NSCFP, can be adopted for this purpose with necessary modifications. The users may be given sufficient training to prepare OPs and Constitutions so that they develop adequate skill to write these documents themselves or with limited professional support.

**Involvement of NGOs:** The non-government organizations and individual professionals need to be involved in facilitating users to prepare OPs and constitutions with their costs be shouldered by CFUGs themselves as appropriate. This would not only help to reduce the workload of the District Forest Office but also ensure a good quality of OPs and constitutions. Detailed guidelines must be developed in this respect also.

**Exposure visits/sharing workshops to forest technicians/field staffs:** Exposure visits/sharing workshops should be organized for forest technician/field staff to provide the sufficient opportunities to share ideas and learn methods followed in preparation of OPs and constitutions in different community forestry projects of Nepal by projects such as NARMSAP, NSCFP, and NACRMP etc. This type of short exposure visit would not only enhance the capacity of forest technicians for the preparation of OPs, but also assess their own strengths and weakness on OPs and constitutions preparation processes.

**Further study on implementation status of the OPs:** This study focused on studying what is written in OPs and Constitutions of CFUGs. Since it has not assessed the extent to which they have actually been implemented in the field, it is recommended that a study be conducted to assess the implementation aspects of OPs and constitutions. The extended study should aim at improving the functioning of community forestry in the study districts. The purpose should not be an action research/project to enable users to identify deficiencies in their OPs and constitutions, and enhance their capacities to amend these documents by themselves.

**Development of monitoring mechanisms:** An effective monitoring mechanism must be developed during OP and constitution preparation phases to ensure accountability of all stakeholders in the sustainable management of the community forest in the area.

39.

## FINANCIAL MANAGEMENT SYSTEM OF COMMUNITY FOREST USER GROUPS - A STUDY FROM WESTERN TERAI, NEPAL

A K Bhattacharya and Bijendra Basnyat

### *Abstract*

This paper examines the follow up of community forestry legislations regarding financial management of Community Forest User Group (CFUGs). The study reviewed the 76 Operational plans (OPs) and 64 constitutions of Western Terai districts (Nawalparasi, Rupandehi and Kapilbastu) as well as conducted rapid field assessment in six CFUGs to understand their financial management system. Review of OP and constitutions reflects that details guidelines for financial management system are lacking in most of the OPs. OPs were found deficient in terms of laying down efforts or provisions for income generation and enterprise development through community forest. They are just mentioned to cover broad headings suggested by community forestry guidelines. Though, CFUGs are provisioning to spend at least 25% of their income in forest development activities and rest in other community development activities in their OPs as demanded by the Forest Act, but reflect a different picture in practice. Major source of income of CFUGs come from the sale of forest products, but sharing of expenses of CFUGs on forest development activities is minimal. There exists a different opinion among the users and and planners and policy makers with regard to the income and forest development activities. The policy makers talk about the income as income of CFUGs generated by implementing the OP but did not say whether it is a gross income or net income of CFUGs and refrain from specifying what exactly forest development activity meant, "Is that a protecting cost or management cost or inclusive of both"? The users were found to include every thing under the forest development activities such as the harvesting costs, transportation cost, salaries of the forest watchers, office support staff. Even if all the costs defined above costs are taken into account, the expenses in forest development activity appear low as compared to non-forestry activity. No mechanism has been developed so far to make users accountable in this regard, although the forest legislations require users to spend at least one fourth of income from the forest in forest development activities. Harvesting cost is the major expense of CFUGs. The contribution of CFUGs in community development is almost negligible in all the cases.

### **Background**

The community forestry program is a highly prioritized program of the Ministry of Forest and Soil Conservation. Forest Act 1993 (HMG / MOFSC 1996)<sup>1</sup>, defines the Community forest as part of National Forests, handed over to the Forest Users' Group by the District Forest Officer for development, protection, utilization and management together with authorization of sales and distribution of forest produce independently according to an approved OPs. The institutional arrangements designed for the promotion of the community forestry are user groups, which are registered with a constitutions and OPs, as autonomous institutions at the District Forest Office. The constitution has a set of rules, regulations and responsibilities. The CFUG members prepared the operational rules on forest protection, harvesting, utilization and sanctioning the rules based on the objectives of forest management. All the activities in community forests are carried out by CFUGs through approved Operational Plan (OPs), prepared in consultation with and assistance from District Forest Office (DFO). CFUGs are recognized as self-governing and autonomous entities responsible for managing community forests. The Forest Act, 1993<sup>2</sup> has given authority to sell and distribute forest products like timber, fuelwood, fodder, non-timbers etc. independently.

<sup>1</sup> HMG/MOFSC, 1996. Forest Act 1993 and Forest Regulations 1995 (text in Nepali). HMG/MOFSC/Forestry Development Project, Kathmandu, Nepal

<sup>2</sup> Forest Act, 1993. Ministry of Law, Justice and Parliamentary Affairs Kathmandu, Nepal.

CFUGs are free to use their fund in forest development activities, community development and social welfare. But financial book keeping of income and expenditure is still at rudimentary and leaning stage in most of the community forests (Bastakoti 1999)<sup>3</sup>. Similarly, CFUGs are now gradually moving from non-monetized (subsistence) to monetized sector of economy and at the same time satisfying the basic needs of people (Singh, 1998)<sup>4</sup>. But still, most of the CFUG's OPs lack details guidelines for financial management system. They are just mentioned to cover broad headings suggested by community forestry guidelines and reflect a different picture in practice (Basnyat 2002)<sup>5</sup>. Hence, this paper attempts to examine provisions made in OPs and constitutions for financial management of the CFUGs as well practice in the field. The paper only looks after the cash expenditure of CFUGs in financial management but do not look after the non-cash expenditure aspects.

## Study Method

The study followed two approaches for understanding the financial management system of CFUGs. Content analysis approach analysis was followed to assess the provisions of OPs and constitutions towards financial management system and rapid field assessment survey to assess the follow up and practice of the provisions made in OPs and constitutions.

Content analysis is an approach for analysis of the documents and texts that seek to quantify the contents in terms of predetermined categories in a systematic and replicable manner (Bryman 2001). The attributes used for analysis of OPs and constitutions are specification of income sources and proportions of expenses in different activity especially forest development, community development and office administration, accounting system and procedures, auditing and adequacy of methods suggested for financial management. The study reviewed 64 constitutions and 76 OPs (out of 84 OPs and constitutions) from Western Terai region of Nepal (Kapilbastu, Nawalparasi and Rupandehi districts). Few were left out for analysis purpose as they were misplaced in respective District Forest office.

Rapid field assessment survey was carried out in six CFUGs to assess the actual practice financial management. The purpose of the survey was to get insights from the field. Six CFUGs were selected randomly by using lottery draw methods. Table 1 below presents the characteristic features of the studied CFUGs. The study used both conventional and participatory research techniques. The focus group discussion was held with community people to understand on financial management system of CF. Descriptive statistics such as frequency and mean, were used for analysis of data. Explanation building and making things visible was the main strategy followed.

**Table 1: Characteristic features of the sample community forests**

SN	CFUG Name	HH Number	Forest area (Ha)	Population	OP approved date	Forest/ HH
1	Charpala	6500	747.75	40000	1994	0.12
2	Butwol 1-4	919	568.45	4777	1999	0.62
3	Shivnagar	2586	108.5	14073	1197	0.04
4	Manharapur Women	34	1.92	182	1995	0.06
5	Jiteshowari	1808	747.75	10500	1997	0.41
6	Sainamaina	1197	688	7094	2001	0.57

<sup>3</sup> Bastakoti R, 1999. Financial Management System of Community Forestry User Groups: A study from Dang District. (unpublished study report). Institute of Forestry, Pokhara, Nepal

<sup>4</sup> Singh BK, 1998. Community Forestry in Nepal: Gradual Move from Subsistence to monetise sector of economy. Banko Jankari. Vol. 8 No. 1. Forest Research and Survey Center, Kathmandu.

<sup>5</sup> Basnyat B, 2002. Operational Plans and Constitutions of Community Forestry User Groups. (A Study from Nawalparasi, Rupandehi and Kapilbastu Districts, Nepal). Organizational Training II at Livelihood and Forestry Programme-Terai Component. Indian Institute of Forest Management Bhopal.

### Legal Provisions for CFUG financial management system

The legal provisions related to financial management system of CFUGs are summarized in this section. Sources of funds of CFUGs include income from various sources such as grants, assistance or donations received from HMG, NGOs or projects, revenues received from the sale and distribution of forest products, revenues collected through fines and penalties, and any amount received from any other sources (Forest Act 1993). Legislation related to financial management system of CFUG is summarized below.

- CFUGs need to establish an account with joint signatures of at least two members appointed by the FUG for using/operating the fund.
- FUGs authorized to establish prices of forestry products irrespective of government's royalty.
- CFUGs are required to carry out an annual audit of income and expenditure of the user group by a person or agency appointed by the user group.
- CFUGs are required to submit a copy of the account audit report to the concerned District Forest Office.
- A timely and regular inspection of FUG accounts by the authorized officer and need to assess whether the account is updated and maintained accurately and appropriately by the user group.
- It is mandatory for FUGs to spend at least 25% of their income in forest development activities from income generated through the implementation of the FUG, and FUGs are allowed to spend the rest in other community development activities.

### Provisions related to Financial Management of CFUGs in OP & C

Constitutions and OPs of western Terai CFUGs are reviewed to assess the follow of CF legislations related to financial management. The primary source of funds for CFUGs is the sale of forest products, followed by prizes, fines and penalties, membership fees and financial assistance from DFOs. All the constitutions tell only about the probable sources of funds but give no indication as to how much comes from each source. The proportion of expenditure mentioned in constitutions of CFUGs is summarized in Table 2. Most of the constitutions (64.1%) make no mention of the proportions of expenditure to go towards different activities even though the Forest Act categorically mentions that at least one quarter of fund generated from implementing OPs must be spent on forest development activities.

**Table 2: Proportion of expenses in different activities**

SN		Forest development		Community development		Other activities	
		No.	%	No	%	No	%
1	Not stated	41	64.1	41	64.1	41	64.1
2	Less than 25%	4	6.3	12	18.8	20	31.3
3	26-50%	6	9.4	7	10.9	3	4.7
4	Above 50%	13	20.3	4	6.3		0.0
	<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>

Source: Constitutions of CFUGs, Kapilbastu, Nawalparasi, Rupandehi (2002)

About one fifth (20.3%) of the constitutions of CFUGs have mentioned that expenses for forest development activities would be more than 50 percent of the total expenses. But none of the OPs and constitutions of CFUGs describe or define about forest development

activity. Forest development activities are the key for the success of community forestry programme. Hence, the OP and constitutions must have well defined the forestry development activity and must suggest the list of activities under it. But none of the CFUGs make an effort do so. Similarly, efforts was also lacking from the respective district forest offices in making CFUGs accountable in this regards. This might be due to lack of guidelines or directive from the central offices on defining the forest development activity, which created confusions among the different stakeholders on the forest development activity.

CFUGs need to establish an account with joint signatures of at least two members appointed by the FUG for using/operating the fund. As mentioned in legislations, all the CFUGs have bank accounts operated under the joint signatures of chairmen, secretaries or treasurers.

CFUGs are required to carry out an annual audit of income and expenditure of the user group by a person or agency appointed by the user group. They are required to carry

both internal as well as external auditing.

Table 3 presents the auditing systems of CFUGs. Around 60% of CFUGs have provisions for internal auditing. Executive committee of CFUGs (63%) will carry out internal audit will in most of the cases whereas the rest conduct auditing by forming a special internal auditing committee. Almost all CFUGs (98.4%) mention external auditing systems. The

**Table 3: Auditing methods**

	Internal auditing		External auditing	
	No	%	No.	%
Yes	38	59.4	63	98.4
No	26	40.6	1	1.6
<b>Total</b>	<b>64</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>

Source: Constitutions of CFUGs,

general assembly is authorized to appoint auditors and approve the audit report. The executive committee should not be allowed to appoint auditors that are primarily checking the committees use of CFUG funds but still one of the CFUGs from Kapilbastu provide authority to forest committee for appointment of external auditors.

The OPs and constitutions should contain the self-sufficient provisions related to financial Management system of CFUGs. Table 4 assesses the adequacy of CFUG fund mobilization systems. 34% of CFUGs have provided details of fund mobilization adequately, whereas 40% only just mention it briefly. They only attempt to cover or touch on the board headings suggested by the CFUG guidelines.

**Table 4: Assessment of fund mobilization**

Adequacy	No.	%
Adequately provided	22	34.4
Partially adequate	17	26.6
Just mentioned	25	39.1
<b>Total</b>	<b>64</b>	<b>100.0</b>

Source: Constitutions of CFUGs, 2002

## Field Assessment

Based on rapid field assessment survey of six CFUGs, this section attempts to assess practice related to financial management system. Specifically this section will analyze the follow up of provisions made in financial management of CFUGs in OP& C and provide insights from the field.

## Accounting System

All the studied CFUGs are maintaining the annual income and expenditure accounts and keep accounts using the double entry system. An exception is Sainamaina CFUG where it is maintaining account it single accounting system. But still, Manahara Women CFUG was not keeping any accounts, presumably due to its small size, even though it is generating small funds from the sale of grasses. The accounts are operated through the joint signature of CFUG treasurer, secretary and chairman in most of the CFUGs. Secretaries carried out the daily office administration in all the CFUGs and the secretary

has the responsibility of keeping financial and other records properly. This is strange considering that treasurers should generally keep the accounts. All CFUGs appointed office assistants to assist the secretary except in Sainamanina and Manahara CFUGs. Auditing of CFUG account, though mandatory is not done by Manahara Women CFUG

### Income and Expenditure Pattern

Table 5 presents income sources of studied CFUGs for the current year. The major share of income of CFUGs was from the sale of timber (86.5%) followed by the sale of other forest products (6.2%). Most of the CFUGs generate money from the sale of timber, even though their main stated objective is to fulfill the basic needs of users. The total income from five CFUGs was Rs. 50,18,141 for the current year with average income of Rs. Ten lakhs per CFUG.

**Table 5: Income sources of 6 CFUGs in Rupandehi, 2001/02**

SN	Sources	Total income(NRs)	Average income (NRs)	Proportion
1	Sale of Timber	4339199	867840.00	86.5
2	Sale of other forest products	309921.5	61984.00	6.2
3	Fine and fees	128218.5	25644.00	2.6
4	Others	134769.2	2695400	2.7
5	Subsidy/Financial assistance	6500.00	1300.00	0.1
6	IGA	99532.5	19907.00	2.0
	<b>Total income</b>	<b>501814.00</b>	<b>10,03,628.00</b>	<b>100.0</b>

Source Annual report, 2001/02 of studied CFUGs in Rupandehi,

Expenditure patterns of studied CFUGs are presented in Table 6 below. The average expenditure per CFUG per year was Rs. 850203, which is almost equal to the budgets of the local governments situated in those areas. The constitutions and OPs of all CFUGs mention that at least 60% of funds generated from the forest would be spent in forest development activities. But the proportion of expenditure in forest development activities was 18.1%, which is much less than stated Forest development costs comprise costs incurred for the development, protection and improvement of forest. Harvesting cost is not taken as forest development cost because they were only collecting the fallen trees and they are including logging and transportation costs. The major share of fund was spent in harvesting operations (21%) followed by forest development activity (18.1%) and office administration consumables and office supplies (15.1%). The contribution of community forestry in community development activity was almost negligible (0.1)

**Table 6: Expenditure pattern of CFUG, 2001/02**

SN	Expenses	Total expense (NRs)	Average expense (NRs)	Proportion
1	Harvesting	892647	178529	21.0
2	Forest development activity	770457	154091	18.1
3	Assets purchase	692687	138537	16.3
4	Office administration, supplies and consumables	642655	128531	15.1
5	Salary	373445	74689	8.8
6	Allowances	269608	53922	6.3
7	General assembly	110514	22103	2.6
8	Subsidy	22200	4440	0.5
9	Community development	5870	1174	0.1
10	Others	470930	94186	11.1

	<b>Total</b>	<b>4251013</b>	<b>850203</b>	<b>100.0</b>
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Source Annual report, 2001/02 of studied FUGs, DFO

No financial monitoring mechanism of CFUGs has been developed so far expect making mandatory to submit their annual audit report to respective district forest office. Most of the CFUGs in Western Terai does not submit audit report and even if some CFUGs submit their audit report, they are not critically analyzed or even looked (Basnyat 2003)<sup>6</sup>. These reports are just lying on the cupboards of respective district forest offices.. District forest office does not take any actions whether they submit the audit report or not. They have become the salient watcher in this regards. One reason might be due to the lack of clear guideline for monitoring the financial management system. But when probe this issue with district forest office, they refrain from financial monitoring of CFUGs by saying that community forestry is not priority programs in Terai as they have no specific targets or budgets given for it. They further substantiate their saying by quoting the revised forest policy of 2000, which has given priority for collaborative forest management than community forest in terai. Even if district forest office reported some of the major inconsistencies in the CFUG audit report, they can only ask the quires for clarification but could not take affirmative actions under the existing legal provisions, as the CFUG account is audited by third party and users, the governing body has already approved it. Thus, there exists the poor monitoring system on financial management system of CFUGs. Similarly, analysis of the financial management systems of CFUGs (Boxes 1 and 2) reflects poor accountability of all actors and stakeholders in the financial management of CFUGs. Managing Terai forests through community forestry might not be viable option, seeing the present trends in income and expenditure patterns of CFUGs. As, CFUG financial management is weak and ineffective, this requires to develop the finical management guidelines.

Box 1 below presents the case of Butwol 1-4 CFUG, which purchased timber from adjoining forest/CFUG/VDC and generated a net income of Rs. 53,504 from the sale of the products. Generating of income for the CF is not wrong. However, questions arise, do the CFUGs have authority to engage in the business? Is this the purpose of establishing CFs?

**Box 1: What is the purpose of CFUGs?  
Managing forest sustainably or doing business?**

Annual turn over of the Butwol CFUG is Rs. 719,216 for 2001/02. It purchased timber and fuel-wood worth of Rs. 309,634.2 and Rs. 10,500 respectively from the nearby Rudrapur CFUGs. Of the total expenses, almost 46% (Rs. 336,134) was spent on timber purchase while making returns of Rs. 389,539 from the sale of those products. The net income for the CFUG was Rs 53,405. This appears fine. However, questions arise: Will this not divert the CFUGC towards business while overlooking the benefits of users? Is this CFUG a timber merchant? Has it authority to purchase timber from other forests or CFUGs? Who granted permission to do so and who is monitoring these things?

Box 2 below presents the financial analysis of Sainamaina CFUG. Seeing their account, many questions arise on financial aspects. Why did the CFUG take a loan? What are the repayment arrangements? Who was responsible for it, users, DFO officials or the CFUG committee? Was it really necessary to pay allowances to user committee members and forest officials? The CFUG has included even allowances and harvesting cost under forest development activity. Although one could argue that these were spent with a view to develop the forest. But this is not warranted. Who allows the CFUG to include allowances and harvesting cost under the forest development activity? Interestingly, the OP specifies allowances for different forest officials, when they visit their CFUG e.g. DFO/forest officials Rs.200, Ranger Rs 150, Forest staffs Rs. 100 and committee meeting allowance Rs. 100 and Patrolling allowance Rs 100. Is community forestry a development oriented or a profit oriented organization? From whom did they take the loan and on what collateral? CFUGs had no answer to these questions. They only passed their burden to the auditors saying that DFO people had audited their CFUGs and that they are financially accountable and transparent. Therefore, the concerned authority must think how to really make them financially accountable towards users. The box below presents the income and expenditure account.



<sup>6</sup> Basnyat B, 2003. Community Forestry Database Report: Livelihood and Forestry Programme Terai, Butwal, Nepal

### Box 2: Are CFUGs financially accountable?

Sainamaina CFUG last year had an opening balance of Rs. 16,548 in the bank and generated funds from the sale of forest products worth of Rs. 56,546 and generated income of Rs. 83,457 by issuing the entry permit to collect the stone from nearby river. It generated further income of Rs. 11,309 from various other sources as fine and penalties, application fees etc. Total income of CFUGs was Rs. 167,860. Apart from this it received a Rs. 35,000 loan (source unspecified). The total balance of the current year was Rs. 202,860.

The expenses of FUG included Rs. 56,410 for forest product harvesting and transportation (almost equal to the amount generated from the sale of forest products and 27.8% of total expense). Salary expenses were Rs. 32,400 (16%) and allowance expenses were Rs. 47,340 (23.3%). Consumption of stationary and office supplies was Rs. 15,141 (7.4%) while miscellaneous expenses were Rs. 34,434 (16.9%). Other expenses which included service, prizes was Rs. 7,887 (3.9%). The closing balance of CFUGs was Rs. 9,248. The major share of expenses was for harvesting operations, followed by allowances and miscellaneous items. The Constitution and OP of CFUG mentioned to expense at least 60% of income in forest development activity? What hindered the implementation of the constitution and OP?

#### Income and Expenditure account of Sainamaina CFUG (2001/02)

Particulars	Income	Particulars	Expense
Last year balance	16548	Salary	32400
Sale of timber	50746	Allowance	47340
Sale of fuelwood	5800	Prizes	930
Entree fee for stone collection	83457	Timber transport	18930
Fine	10999	Harvesting	37480
Application fee	310	Office supplies	15141
Loan	35000	Miscellaneous	34434
Total	167860	Service	957
		Rent	6000
		Cash	9248
		Total	202860

Source: Audit report, Sainamaina CFUG

At present, CFUGs prepare annual income and expenditure sheets. These do not take into account assets and their depreciations. This has happened because they are not required to prepare detailed balance sheets reflecting assets - mobile and immovable. As a result, there arises the possibility of misutilization and the loss of assets in the future. CFUGs have been spending annually about 15% of their fund in creating assets (please refer table 5). To make CFUGs financially accountable, the accounting system should be developed in such a way that it will allow not only allow comparison between income and expenditures between years, but also so that to prepare a balance sheet is compulsory. Box 3 below illustrates the accounting system of Shivanagar CFUG.

### Box 3: Purchase of Tractor

Shivnagar CFUGs, Rupandehi had purchased a tractor recently at Rs. 655,000 out of its saving for renting to its members at a subsidized rate. The CFUG committee decided to charge depreciation on the tractor at a rate of ten percent per annum in such a way that they would be able to purchase the tractor later on and decided to deposit on bank. Because the Bank would not allow operating two saving accounts on the name of the same CFUG, the committee decided to open another account on the name of Secretary and Chairman

where they would deposit annual depreciation cost. Although this was acceptable to the CFUG/committee at present, it has created many questions with regard to the possibility of misappropriation of funds. Indeed, if an auditor is not likely to audit personal account, the DFO has neither time nor an authority to look into the personal account.

## Conclusions and Recommendations

Most of the OPs and constitutions mention both fund generation and mobilization mechanisms. Almost all the OPs give due importance by saying that the majority of the fund generated would be used for forest development activity but very few has quantified the proportion for this. All the constitutions tell only about the probable sources of funds but give no indication as to how much comes from each source. Interestingly, very few CFUGs are serious about the provision made in First Amendment of Forest Act, 1993 to utilize at least 25% of the income generated from the community forest for development of forest. But almost all OPs and constitutions have failed to define about the forest development activity.

The majority of CFUGs derive income from the sale of forest products, mainly timber. Apart from the provision to sell timber, OPs have no provisions to create opportunities to generate income from other sources or to develop enterprises through CFs.

The concept of CFUG income appears in acts and regulations, and in documents and discussions on policy and strategy without defining and specifying what is meant by income (Grosen 2000). Some considered the gross revenue from the sale of forest products as income where as others consider balance of fund as income. Thus there is no general agreement on definition of CFUG income whether it is a gross income or net income. However, forest regulations mentioned that CFUGs have to maintain accurate records of the forest products as well as income and expenditure accounts.

The share of CFUG expenditure on forest development activity is very low. While forest users were not clear about the concept of forest development activity, planners and policy makers also have different opinions with regard to approaches and methods for forest development. While policy makers would not care to distinguish gross or net income and also what forest development activity would include whether protection costs or management cost or inclusive of both, users tended to include everything in the forest development activity from the salary of watchers to harvesting forest products and transportation cost. Forest development activity should be guided by the long-term vision for the forest balanced with the multiple product and services objectives and the current condition and potential productivity of the forest. These three factors should in effect define what is necessary to do in terms of management activities and these can be evaluated. It is this amount that should be spent on 'forest development activities'. The same issue was brought by Grosen 2002) as well. This has happened because main purpose of the community forest was to fulfill the basic need through active participation of people. The monetary aspects of the forest management were ignored during the early stages of community forestry development. More emphasis was given on hand over than active management. Later on, Forest Act was amended to include this aspect by defining that users should spend at least 25% of income in forest development. But this was poorly translated in the field. Forest Office neither made any provision for defining the forest development activity nor did the Ministry of Forest and Soil Conservation issue any directives. Hence, there exists no common definition or understanding on forest development activity and different stakeholders interpreted in their own way. Forest development activity should be guided by the long-term vision for the forest balanced with the multiple product and services objectives and the current condition and potential productivity of the forest. These three factors should in effect define what is necessary to do in terms of management activities and these can be valued. It is this amount that should be spent on 'forest development activities'. Taking aforementioned factors into account, CFUGs must define forest development activity in their OP.

Apart from the above, the study found no constitutions or OPs that made CFUGs/User Committees spend according to the provision of forest legislation. When users and forest administrators have differences in opinion with regard to income and forest development activity, it is obviously difficult to monitor the implementation of forest act. Even if the forest management was a completely commercialized and monetised operation, it is doubtful whether 25% would be an appropriate and feasible figure to ensure sustainable maximization of productivity in all situations (Grosen 2000)<sup>7</sup>. As, CFUG financial management is weak and ineffective and exists differences in opinion with regard to income and forest development activity, this financial management guidelines for CFUGs need to be developed. Studies on financial management and fund mobilization in (Bastakoti 1999, Ghimire 2000)<sup>8</sup> have also pointed out that due to lack of fund management guideline, CFUG financial management is weak.

Poor recording systems are most prominent in government offices and district forest office is not an exception. Most of the previous records at DFO office are either lost or misplaced, which made the monitoring task not only difficult but also time consuming. Thus, a user-friendly database of each CFUG might be prepared for easy recording and interpretation purposes on any dimensions of community forest management.

NGOs/ Community Based Organizations might be involved in monitoring the financial management system of CFUGs. Perhaps this organisation could closely link with these aspects as well as to the social aspects of the groups leaving only the technical aspects to DFO staff.

FUGs are presenting only one year information on their income and expenses accounts. Thus, it is suggested that at least CFUGs must prepare two year comparative income and expenses in order that variations in last year can be easily identified and improved. This would help for the effective monitoring of CFUGs from the financial perspective. The income and expenditure account is not sufficient to explain financial situation of CFUGs. Thus, it is strongly recommended to prepare the balance sheet of CFUGs as practiced in other self-sustaining autonomous institutions such as NGOs.

CFUGs have been appointing auditors as to their contacts and wishes. Most of the auditors lacked basic knowledge and exposures to community forestry policy and law because most of them were either corporate or development sector auditors. For effective auditing of CFUGs, District Forest Offices should prepare a roster of auditors for CFUGs and make them aware of provisions of financial management in community forestry legislation and policy. CFUGs should be allowed to select auditors only from this roster on the basis of decisions made in general assembly. This will help to ensure financial accountability on the part of all committee members, users, and auditors. The important thing is that the users, not the committee, select the auditors, as the auditors are effectively auditing the use of the CFUG accounts by the committee on behalf of the users.

User Committees require training in financial management aspects such as record keeping, voucher preparation, ledger posting, and account keeping in order that they have adequate knowledge and skills in financial management. Although it could not be clearly brought out whether the users are aware about the activities, transactions and dealings but it has clearly emerged that a transparent process should be evolved and adopted to make the users aware of all the activities and all the relevant information should be available to all the stakeholders.

- <sup>7</sup> Grosen J, 2000. Issues of Income, Taxes and Subsidies (Issue Paper 7) in Joint Technical Review of Community Based Forest Resource Management. Nepal Australia Community Resource Management Project, Lalitpur, Nepal
- <sup>8</sup> Ghimire K, 2000. Financial Management System of Community Forest User Groups. Report Submitted in Partial Fulfillment of Post Graduate Diploma in Forestry Management. A Case From Banke, Bardiya and Dang Districts of Nepal. Indian Institute of Forest Management, Bhopal

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## FORESTRY FOR POVERTY ALLEVIATION: SUSTAINABLE LIVELIHOODS FOR FOREST VILLAGES

R K Singh and A K Bhattacharya

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### **Abstract**

*The issues related to the development of forest villages with respect to their geographically disadvantageous location, development priorities vis-a-vis revenue villages, Forest Conservation Act have recently attracted special attention. A need for the special project based approach has been considered necessary for the integrated development of the forest villages. The paper discusses various issues related to the development of the forest villages with sustainable livelihoods approach. The development processess and the project components have been analysed in detail.*

### **BACKGROUND**

Scientific management of forests required work force that was not available in some forest areas. Therefore, Forest Department had to establish labour camps in the forests. Since the forestry operations are of seasonal nature, forestlands had to be allocated to these people in order to sustain their livelihoods throughout the year. Over a time, these camps were named as Forest village. The history of Forest village, especially in eastern Mahakaushal area is more than 100 years old. Some of the revenue villages located in forest areas in eastern Madhya Bharat, Vindhya Pradesh, and Bhopal State were transferred to Forest department for administrative convenience. The Forest villagers of Mahakausal had no right on the land whereas in other areas they were given Pattas of the land that was cultivated by them.

After independence, the State Government issued various orders from 1962 to 1980 to convert 662 Forest village into Revenue village. Only 422 Forest villages could be transferred to revenue department and the rest 140 Forest village were not converted as revenue villages because they were located in deep forests. There are 1346 Forest villages in the state spread over 42 districts. The State Government made an effort in 1980s to convert these villages into revenue villages. But it could not materialise because the Forest Conservation Act 1980 had become effective by then.

The land allotted for agriculture in forest areas is legally classified as reserved forest. Therefore, conversion of these villages into revenue village would require compensatory afforestation on equivalent non-forestland or rehabilitation of degraded forests double in area to that of forest villages. The compensatory afforestation would require around Rs. 600 crore. In a discussion held on 7th March 94, between Hon'ble Chief Minister of Madhya Pradesh and Minister, Environment and Forest, Government of India, it was decided that the State Government would not convert forest villages into revenue villages and the Government of India would allow renewal of Pattas for a period of 15 years. Government of India has issued the order for the same on 20th January 1997.

The Forest Villages located in remote areas are comparatively less developed than a typical Revenue village. Till recently, the Forest Department alone was considered responsible for the development of forest villages by many developmental agencies. The field presence of other developmental agencies is also quite low in forest villages therefore, less priority is given to these villages. After the enactment of the Forest Conservation Act, 1980, the scope of developmental initiatives in these villages has

considerably reduced. Hon'ble Chief Minister has directed developmental departments to provide basic facilities and develop infrastructure in these villages on priority basis. In a meeting held on 23rd March 99, the Chief Secretary directed Panchayat and Rural Development Department, Women and Child Welfare Department, Tribal Welfare Department, Health and Family Welfare Department to give priority to Forest Villages in the project/programs being implemented by them. These departments have directed their field units to give priority to the Forest Villages in their programs. This project envisages to realise the spirit of the decision of the Hon'ble Chief Minister by empowering Forest Villagers and ensuring equitable use of developmental opportunities by them.

## **LIVELIHOOD SYSTEMS**

It would be proper to define the sustainable livelihood before describing current livelihood systems of the forest villages. The most generally quoted definition of sustainable livelihoods is that given by Chambers and Conway (1992)<sup>1</sup>:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. A livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation: and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term.

## **ASSETS IN FOREST VILLAGES**

Assets include human capital, physical capital, social capital, natural capital and financial capital.

## **HUMAN CAPITAL**

The population of 1346 forest villages in the state is over 6.1 lakhs. Tribal constitute over ninety percent of the total population. Most of the forest villages have primary education facilities within 3 Km except for 105 villages. These villages have primary school building except for 193 villages where construction of school building is required. The rate of literacy is lower than the revenue villages. There is substantial reliance on seasonal migration and wage opportunities outside the village. Being unskilled, they are mostly employed as unskilled labourers. As compared to the revenue villagers, the forest villagers have better knowledge of biodiversity. They have also been able to retain the tradition knowledge. Forest villages do not have proper medical facilities -

- Only 18 villages have medical facilities within 5 Km
- 500 villages have medical facilities within 5 to 10 Km
- 500 villages have medical facilities within 10 to 15 Km
- Rest villages have medical facilities within 15 to 50 Km

In the absence of adequate health care facilities, the general health of the villagers is poor. Forest Department has tried to provide medical facilities to some of these villages with the help of mobile dispensaries. However, most of the mobile dispensaries have become non-functional due to unavailability of doctors and paucity of funds.

The State Government has made certain population norms for making available different facilities to the villages. Due to low population in these villages, many villages do not get some facilities.

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<sup>1</sup> Chambers R & Conway G, 1992. Sustainable rural livelihoods: Practical concepts for the 21st century, IDS Discussion Paper 296, Brighton, IDS. (pp.7-8).

## **PHYSICAL CAPITAL**

The Forest Villages are located in remote areas and therefore, they lack basic infrastructure. Most of the villages are connected with Katcha roads and they become inaccessible during monsoon. Although 5000 Km of approach road has been constructed in different forest villages, some forest villages are still not connected with approach road. Around 3000 Km of approach road needs to be constructed to provide fair weather communication for all forest villages. All weather communications to these villages would require construction of a large number of culverts, bridges, and up-gradation of these approach roads.

Although more than 95% villages in the state have been electrified, around 50% forest villages do not have electricity connection. More than 3000 wells have been dug and

around 3000 Hand pumps have been established for providing safe drinking water. However, hand pumps for safe drinking water are still not available in all the hamlets of the forest villages. Safe drinking water facility to all hamlets would require installation/construction of around 700 Hand pumps / wells.

## **NATURAL CAPITAL**

### **NATURAL CAPITAL UNDER PRIVATE OWNERSHIP**

Forest villages are composed of small hamlets widely dispersed and generally near to reserve or protected forests. They are under transition from predominantly forest dependent to a mixed agriculture/wage-labour system due to declining forest productivity and population growth. Limited permanent cropping agriculture is practiced within a defined village forest territory, providing two to four months' food security. Approximately 121000-hectare forestland has been distributed to 30,615 patta holders in 1346 forest villages. Due to small holdings and the very low productivity of the land, most households eke out a living by maintaining a diversified pattern of occupations; no single activity provides sufficient resources to entirely ensure their livelihood. Agriculture is predominantly rain fed and mono-cropped. The crops grown include paddy, maize, a variety of millets, sorghum, wheat, pulses and oil seeds. Food grains occupy about 95% of the cropped area.

The Forest Village rules were revised on 3 November 1976 to provide appropriate facilities to the forest villagers. According to new rules every family is given temporary Patta of 2.5 ha of land for a period of 15 years. 2.5 ha additional land is given to every adult person living in a Joint family. There are many villagers who do not own land. Some of them have encroached forestland. They cannot be allotted Patta due to Forest Conservation Act 1980. There is hardly any other employment opportunities in the village for them. Therefore, to a large extent, they have to depend on agriculture for which they require land. This situation leads to seasonal out migration in most of the villages. This problem would become more serious in future with growth of population in these villages.

Under Section 9 and 10 of Forest Village Rules, the Forest villagers can pledge their land to Co-operative Bank/institutions for obtaining loan for agriculture purposes. In recent past the Government have made efforts to equate forest villagers with their fellow brothers in revenue village. The existing legal provisions do not allow them to sell their land to other people. Therefore, villagers have very limited option to change their livelihood.

Livestock raising is an important component of the production systems. The Forest villagers rear cows, buffaloes, goats and pigs. Small stock also consists of poultry. The quality of the livestock, in general, is very poor. They maintain cattle for manure, ploughing, and transport purposes. The excess cattle are sold in the hour of needs. In

some regions, it is taboo to milk the cattle and consume milk and milk products. Also, they do not use dung for dung-cakes. In other regions villagers consume milk and even convert it into Ghee for selling. The animals normally graze in adjacent forest areas because the crop residues are available rather limited quantity.

### **NATURAL CAPITAL UNDER GOVERNMENT OWNERSHIP**

Most of the Forest Villages are deep inside the forest, therefore, they have better access to large area of forests as compared to the people of revenue villages. The forest not only provide them food, material to build house, fuel for cooking as well as light and heat in winters, medicinal plants etc., but also satisfy their deep rooted emotional, religious and psychological needs. The tribal life is connected in one way or the other with the forest, right from birth to death. In times of famine and draught forest is their last succor. The villagers depend on continued exploitation/overexploitation of some NTFPS. The percentage of income derived from collection of forest produce to total income has been found up to 70% in forest villages around good forest areas despite the fact that they do not get fair price of the non-nationalised forest produce collected by them. Some NTFPs are not exploited whereas others are overexploited with consequent detrimental effects on both the environment and biodiversity. With degradation in the forest areas, the real income from the forest has also decreased. In some districts institutional arrangement has been made to eliminate the middlemen from the trade of NTFPs. This has helped in increasing the income of primary collectors of NTFP. In some Divisions, value addition in NTFPs have been attempted with limited success.

### **FINANCIAL CAPITAL**

Cash is scarce in most of the households and in order to be able to make the necessary purchases of food grains and other daily necessities, credit plays an important role. Most villagers have limited or no access to loans provided by Banks or credit societies. Due to illiteracy and ignorance they are unable to access the formal banking system for cash requirements. Level of indebtedness in forest villages is very high and the dependence is overwhelmingly upon moneylenders. Degree of indebtedness is highest amongst marginal farmers and landless labourers. Most of the villagers borrow from informal sources as a result; the majority of them have fallen into the debt trap from which they are finding it difficult to escape. As an implication of this trap they are often forced to accept lower prices for their produce through a complex arrangement of barter trade and interlocked transactions. This often leads to debt bondedness, which, by reducing the labour availability in the household, further decreases their income generating capacity. They also have to migrate to adjoining districts or towns to work as a labourer in order to fulfil their obligations arising from debt.

*The average annual credit usage per rural household ranges from Rs. 5,000 to Rs. 15,000. For the poor households this figure is between Rs. 5,000 and Rs. 7,500. Around two-thirds of the credit, in the case of poor households, is taken for consumption purposes and about a third for production purposes. For the non-poor rural households, the percentage of production credit usage ranges from 40 to 70 percent, About three-fourths of the credit taken is short term (less than a year). Of the total credit usage, it is estimated that more than 80 percent is from the informal sector (Biswas and Mahajan, 1997)<sup>2</sup>*

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<sup>2</sup> Biswas A & Mahajan V, 1997. Sustainable Banking with the Poor, A case Study on Women's Thrift Cooperative Sysetem in Warangal and Karimnagar Districts of Andhra Pradesh, Cooperative Development Foundation, Hyderabad



## SOCIAL CAPITAL

Tribals largely inhabit the forest villages. Traditional institution based on clan relationship continues to perform a number of regulatory functions in these villages. The tradition of making collective decisions based on consensus among communities is still prevalent. With the constitution of PRIs and village level committees a new leadership in some of the areas has emerged that has replaced the traditional leadership. However, the traditional leadership among tribal is still respected.

As compared to the revenue villagers, the forest villagers have poor network with the Government officials and people's representatives. In the absence of information about government programmes and legal rights coupled with poor network with the government officials and people's representatives, they are not able to get their entitlements

## VULNERABILITY CONTEXT

The Forest Villagers' livelihood is vulnerable to several factors. The agriculture can provide food security to the forest villagers for about 3 months. For about 2 months they earn the livelihood from collection of forest produce. For around 4 months they earn their livelihood working as labourers either in forest department or other government sponsored programme. There are hardly any employment opportunities during rainy season therefore, food availability are one of the greatest problem in this season. They also become vulnerable to various diseases like Blood dysentery and Malaria during the rainy season. In the absence of all weather road, it becomes difficult to mobilize medical services in these villages causing threat of life to several people every year.

With very limited livelihood options they are vulnerable to natural calamities like flood, hailstorm, draught, pest attack that destroy their agriculture crop and reduce the availability of forest produce. With the increase in degradation of forests, their income from forest produce has also declined. They are also vulnerable to variation in prices. The prices are normally lowest when they need to sell their produce.

**Table1: Difference in Assets between Revenue and Forest Village**

REVENUE VILLAGE	FOREST VILLAGE
<b>Natural Capital</b>	
The property right of land is well defined.	Although Forest Villagers have <i>de facto</i> control over the land they cultivate, but they are not the owners in legal sense. Therefore, they cannot sell this land.
More scope for developmental initiatives.	Forest Conservation Act 1980 limits the scope of developmental initiatives.
Inhabited by large, medium, small and marginal farmers along with landless people.	Inhabited by only small and marginal farmers along with landless people.
Only few villagers have access to good forest.	Most of the villagers have access to larger area of good forest.
<b>Physical Capital</b>	
Better infrastructure facilities as compared to Forest villages.	Infrastructure facilities are poor, in general, due to remoteness.
<b>Human Capital</b>	
Better health facilities and higher rate of literacy.	Health facilities are poor and rate of literacy is also low.

Traditional knowledge has been lost due to mainstreaming.	Villagers, especially older people, have been able to hold on to traditional knowledge.
<b>Social Capital</b>	
Better network with government officials and people's representatives. Better access to market.	Poor network with government officials and people's representatives. Limited access to market.
<b>Financial Capital</b>	
Comparatively indebtedness is low. Better access to official loans.	Comparatively indebtedness is high. Access to official loans is almost nil.

## PAST APPROACHES

'Disadvantageous location' has been defined as the major problem of the forest village therefore, the focus of intervention has been primarily on building physical assets for the village like roads, school building, *Nistar*/irrigation tanks etc. Forest villages have distinct advantage over Revenue villages in terms of their access to good and large forest area. They also have better knowledge of a variety of herbs and shrubs found in the nearby forests.

Despite concerted efforts of the Forest Department and a reasonable level of investment by central and state governments for the development of Forest Villages, the impact of these efforts to raise standard of living of the forest villagers has been limited and certainly are not commensurate with the resources allocated. Major features of previous approach are:

- 1) The approach has been to solve the problem of 'Disadvantageous location' rather than working on the strengths of the Forest villages,
- 2) Interventions have been welfare-oriented where villagers are treated as passive recipients,
- 3) Most of the initiatives have been top down, target oriented and uniform therefore, not able to capture the local aspirations of the people,
- 4) Initiatives of different departments have been uncoordinated, failing to create synergy between investments and get multiplier effect, and
- 5) Little or no consideration for gender equity.

## DRAWBACKS OF PREVIOUS APPROACH

A benevolent but paternalistic development approach results in unsustainable interventions and fails to reduce the dependency of communities on external support. In an approach that focuses on infrastructure development, the dependency increases with the increased level of investment and withdrawal of external support becomes difficult. For sustainability to be achieved, therefore, there must be an increased focus on empowerment, village level institution development, and building local capacities in a range of technical and managerial skills.

## LESSONS FROM COMMUNITY DEVELOPMENT APPROACHES

Different approaches have been adopted in organising communities for their development in the country. Each approach has its own strength and weaknesses.

## COMMUNITY ORGANISED AROUND PRODUCTS

NTFP collectors/small farmers' income is derived from a limited capital and physical base. The existing institutions are either disinclined or unable to support them. High cost of services and facilities as he operates as an individual and unfavourable market

mechanisms like prices being lowest when he needs to sell his produce, all these results in low income to the farmers. Agricultural co-operatives formed with an aim to increase income as well as provide social benefit to the small farmers through self-reliance farmers' organisation have been found operating successfully in different parts of Maharashtra and Gujarat. Such a co-operative organisation is developed around its member's major natural output (Agriculture) instead of only the supply of inputs like seeds, fertilizers, credit etc. This is because product and the by-product systems are different, technology and managerial requirement are different, nature of integration and structure is different, size of operation is different, government policy and support is different and competitive market conditions and requirements are different for different outputs. Its structure evolves itself based on members' priority, appropriate technology and location of facilities, size of operation and economy of scale. This structure and size allows the small farmers to jointly use the best available technology as well as trained technical and managerial manpower. Its success lies in integration. This organisation is integrated on 3 levels,

- a) Forward
- b) Backward and
- c) Horizontal

Forward integration ensures more income to the members directly. The cooperative undertakes all post harvest and marketing activities that includes handling, transportation, warehousing, drying, processing, packaging and distribution up to the consumer level.

Backward integration minimizes farmers' risks and ensures a high level of productivity. Supply of all needed agricultural inputs and facilities is undertaken by the cooperative. These are integrated with the farmers' requirements and are subsidized or sold at the cost price to the farmers.

Horizontal Integration is the organization of farmers into smaller groups, which together form a larger co-operative. This facilitates their participation in decision making in such areas as quality control, standardization of produce, sharing of benefits and overall policy development of the co-operative. This institutional arrangement integrates individual member's agricultural production and plans with the over all market operations for optimal use of resources.

### **Transformation of Varnanagar**

Only about 45 years ago the Varna Valley in the state of Maharashtra was barren and hilly, notorious for decoity. Today Varnanagar is a modern growing colony, based wholly on Varnanagar Sugar Co-operative. 80 per cent of the farmers are small landholders owning sugar cane land less than 1 ha. Based on the co-operative approach, the factory was set up in 1955 to produce refined sugar. To utilize the by-product, bagasse, a paper mill was started in 1983. A distillery is planned in the near future. Farm machinery is maintained and rented out to the farmers at the subsidised rates. A Co-operative Bank has been set up to facilitate loans. Agricultural assistance helps the farmers. Technical and financial assistance is given for irrigation schemes. With the assistance provided by the co-operative they have been able to double sugar cane production from 1.5 lakh tons to 3 lakh tons. Farmer's costs are minimised by backward inputs like transportation and harvesting by the co-operative. This results in large saving for the member farmer by backward integration. The productivity too has increased. The co-operative is able to achieve a high average recovery of 12 per cent from Sugar Cane. The price actually paid by the Co-operative to the farmer after value addition by forward integration is almost double of that of the non-member farmer. This is a constant feature of the integrated Sugar Co-operative. The other benefits of the Co-operative have been the diversification of the farmer activity to supplement his income. A central Poultry farm with daily production of 38,000 eggs is run by the co-operative. The dairy complex collects and process more than 100 thousand liters of milk a day. The Co-operative not only maximises its gain but also provides opportunity for over all development of the farmer. A college and a public school, gymnasium and Akhara have been started. A hospital holds periodical health camps with visiting specialists. To ensure him all amenities the Co-operative runs a modern departmental store. The result has been an economic as well as social growth of the farmer.

Source: Prof. P.M. Shingi, IIM, Ahmedabad (Pers. Communication)

Krishna co-operative in Satara district and cooperatives of paddy growers near Surat are good examples of how small farmers can transform their quality of life by organising themselves. Similar arrangements can be developed for small farmers and NTFP gatherers of forest villages.

### **LESSONS**

- Small farmers, as a member of the cooperative, can be empowered to negotiate with the market.
- The cooperative helps in maximising the share of primary producer/collector in consumer rupee.

### **CONSTRAINTS**

Co-operative laws: The present Co-operative laws of the state do not provide opportunity to set up business enterprises which are truly co-operative in nature i.e. which provide services to members, give returns to them on their uses of the services, and are controlled democratically by the user members. Control by members includes their right to define their co-operative, its membership, its services, to decide on management structure, on the staff, on investment of funds, on liquidation, subject to only such restrictions as are reasonable. The Andhra Pradesh Mutually Aided Co-operative Societies Act 1995 can be adopted to overcome these constraints.

Leadership: People with ability to lead a business enterprise are needed for successful operation of such cooperatives. People with such abilities are not readily available. In Gujrat and Maharastra, leadership traits are prevalent in certain communities.

community organised around natural resources

### **JFM COMMITTEES**

The communities are being organised around forests near their villages throughout the country. The initial results have been very encouraging. Around twelve thousand committees have been constituted in different regions of the state. It is estimated that a total of over 5.4 million-hectare of forest are now under Joint Forest Management arrangement.

#### ***Tale of a Frontline Manager***

*The villagers of Kalapani Forest Village in Betul district, Madhya Pradesh fondly address Mr Ram Charan Sahu, the local forest guard as 'dadda' i.e. elder brother in recognition of his contribution to the village. Sahu, 54, was posted in Pathai beat in 1992 under which the village of Kalapani falls. At that time villagers were in direct conflict with local forest officials owing mainly to grazing and timber removal practices in violation of existing rules. Sahu too initially came in conflict with villagers, but, after interacting with villagers he realised that unemployment is the main issue to be tackled if relations with villagers were to be improved. However, as forest guard he did not have much to influence the higher bosses in the department to start employment in the village, yet he kept on thinking about the problem.*

*Then in 1994 he had the opportunity to attend a workshop in which the then PCCF urged foresters to implement JFM in the village by forming village level committees. This, according to Sahu, ignited his thought process and thus Kalapani forest protection committee- the first in the district-was formed. Sahu now spent his energy in convincing villagers about the benefits of collective action and motivated the villagers to collect Mahua (*Madhuca latifolia*) a minor forest produce and sell it in the market. This provided income to villagers and earned some profit to the committee. For next three years he scaled up activities by collecting Deenanath grass seeds that provided large-scale employment to villagers and earned profit to forest committees though it entailed many problems related to marketing. Sahu on realising the potential of agriculture in the village focussed his attention on developing lift irrigation in the village with the help of other government departments. This was not easy to accomplish as other departments seldom pay heed to the requests of a lowly placed staff from other departments. However, with his good behaviour and concerted efforts he succeeded in establishing network with higher officials of other departments, which he used for mobilising resources. Now the village has 65-hectare out of 202 hectares land under irrigation against negligible irrigated land earlier and agricultural output has almost doubled. The committee has now purchased a tractor out of its savings to help villagers.*

*The generation of employment from forests convinced the villagers about the need to protect the forests and now the villagers practice rotational grazing and have given up the habit of cutting timber and pole for selling in the market. Now they have taken up plantation of fruit bearing species on their land and along roadside in the village.*

*Source: Dharmendra Verma (Pers. Communication)*

### **LESSONS**

The conditions of the forests and forest dwellers have improved wherever the foresters and the local community have made sincere efforts to reverse the trend of degradation and develop village resources.

There has been a marked change in the work environment that allowed freedom of expression and experimentation. As a result, it provided scope for 'learning by doing' to the middle level managers. Yet, the role of the front-line managers and the village leaders can not be undermined, as formation and effective functioning of committees largely depend on their capacities to change. The experience has shown that a well-planned capacity building program can change the attitude of both partners and build their capacity for managing forests jointly. Commitment among foresters for social development seems to be essential for sustainable JFM arrangement.

## **CONSTRAINTS**

Local public servant and/or local leadership inspired by value have been found to be necessary for well functioning of committees. Community organised around financial resources

Self Help Groups of Women, initially formed for thrift and credit, have been found to be very effective in empowering women in Andhra Pradesh, Tamilnadu, Orissa, and to some extent in Madhya Pradesh. Initially these groups provide loan to its members for consumption purposes, festivals and ceremonies. Gradually they start supporting the production base of their members. Federation of such groups has been able to establish banks. The SHGs provide protection and security to the members, from the exploitation of the moneylenders, and most important make the poor women bankable. The economic empowerment of poor women has ensured them sustainable livelihood. Overall there has been positive impact of SHGs on economic, social, cultural and political life of women.

### ***Importance of Thrift***

*Most important of all reasons for a thrift cooperative's popularity perhaps is the universal urge and need to save regularly and to borrow in times of need. What is also attractive is the control over one's savings, the almost visual display of the use of funds that a thrift cooperative offers, the dignity with which one can borrow from a thrift cooperative and a member's sense of personal confidence and desire to be associated with the thrift cooperative.*

*Source: CDF Hyderabad*

## **Lessons**

They have been found very useful for empowering women.

## **Constraints**

Successful SHGs have federated and formed co-operative in Andhra Pradesh under Mutually Aided Co-operative Societies Act 1995. Such act would be required for future growth of the SHGs.

Community has been also organised around social ties and communal traditions in the country. Watershed development program in Rajasthan highlights how people's efforts can be drawn upon their communal traditions. The User Committees in this programme have been able to build upon their successes in achieving self-sufficiency in food, fodder and fuel wood, and take the initiative for new development activities ranging from literacy to savings and poultry and rabbit raising.

### **Kribhco Experience**

*With financial and technical support from the UK, in the early 1990s the Kribhco Indo-British Rainfed Farming Project (KRIBP) was established to improve the livelihoods of poor farming families in the Bhil tribal region of western India. Community Organizers were given the responsibility and flexibility to support the development of village-level institutions based on their own analysis of the local social situation. Despite some broadly common features of social organization in the area, the organizers quickly discovered that villages were far from homogenous units.*

*Consequently, efforts to create village-wide groups proved unworkable: they excluded some village hamlets and kin-groups within villages; they tended to be dominated by established village leaders; women had a limited role; and, "membership did not imply that groups had any significant social existence". In response, the KRIBP fostered the establishment of smaller (collective) groups that shared some combination of familial, communal or social norms and practices. Depending upon their specific interests, these groups undertake various agricultural and natural resource management related activities.*

*Source: Jim Bingen, 2000<sup>3</sup>*

### **Lessons**

Catalytic agents should use such potentials for village level institution building.

### **Constraints**

Groups organised around social; ties and communal traditions may have problem in federating with other groups.

### **PROJECT AIM**

The aim of the project is to expand human capacity and enable individuals, households and communities to strengthen sustainable livelihoods for themselves.

### **OBJECTIVES**

1. To build the capacity of individuals, households and groups so that:
  - They improve their assets,
  - They have more ability to influence structures and processes making them more responsive to their needs.
2. To improve inter-sectoral co-ordination and demonstrate the impact of synergy to the villagers.
3. To create opportunities for marginalised people to influence the decisions and processes affecting their lives by establishing more effective 'micro-macro' link.

### **PROPOSED STRATEGY ELEMENTS OF STRATEGY**

#### **PEOPLE-FOCUSED**

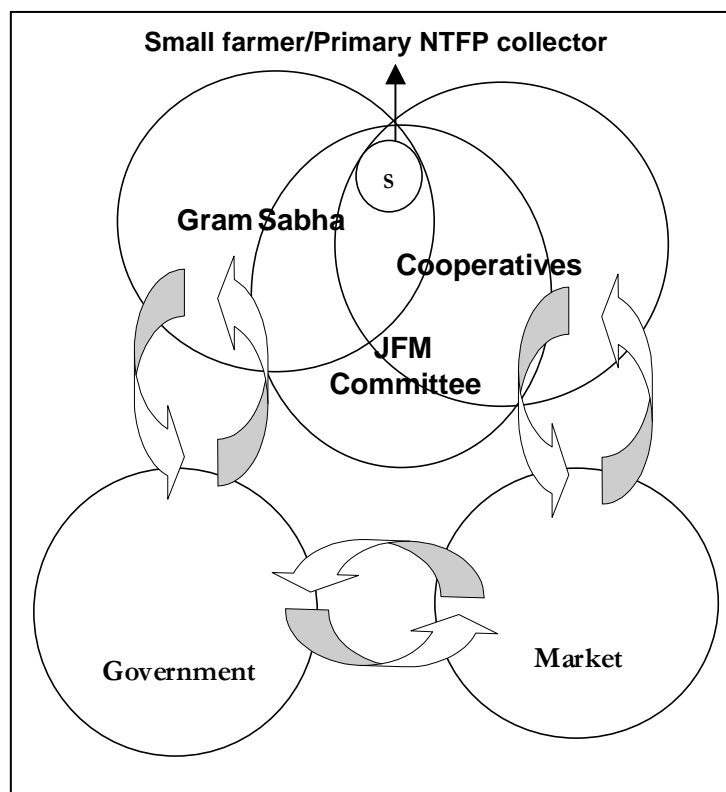
Sustainable livelihoods approach has evolved from thinking about poverty as a problem of lack of income, through the basic needs approach, then an emphasis on food security and vulnerability, and finally more recently an approach to poverty programs which focuses on the provision of health and education services by government.

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<sup>3</sup> Jim Bingen, 2000. Institutions and Sustainable Livelihoods, Michigan State University, The Sustainable Livelihoods E-Mail/Web Conference, FAO, Rome.

**A sustainable livelihoods approach is likely to encompass elements of all these aspects, but focuses on capacities rather than needs, assets and strengths rather than weaknesses and constraints.** The government policies and decision-making about both public resource allocation and the set of government departments have an impact on all these elements. Perhaps the most immediate impact is on the stock of assets, or access to those assets, many of which are either public goods, such as infrastructure, or the outcome of the provision of public goods, such as education. Only empowered groups will have more ability to influence government structures and processes so that these become more responsive to their needs.

### Model for Empowering small farmer/NTFP collector



The small farmers or primary collectors of NTFP can maximize their share in consumer Rupee only through institutions like cooperatives that provide them opportunity to reduce the cost of production, increase productivity and add value to their products so that they can sell directly to the consumers.

Small farmers or primary collectors of NTFP require market as well as political goods for sustainable livelihoods. Equal opportunity to small farmers or primary collectors of NTFP can only be ensured when they have more ability to network and capacity to influence market and government. At a very minimum, human capital investments offer the promise of enabling people to liberate themselves from the “ties that exclude.” In particular, these investments in human capital may provide the marginalized groups the opportunity not only to build and strengthen their other assets, but also to use them as a means for enhancing their livelihood strategies. The strategy would be to form or strengthen various types of community institutions like Gram Sabhas, Co-operatives formed around commodity, Self help groups of women and JFM committees so that small farmers or primary collectors of NTFP develop capacity to influence government and market.



## *INTER-SECTORAL CO-ORDINATION*

The experiences so far indicate that the inter-institutional co-ordination in the field largely depends on the inter-personal relationship of the middle level managers with their counterparts in other departments. The inter-personal equations in the field keep changing because of frequent transfers. The personal traits of middle level managers that support the collaborations between institutions are not shared equally by all incumbents. Government attempts to ensure inter-departmental linkages through formation of committees and organizing monthly meetings have not yielded very good results. Change is often a long-term process. Consequently, short-term targets and objectives need to be set. There should be clear and visible 'wins' for key stakeholders. Government efforts to bring all agencies under one umbrella have not yielded very good results therefore; attempt should be made to develop clusters of natural allies (departments). Catalytic agents (Govt. departments) would have to demonstrate benefit of synergy if they expect people to believe in collective action.

## *FLEXIBLE AND PROCESS ORIENTED*

Flexibility in implementation would be the single most important features of project implementation. The 'process' includes actions, the sequence in which they are carried out, a direction or purpose and an environment in which it all occurs. The processes that build synergy among catalytic agents, communities and between these two groups would be identified. The empowerment of small farmers and primary collectors of NTFP is a key feature of the project therefore, the project implementers should have the capability to respond to (newly) empowered people's demands and concerns. The social capital can be transformed in new settings – i.e., as people work together another type of social capital emerges, then projects need the flexibility to respond to this 'emergent capital' and to explore how it might be 're-invested' in other opportunities to enhance people's livelihoods.

## *CLUSTER APPROACH*

Forest villages in some districts do occur in cluster but they are also scattered in some districts. If only forest villages are covered under the project, it would be difficult to get the scale of economy in value addition of natural products. The revenue villages adjoining scattered forest villages would also be included in the project area. For co-ordination purposes, the project area should be normally co-terminus with the area of jurisdiction of frontline managers of important developmental departments. The area of jurisdiction of frontline managers of important developmental departments are normally not co-terminus, therefore, the villages under the jurisdiction of beat guard would be included in the project area.

## *MICRO-MACRO LINK*

Processes would be identified and adopted for establishing effective micro-macro link. The village level experiences would be used to initiate change in structure and processes.

## **PROJECT COMPONENTS**

### ***capacity building***

The project would focus on building capacity of:

- Staff of key departments engaged in rural development, who would work as a catalytic agent in the project area and
- Individuals, households, groups and communities of the project area.

## **CAPACITY BUILDING OF CATALYTIC AGENTS**

The public servants traditionally work as individual subject specialist providing support from a predetermined menu of possible inputs. Catalytic Agent is one who facilitates analysis, selection and action by villagers in an open-ended way. To work as catalytic agent in a multi-sectoral team, they would require acquisition of new knowledge, skills and behavior. They would be encouraged to learn and demonstrate new ways of dealing with each other and with villagers.

In last few years, there have been significant changes in the organisational culture of Forest Department. It has become more participatory but the changes are not uniform across the ranks and files of the organisation as "the transition from authoritarian to participatory rarely comes easily".

Combined training program, study tours and workshops would be organised for the multi-sectoral team at front line, Block and district level. NGOs would also be encouraged to participate in the team. The trained team would develop strategic plan for intervention in village clusters. By planning together they would have common mission and common understanding of how they are going to operate. Individual Team members will be responsible for their program areas, and the Team will be responsible for integrated strategic planning, development of unified budget proposals, and coordination of activities within the cluster.

The multi-sectoral teams would also be responsible for providing enabling environment to the villagers, which means:

- People know about their legal rights.
- People know about the government programs and their entitlements.
- There is sufficient access to authority and appeal procedures to protect these rights and settle disputes.
- If public servants do act in negative ways, there is an accessible body that can deal with complaints in a constructive way.

## **CAPACITY BUILDING OF VILLAGERS**

Capacity of the communities would be built to manage initiatives for site specific planning, execution and evaluation; and manage conflict. The capacity building plan to be prepared jointly by the catalytic agents and the villagers would be based on the assessment of training need of individuals, households, groups and communities.

## **ENTRY POINT ACTIVITY**

The experiences indicate that the entry point program help in organizing community for collective action. A small amount for each village would be provided for entry point activity that would be used to fulfill some felt needs of the village during process of formation of committees. The catalytic agents would communicate the experiences of different types of community organizations working in different regions of the country along with its advantages and limitations. They would encourage villagers to organize in different ways based on the potential of the village.

## **MICROPLANNING**

The microplan would be prepared jointly by trained catalytic agents and the villagers. The microplan would include plans to improve the assets of the villagers using resources from the ongoing development programs of the government. The villagers would be encouraged to use resources for primarily working on strength rather than weakness of the villages. The project funds would be normally utilised for the activities listed below apart from the capacity building.

## **AGRICULTURE LAND & WATER MANAGEMENT**

Agriculture in forest villages to a very large degree continue to be rain fed and mono cropped. Declining level of agricultural land productivity could be primarily attributed to:

- inadequacy of some of the most critical inputs including inadequate soil (on account of most of the land being on slopes) and water and to inadequate agronomic practices;
- Per unit area productivity of the land being low, the villagers prefer extensive, rather intensive cultivation. Such extensive cultivation practices often lead to encroachment of new areas.

One of the key components of the programme would be to support the forest village communities in restoring the productive potential of the agricultural lands with in their possession, which will significantly contribute towards over all food security of the households. The project will provide for investments like soil and water conservation measures and minor irrigation works to help the people in raising the productive potential of the limited land in their possession by moving on to multiple cropping system. The project will seek to strengthen eco-friendly agronomic practices and would invest in field demonstrations on the principles of farmer's field school.

The project would therefore support investment in land and water related activities to help the farmers in restoring and sustaining the productivity of the agricultural land, legitimately in their possession. Such investment should consider micro water shed, as unit of intervention and would include soil and moisture conservation measures, minor irrigation structures etc. The project would promote investment in all such measures that contribute towards ecologically sustainable agriculture.

The project would also support improvement in inland fisheries - in natural streams, ponds and tanks by removing key constraint to aqua-culture.

## **COMMUNITY BASED FOREST MANAGEMENT**

The Govt. policy and legislation of last one decade has progressively resulted in increased access / tenurial security of Forest Villages over the forest produce. Sustainable harvest, processing and trading of NTFP constitute a tremendous opportunity to enhance livelihood security of the forest villagers. It will also provide for enrichment planting /seedling of NTFP species including medicinal plants and raising of nurseries. The project would support investment to help the forest villagers (user groups) to build forward / backward and horizontal linkages in order to develop it into a viable and profitable enterprise. Land less population (Thaluas) of the forest villages would be the special target group of such intervention.

The project will also support and strengthen the ongoing initiatives of forest protection committee in order to reinforce the reciprocal commitment of these committees towards forest protection and regeneration. The project will support setting up of community forest management fund. The initial trench of money in the fund can accrue on account of the reciprocal commitment of village community (committee) towards forest protection.

## **LIVESTOCK PRODUCTION IMPROVEMENT**

Project will focus at livestock improvement by systematically addressing and overcoming the most important factors which on one hand limit the contribution of livestock to the forest village livelihood and on the other hand undermine ecological considerations. The project will include provision of animal health thereby empowering people to reliably keep their animals alive in the face of epidemic diseases. The

programme will include enhanced grass / fodder production on account of (1) improved grazing management (rotational /deferred grazing) in the adjoining forest and (2) by exploiting niches created through water shed development. Having over come the major constraints to existing system, the project will then facilitate the evolution of these systems in direction chosen by livestock keepers, through a process of action learning and technology development, improved forward/backward linkages, testing and adaptation. Vaccination of animals, as a preventive step for animal health as well as to stop disease spread in surrounding wild animal, population will also be taken up.

## **VILLAGE COMMON FUNDS & SHGS**

The project strategy clearly lays down assistance to the people in building various types of community institutions that could help them in influencing both the market and the Government.

The experience of VFC as FPC in operating the village common fund (or revolving fund) will be made use of. The project will support strengthening of such community institution by building on to their strengths and overcoming the constraints. Use of VFC for productive purpose will be promoted.

Project will support development of available finance system in the project area by promoting Self Help Groups. In addition to capacity Building, the SHG promotion would involve mobilisation of funds, mainly through members savings, complemented by the seed capital assistance from the project to these groups to encourage their capital base. The groups will be encouraged to make use of existing govt. schemes on SHGs to enhance their capital base. The project will also facilitate networking of cluster of SHGs in order to facilitate exchange of ideas.

## **HEALTH & NUTRITION**

Given the difficult geographic locations, the health service so far had a very limited out reach in the forest villages. The project will assist the community in engaging Gram Swasthya Rakshk, provide for their training and for Medicine Kit (one time investment). While selecting the health workers, preference would be given to the traditional health workers within the community. The training programme for health workers will include building on to the elements of Traditional Health System and its integration with the referral services with Primary Health Centers. The health workers in tandem with the Anganwadi workers (Anganwadi scheme of Govt.) will also provide a Nutritional Educational Programme to pregnant mothers and children under five. In brief, the health and nutrition component of the Project, will on one hand reinforce/ strengthen the out reach of Public Health System of Govt., at the same time it will promote community Traditional System of Medicine as well.

## **PROJECT IMPLEMENTATION**

### ***FORMATION OF A POWERFUL CHANGE TEAM***

The project will finance setting up of a Project Management Unit (PMU) and a task force under Additional Principal Chief Conservator of Forest (Development). Overall responsibility of the project implementation will rest with a full time Project Manager (a Sr. D.C.F or C.F.). The Project Manager will have a team of support staff. A task force would be constituted at Bhopal to establish Macro-micro link in project areas. Other members of the task force will be drawn from line departments and will be providing part time services for which they will be adequately compensated by the Project. The task force will also supervise the Project implementation through periodic field visits (6 monthly basis).

The PMU will hire services of a professional, for process documentation, and the report/feedback will be made by the task force and the field implementers. Overall responsibility of Training need assessment, hiring of training resources / coordination will be done by the PMU. The Project leader would be primarily responsible for providing support to field units and monitor the progress during implementation of the project and establishing effective co-ordination among various departments at government and head of the department level.

### **CREATING SENSE OF URGENCY**

Without a sense of urgency, often based on a (potential) crisis, there is little incentive for change. The 'sense of urgency' to change should exist right from the top management up to frontline managers where policies are actually translated into actions. Workshops would be organized at the beginning of the project for the district heads of developmental departments along with other government servants working in the project area. The secretaries and head of the departments of developmental departments would be requested to communicate jointly and directly to the employees of the project area during these workshops. The workshops would be used for creating vision and developing strategies to achieve the vision. This vision should be communicated widely throughout the organisation, to all levels including frontline staff. The new coalition would be encouraged to set an example of participatory attitudes and behaviour

### **IDENTIFY PROCESSES FOR INTEGRATION**

The processes that would help in horizontal and vertical integration of various sectors would be identified and adopted during the implementation of the project. Some of them have been mentioned in the table.

	<b>Level</b>	<b>Processes for Integration</b>
1	State	<ul style="list-style-type: none"> <li>• Monitoring of the Project by the Empowered Committee</li> <li>• Instructions to District heads of various departments to be issued with Joint signatures of Principal Secretaries of Key development departments.</li> </ul>
2	HOD	<ul style="list-style-type: none"> <li>• Joint meetings</li> <li>• Jointly address the district heads of key departments in workshops</li> <li>• Review state level report prepared by the task force</li> </ul>
3	District	<ul style="list-style-type: none"> <li>• Joint Training of District heads of key departments.</li> <li>• Joint participation in developing strategic plan for the block.</li> <li>• Joint supervision and synthesis of six monthly report.</li> </ul>
4	Block	<ul style="list-style-type: none"> <li>• Joint Training of Block Level Managers (BLM) of key departments.</li> <li>• Joint participation of BLM of key departments in developing action plan for the block</li> <li>• Joint supervision and preparation of six monthly supervisory report.</li> </ul>
5	Village Cluster	<ul style="list-style-type: none"> <li>• As far as possible the Project area should be co-terminus with the jurisdiction of Front line Managers (FLM).</li> <li>• Joint Training of FLM of key departments.</li> <li>• Joint participation of FLM of key departments with the villagers in Micro-planning, implementation, monitoring and evaluation.</li> </ul>

## PROJECT SUPERVISION

The supervision mission would give attention to who gets what, when and how, as to who is setting what rules, when and how. In doing so, it should be possible to identify the ways to improve effective functioning of different structures and processes that influence both the access to assets and the livelihood strategies that are open to the poor. Instead of processes that should work for public servants, in too many cases public servants seem to work for the processes. A major goal of supervision would be to remedy this situation. The processes would be simplified so that they work effectively for the public and public servants. These processes will be redesigned to provide better public service, reduce red tape, and make work lives of public servants better and more rewarding. This should be possible with the micro-macro communication link in monitoring. The supervision mission would closely monitor the progress of the project through elaborate field visits, prepare reports and make presentation before the empowered committee. Primarily, they will make recommendations for process and structure related changes that can ensure small farmers to get their entitlements. The policy changes would be initiated on the issues emanating from such discussions. Thus a macro-micro link would be established to promote enabling environment for the villagers.

## PROJECT COST

### COMPONENTS WISE PROJECT COST SUMMARY

	Component Activity	% of Total Base Cost	Remarks
1	Capacity building Of Catalytic agents Of communities.	10 %	If we pick up an envisaged cost estimate for RS. 7 Lakhs/ Village, then the total outlay for 1346 FVs and 656 revenue villages around them will be around 140 crore. As per the base cost breakup- the absolute cost could be assigned to components. This cost would be spread over four years.
2	Entry point Activities	15 %	
3	Land & Water Management	25 %	
4	Community based Forest Management	25 %	
5	Production System Enhancement	10 %	
6	Health & Nutrition Services	10 %	
7	Project Management	3 %	
8	Contingencies	2 %	

41.

## **TRAINING NEED ANALYSIS FOR STAKEHOLDERS IN FOREST DEVELOPMENT AGENCY – AN INNOVATIVE INTEGRATED APPROACH IN SUSTAINABLE FOREST MANAGEMENT**

A K Bhattacharya and Yogesh Kumar

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### ***Abstract***

*Forest Development Agency has established as a new integrated holistic approach towards sustainable forest development. Being an innovative and multistakeholders based tool, capacity building is an essential key element of the whole programme. The paper describes briefly the objectives and processes of the FDA programme and attempts to identify the areas of the capacity building for the stakeholders based on the perceptions of the various stakeholders. The paper focusses on the areas and components for training, objectives, methodology, tools and agencies for the training programme.*

### **BACKGROUND**

The Indian forestry sector has witnessed a major policy shift during the last decade towards more decentralized and people-oriented forestry. To improve the existing afforestation schemes all the programs were merged and were redesigned as the National Afforestation Programme. NAP is envisioned to improve the quality of life and self-sustenance aspect of people living in and around the forests.

National Afforestation Program (NAP) has been formulated by merger of four ninth plan centrally sponsored afforestation schemes of the ministry of environment and forests namely, Integrated afforestation and eco development projects schemes (IEAPS), Area oriented fuel wood and fodder projects schemes (AOFFPs), Conservation and Development of Non-timber forest produce including medicinal plants schemes (NTFS) and association of Scheduled tribes and rural poor in regeneration of degraded forests (ASTRP) with a view to reduce multiplicity of schemes with similar objectives, ensuring uniformity in funding pattern and implementation mechanism, avoiding delays in availability of funds to the field level and institutionalizing peoples participation in project formulation and its implementation. The scheme will be operated by the national afforestation and eco development board ministry of environment and forests, as a 100% centrally sponsored scheme.

### **OBJECTIVE OF THE SCHEME**

#### ***SHORT-TERM OBJECTIVES***

- Regeneration and eco development of the degraded forests and adjoining areas on a watershed basis.
- Augmentation of the availability of fuel wood fodder and grasses from the regenerated areas.
- Securing peoples participation in planning and regeneration efforts to ensure sustainability and equitable distribution of partnership concept in the management and administration of forests forest products from the regenerated land and to promote the and common property resources.
- Promote agroforestry and development of common property resources.

- Promotion of fuel saving devices to encourage efficient use of fuelwood and to reduce the drudgery of rural women involved in collection of wood as also to improve the environment
- Conservation and improvement of non-timber forest produces such as bamboo, cane and medicinal plants
- Encourage production of NTFP such as wax, honey, fruits and nuts from the regenerated areas.
- Develop water resources through plantation and water harvesting programs
- Development and extension of improved technologies such as clonal propagation and use of root trainers for raising seedling, mycorrhizal inoculation etc
- Rehabilitation of special problems lands
- Employment generation for the disadvantaged sections of the society particularly women, scheduled caste/tribes and landless rural labourers inhabiting forests and adjoining areas.

### LONG-TERM OBJECTIVES

- Protection, conservation of natural resources through active involvement of the people.
- Checking land degradation, deforestation and loss of bio-diversity
- Ecological restoration and environmental conservation and eco-development
- Evolving village level people's organisation, which can manage the natural resources in and around villages in a sustainable manner
- Fulfillment of the broader objectives of productivity, equity and sustainability for the general good of the people.
- Improve quality of life and self sustenance aspect of people living in and around forest areas
- Capacity endowment and skill enhancement for improving employability of rural people.

The proposed National Afforestation Programme is to be implemented by Forest Development Agencies (FDAs), the two-tier structure. The FDA comprises of two bodies as its governing bodies: Executive body and General body.

<b>Executive Body</b>	<b>General body</b>
<ol style="list-style-type: none"> <li>1. Office holding members:</li> <li>2. Chairperson: conservator of forests</li> <li>3. CEO cum member secretary: Divisional Forest officer</li> <li>4. Ex-officio members</li> <li>5. Zila panchayat</li> <li>6. DDO</li> <li>7. DDA</li> <li>8. Executive engineer R.E.S</li> <li>9. Deputy director animal husbandry</li> <li>10. Tribal coordinator Tribal welfare</li> <li>11. Executive engineer P.H.E</li> <li>12. District industries officer</li> <li>13. District education officer</li> <li>14. 15 members of the JFMCs including seven women are the non-official members.</li> </ol>	<ol style="list-style-type: none"> <li>1. Conservator of forests</li> <li>2. Divisional forest officer</li> <li>3. SDO</li> <li>4. Range forest officers</li> <li>5. One non official representative of the panchayat</li> <li>6. 11 presidents of all the 11 JFMCs are the members.</li> </ol>



**Capacity Building** has been identified as one of the critical elements for the effective implementation of the NAP. There is an urgent need to develop and/or strengthen human resources and institutional capacities for programme.

**Training Need Analysis** for stakeholders in FDA involved three basic steps:

1. The present level of knowledge and skills of a person or target group to be trained (the present capacity) was determined.
2. The standard level of competence required for efficient work performance of each personnel group (the standard capacity) was communicated, discussed and explored.
3. The difference between the present and the standard capacities (the knowledge/ skills gap) were ascertained and identified as gap. The gap reflects the deficiency that can be bridged by training.

A TNA is necessary for each key training target group assigned to a specific task (e.g., Financial record keeping). Since each task is defined clearly, the required standard capacity is known. Thus, it is easy to compare the present capacity with the required standard to ascertain the gap to be bridged through training.

### Process

The Training Needs Analysis during the FDA workshops conducted had three main steps:

1. The primary step involved orienting the participants of the workshop towards NAP, FDA and related roles and responsibilities of the key players.
2. Two well designed focus group sessions were held to obtain qualitative information from members.
3. Analysis of all the data and drafting of the final documents to highlight the training requirements of the key players of the project.

### Target Group and their corresponding tasks

The various target groups/ stakeholders of the project and the general tasks identified for each of them is as under-

Group	Tasks
CEO/DFO	Formulate and execute sustainable management plans for concerned FDAs.
SDO	Monitoring and Evaluation, Interdepartmental and intrainstitutional (FDA) coordination
Range Officer	Directly oversee operational activities of field staff and community mobilisation
Dy Ranger	Regular monitoring of project activities at grassroot level.
Forest Guard	Carry out field activities in coordination with community
Chairperson-JFMC & members of executive committee	Carry out field activities for sustainable forest management and village development.

Since these groups have different job descriptions, they have different training requirements; therefore it is necessary to assess the nature and scope of their work to determine their training needs. Likewise, stages of forest development and management vary in various regions and related tasks and training needs may differ among divisions. The participants during the workshops participated in focussed group discussions and their ideas were compiled to come up with following outcomes/ recommendations:

**RECOMMENDATIONS / OUTCOMES:**

<b>Trainee group</b>	<b>Identified needs (from TNA)</b>	<b>Objectives of training</b>	<b>Training Method &amp; Technique</b>	<b>Agency</b>
<b>CEO/DFO</b>	Project Management	Emphasis on management, leadership qualities, initiative, planning and conceptual abilities.	Lecture cum discussion.	IIMs, IIFM
<b>SDO</b>	Knowledge of the Participatory monitoring and evaluation techniques.	To familiarize them with the participatory M&E techniques so that its implementation can promote people-oriented forestry.	Lecture cum discussion, Brain Storming,	IIFM
	Interdepartmental Coordination	Clarification of the role of various departments like Animal husbandary, Agriculture, Health etc in achieving the project goals.	Brainstorming.	Departmental Heads.
<b>Range Officer</b>	Extension Skills	To provide planners/decision maker at range level with the skills necessary to undertake cost-benefit analysis of implementing activities at operational planning levels	Self Analysis Technique, Role Playing, Lecture cum discussion, Simulation Games	IIFM. Social Science faculties from Universities in the region.
	Communication Skills			
	Team Building			
	Negotiation Skills			
<b>Dy. Ranger</b>	Soil and Moisture conservation	To strengthen the technical skills and thus enabling them to guide community in the field.	Lecture cum discussion, Field visit to success and failure sites.	WALMI, Bhopal. Regional Agriculture colleges
	Financial Records	To provide them with skills so that they are able to monitor and inspect regularly at grassroot level.	Training through placement.	Accountant/ Clerk of division Office, CAs
	Micro-planning, PRA	To eliminate dependency on external agencies for micro-planning.	Lecture cum discussion, Demonstration, field exercise.	Social scientists, NGOs
	Extension Skills	To enable them in transferring the ideas from concepts/laboratory to field by strengthening their documentation and presentation skills.	Lecture cum discussion, Demonstration	Master trainers from state training & research institutes.

<b>Forest Guard/ Member Secretary - JFMC</b>	Maintenance of Financial Records	To make them efficient in carrying out their role in dealing with financial matters.	Training through placement.	Accountant/ Clerk of division Office, CAs
	Micro-planning, PRA	To enable their active participation in the planning process at grassroot level.	Lecture cum discussion, Demonstration, field exercise.	Social scientists, NGOs
	Soil and Moisture conservation	To strengthen the technical skills and thus enabling them to guide community in the field.	Lecture cum discussion, Field visit to success and failure sites.	WALMI, Bhopal. Regional Agriculture colleges,
	Institution Building	To orient with FDA structure, JFM rules, Change management, institutional conflicts and conflict management.	Lecture cum discussion	Master trainers from state training & research institutes, University teachers.
<b>Chairperson-JFMC &amp; members of executive committee</b>	Technical know-how of forestry operations	To establish improved community based forest management practices among FDA Samitis with help of chairperson.	Field demonstration	Forest Department
	Soil and Moisture conservation	To make them self-reliant in creating structures and establishing other SMC measures with minimum external support.	Lecture cum discussion, Field visit to success and failure sites.	WALMI, Bhopal. Regional Agriculture colleges.
	Institution Building	To orient with FDA structure, JFM rules, Change management, institutional conflicts and conflict management.	Lecture cum discussion	Master trainers from state training & research institutes, University teachers.
	Accounting	To develop capability for dealing with the financial transactions at JFMC level.	Lecture and exercises.	Accountant/ Clerk of division Office, CAs

	Micro-planning, PRA	To ensure active participation of community in the planning process and using participatory technique to build rapport, elicit support, information and participation of the people in their own development.	Lecture – cum - discussion, Demonstration, field exercise.	Social scientists, NGOs
	Agro-forestry	To promote silvicultural practices on the private and community farmlands.	Lecture cum discussion, Field visit to success and failure sites.	Agriculture and forest department
<b>Women Members</b>	Gender Sensitization	Sex & gender issues in the process of development especially rural development.	Role Playing, Lecture cum discussion.	Women Master trainers from state training & research institutes, University teachers.
	IGA oriented skills like Decentralised Nursery Raising	Capability endowment and skills enhancement for improving employment opportunities for the rural people.	Lecture cum discussion, Demonstration, Visit to successful entrepreneurs.	SEDMAP-Bhopal, Forest Department
	Alternative energy resources	To promote use of Non conventional energy resources	Lecture cum discussion, Demonstration, Field visit to success and failure sites.	Non-conventional energy resource Department.
	Self Help Group	To promote thrift and credit activities among women	Lecture cum discussion, Visit & interaction with other successful groups.	NGOs
	Socio-cultural milieu and women's empowerment	Capacity building of women representatives esp. their role in decision making coupled with programme (FDA).	Lecture cum discussion and role playing	Women Master trainers from state training & research institutes, NGOs

**PART - IV**

**NON TIMBER FOREST PRODUCE**

**MANAGEMENT**

42.

## NON TIMBER FOREST PRODUCTS (NTFP), LIVELIHOODS AND NUTRITION INTERFACE - A STUDY FOR THE TRIBAL COMMUNITIES OF MADHYA PRADESH AND MAHARASHTRA STATES IN INDIA

A K Bhattacharya and Krishna Patra

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### **Abstract**

*The paper deals with the relationship between the tribal communities and the NTFP used for their livelihood and nutrition in the forests of Betul District of Madhya Pradesh and Melghat District of Maharashtra with special reference to Gond and Korku tribal communities. The study area includes tribal dominated forests. The methodology adopted includes collection of secondary and primary data through participatory household surveys. Thirty major NTFP species have been recorded in the study area, out of which few NTFP are used for self-consumption, few for sale and some of them for both the purposes. Nutritional assessment of the NTFP shows that underweight is maximum (64.8 %) among the children and 51.80% in adults. The results of the chemical analysis of the species have been discussed and done and compared with the standards prescribed by the ICMR. The study reveals that the tribal communities are heavily dependent upon NTFP for their livelihood and nutrition. The study has looked into the details of the dependence of tribal communities upon the forests for their sustenance, nutrition and livelihood. Recommendations for proper strategy have been made for better utilisation of NTFP.*

### **INTRODUCTION**

Forests are the giver of life to millions of people worldwide. Tribal communities have their own ways of life, cultural identities and customary modes of living. For centuries they have lived in isolation, far away from the national mainstream. They have worshipped their deity whom they identified with their landscape and nature. Their isolation has kept them socially, economically and politically isolated with accompanying impediments of poverty, malnutrition, ignorance and exploitation. The colonial groups look to these social groups from the point of view of maintenance of law and order whereas the social scientists as objects of social antiquities to be preserved in isolation. Tribal population in India is about 8%. 70% of these tribes are concentrated in Madhya Pradesh, Chattisgarh, Bihar, Jharkhand, Maharashtra, Gujarat, Rajasthan and Orissa (Sah 2003)<sup>1</sup>. Their lives are closely intertwined with nature; they are born, brought up and die in the close vicinity of forests. Forest is the common thread in all their aspects of life, whether it is marriage, livelihood or death. No other set of humans has such a symbiotic and peaceful coexistence as tribal communities have with nature.

Thus forests and tribal communities are inseparable as long as forests exist. The entire gamut of activities that the tribals undertake is linked with the forests. In tribal dominated regions, forests provide resources for food, cloth and shelter. These forests also satisfy cultural and religious aspirations of these people. Forests have not only contributed towards providing succour to the tribal communities but are also instrumental in the economic upliftment of the tribal. Widespread poverty resulting in chronic and persistent

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<sup>1</sup> Sah DC, 2003. Continuity and change; Tribal society in South –Western Madhya Pradesh. 'Madhya Pradesh Journal of social Sciences' vol.8.,no.1,pp.12-36.

under-nutrition. This condition of under-nutrition reduces work capacity and productivity and enhances mortality and morbidity. Such reduced productivity translates hunger is the single and biggest scourge of the developing world today resulting in into reduced earning capacity leading to further poverty, and the vicious cycle goes on (National Nutrition Policy 1993)<sup>2</sup>. The health status of tribal women is found to be lower than that of the average Indian woman in general due to gaps in knowledge regarding the health (Basu 1993)<sup>3</sup>.

Forests provide NTFP, which play a major role in the tribal economy. NTFP play a key role in the life and economy of communities living in and around forests. NTFP are used in the form food, fodder, fiber and household articles, medicinal and ornamental forms, and supplement their income, specially during lean seasons, besides providing religious and aesthetic needs (Vidhyarthi and Gupta 2001)<sup>4</sup>. To a vast majority of tribal people, extraction, processing and marketing of NTFP is a source of employment throughout the year and the income generated by NTFP significantly contributes to household income in tribal areas (Saravanan 2003)<sup>5</sup>. In India, over 50% of forest revenues and 70% of export income are from NTFP collected from forests (Campbell 1993<sup>6</sup>; Bhat *et al* 1992<sup>7</sup>). It also provides 50% of income for 20-30% of rural people in India (Sekhar *et al* 1993)<sup>8</sup>. In a tribal economy, NTFP can bring stability to the life of the people and lead to their sustainable livelihoods. Thus proper management of NTFP is essential to improve the livelihood and nutrition of the tribal.

Both the major tribal groups of the study area, i.e. Korcu and Gond, depend to a large extent on NTFP for their livelihood and nutrition; hence it is essential to estimate the contribution of NTFP in the nutrition and economy of these tribal communities (Bhattacharya *et al* 2003)<sup>9</sup>.

## OBJECTIVES

The study was conducted with following objectives -

- Identify NTFP species used as the food in the region.
- Examine the present and the potential contribution of the NTFP to the economy of the *Gond* and *Korcu* tribal communities of the study area.
- Identify nutritional status of the tribal communities of the study area.
- Suggest future strategy and formulate systems for the sustainable management of the NTFP for the sustainable development of the *Tribal communities*.

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<sup>2</sup> DWCW, 1993. National Nutrition Policy. *Govt. of India*. Department of Women and Child Development, Ministry of Human Resource Development. New Delhi.

<sup>3</sup> Basu SK, 1993. Health Status of Tribal Women in India. *Status paper for the national Workshop on "Status of Tribal Women in India" organised by Council for social Development, New Delhi and sponsored by National Commission for Women, New Delhi (22-23 Dec'93)*

<sup>4</sup> Vidhyarthi AK & Gupta HS, 2001. Non Wood Forest Produce in Village Economy –A Case Study in ChotaNagpur Region ,Bihar. *Journal of Tropical Forestry*. Vol 17(2), pp.18-23.

<sup>5</sup> Saravanan S, 2003. , Marketting of NTFP andFunction of LAMPS in Salem District of Tamilnadu. *My Forest* Vol.39(2) June 2003.

<sup>6</sup> Campbell JY, 1993. Putting the peoples product First; NTFP and the challenges of managing forest to enhance local income. *Proceedings of the international seminar on MFP in Forestry, Dehradun India*.

<sup>7</sup> Bhat JP, Singh R & Sharma LR, 1992. Tribal Farming Systems in mountainous region of North west India, *Indian J.Agri.Econ*, 47(3):430.

<sup>8</sup> Sekhar C, Ravi Vinaya Rai R & Surendran C, (1993). Price regime analysis marketing and trade of MFP – A Case Study . *Centre for MFP, Dehradun, India*.

<sup>9</sup> Bhattacharya AK, Sinha VK, Saxena VK, Tiwari P, & Patra K, 2003. Contribution of the Non Wood Forest Products in the nutrition and the livelihood of the Tribal Communities in the Betul Forests for Madhya Pradesh and the Melghat forests of Maharashtra. *Project Report .IIFM*.

## STUDY AREA

The study was aimed to assess the contribution of NTFP in nutrition and livelihood of the tribal communities of *Betul* forests of Madhya Pradesh and *Melghat* forests of Maharashtra. Both the forest areas fall in the *Satpura* mountain range. The study area falls in the tribal sub plan and the study aimed to explore the changing food habits among the forest dependent tribal communities. From each of these forest areas two villages were selected to conduct the study.

### ABOUT BETUL FOREST DIVISION

The study area comprises major portion of Betul and Shahpur tehsils, predominantly (40.24%) populated by tribal communities. The main tribes of Satpura ranges are Gond and Korku (Working plan, Betul forest division). The two villages selected in this division are Kathawadi and Muda.

**Kathawadi** : Kathawadi is a revenue village dominated by Gond tribe. Population of the village is 489 and there are 76 households in the village. The village is about 11 Km from NH 69. The nearest market for the village is Shahpur. The village has a government school up to eighth standard and the forest area is about 2Km from the village. The village has electricity facility.

**Muda** : Muda is a forest village populated mainly by Gond and Korku tribes. A few households of people of schedule caste are also living in the village. Total population of the village is 706 from 117 households. One *Anganwadi*, a primary level school and electricity connectivity are few government facilities available in the village. The village is surrounded by forests and villagers depend heavily on forest resources for their daily requirements. The village is about 20 Kms from NH 69. The nearest market for the villagers is Bhaurra on NH 69.

### About Melghat Forest Division

Melghat Forest Divisions (East and West) and the Melghat Tiger Reserve fall in Amravati district of Maharashtra State. Vegetation of a large portion (30-70%) of the area was clear felled and planted with teak *Tectona grandis* interspersed with *Adina cordifolia*, *Anogeissus latifolia*, *Lagerstroemia parviflora*, *Mitragyna parviflora*, *Terminalia tomentosa*, *Dalbergia paniculata*, *Sterculia urens*, *Acacia catechu*, *Gmelina arborea*, *Lannaea grandis*, *Chloroxylon swietenia*, *Clistanthus collinus*, *Ougeinia dalbergioides*, *Soyimida febrifuga* etc. The understorey consists of *Lannaea coromandelica*, *Diospyros melanoxylon*, *Cassia fistula*, *Dendrocalamus strictus*, Orchids, ferns, grasses and other herbs. The Korku tribal communities form a large percentage of the population. Hataru and Chaurakund are the two villages selected from this division .

**Hatru** : The village falls in Melghat Tiger Reserve. The village is 36 Km from *Semadoh*, the main market for the villagers. The village is connected to the main market by a bus. The population of the village is 906 belonging to 128 households. Korku is the dominant tribe in the village with more than 80% of the households in the village. The village has a school up to eighth standard with hostel facility for students (*Ashram Shala*). The village has a primary health centre, veterinary hospital and a post office. The village is about 1 Km from forest area.

**Chaurakund** : The village also falls under Melghat Tiger Reserve. There are three communities in the village namely Korku, Gwali and Gond. Population of the village is 852 belonging to 108 households. The village has a primary school, Health sub-centre and one *Anganwadi*. The village is 12 Km from the main market, Dharni.



## METHODOLOGY

### DATA COLLECTION

The study is based on the primary data obtained from the field data as well as the secondary data (reports, literature, etc) obtained from the Forest Department, journals and other sources.

#### **Selection of Villages and households**

Since this study is exploratory in nature, from each of the two regions one revenue village and one forest village were selected, so as to study the contribution of NTFP in different administrative settings, which were believed to offer variances. In *Kathawadi* and *Muda* villages of Betul Forest Division all the households present in the village were covered in the study (except a few of the households which had migrated for harvesting winter crop in the nearby areas). In *Chaurakund* and *Hatru* villages of Melghat forest division about 50% households were covered in the study (as the villages were very large). The selection of households in these villages was again based on the presence of the members of the household in the village.

#### **Survey Techniques**

The study was carried out through Focus group discussions and scheduled interviews. The interview schedule covered the enquiry about the food consumption pattern including the types of foods consumed by the communities specially the vulnerable groups. Before the actual detailed survey of the target villages, a pilot survey was conducted in *Kalapni* and *Pathai* villages of Betul Forest Division to test and validate the personal interview schedule. Focus group discussion was carried out initially in these villages to identify groups having different NTFP consumption pattern; this was followed by household survey through interview schedules. The aspects included demography, occupation, agriculture, attitudes and dietary practices in health, anthropometric measurements (height and weight) for nutritional assessment etc. The information and data collected were confirmed and validated through triangulation by making repeated queries to tribal people in the same or other villages and also from the staff of the Forest Department. Their daily menu was also taken into consideration.

## CHEMICAL ANALYSIS

The samples of available NTFP consumed by the villagers were collected for chemical analysis to ascertain their nutritional values. The chemical analysis was carried out at Laxminarayan Institute of Technology, Nagpur.

## RESULTS AND DISCUSSION

The population distribution pattern under different age groups is given in Table 1.

**Table 1 - Age profile of the study Population (Maximum and Minimum)**

S. No.	Age group	Village (%)	Village (%)
1	0-5 (Pre-school)	Kathawadi (18.2)	Muda (16.7)
2	6-16 (School- going)	Muda (27.9)	Chaurakund (22.5)
3	17-26 (Adolescent and early adulthood)	Hatru (20.5)	Kathawadi (15.3)
4	27-40 (Adulthood)	Kathawadi (25.97)	Muda (18.99)
5	41-55 (Middle age)	Muda (13.98)	Chaurakund (9.8)
6	> 55 (Old age)	Chaurakund (8.1)	Hatru (5.0)

The analysis of the table indicates that the maximum population is that of school going children (6-16 years) in Muda and the minimum population is in Hatru that of older people (> 55 years old).

The list of NTFP consumed by the tribal communities of the study is given in Table 2. There are thirty NTFP species found in the area.

**Table 2 - List of NTFP species found in the area**

Name of NTFP		Name of NTFP		Name of NTFP	
Local	Botanical	Local	Botanical	Local	Botanical
Aam	<i>Mangifera indica</i>	Bhilwa	<i>Semecardium anacardium</i>	Kolar Bhaji	<i>Bauhinia</i> sp
Achar	<i>Buchanania lanzan</i>	Dondera		Kusum	<i>Schleichera oleosa</i>
Adhkand	<i>Dioscorea</i> sp	Garadu	<i>Dioscorea</i> sp	Leja	
Aonla	<i>Phyllanthus emblica</i>	Gataru	<i>Dioscorea bulbifera</i>	Maener	
Baheda	<i>Terminalia bellerica</i>	Gular	<i>Ficus glomerata</i>	Mahua	<i>Madhuca latifolia</i>
Baichandi	<i>Dioscorea hispida</i>	Harra	<i>Terminalia chebula</i>	Marodphalli	<i>Helecteres isora</i>
Bans	<i>Dendrocalamus strictus</i>	Imli	<i>Tamarindus indica</i>	Mati	
Bel	<i>Aegle marmelos</i>	Jamun	<i>Syzygium cumini</i>	Musli	<i>Chlorophytum</i> spp
Ber	<i>Zizyphus jujuba</i> <i>Z. mauritiana</i>	Jirola		Seetaphal	<i>Annona squamosa</i>
Bhamauri / Pihari	<i>Psalliota campestris</i>	Kabit		Tendu	<i>Diospyros melanoxyton</i>

The quantity of NTFP collected in the area and their different uses to the villagers is shown in Table 3.

**Table 3 - Collection and use of various NTFP in the project area (Kg)**

Species	Collection	Sale (%)	Consumption (%)
Mahua	10639	3530 (33.2)	7109 (66.8)
Bans	1306	0 (0)	1306 (100)
Gataru	1208	0 (0)	1208 (100)
Musli	1171	1112 (95)	59 (5)
Bhamauri	1151	4 (0.3)	1147 (99.7)
Tendu	867	256 (29.5)	611 (70.5)
Jamun	711	27 (3.8)	684 (96.2)
Aachar	536	344 (64.2)	192 (35.8)
Kolar	454	0 (0)	454 (100)
Dodera	421	0 (0)	421 (100)
Aonla	514	294 (57.2)	220 (42.8)
Aam	224	24 (10.7)	200 (89.3)
Imli	220	38 (17.3)	182 (82.7)
Gular	218	0 (0)	218 (100)
Ber	154	10 (6.5)	144 (93.5)
Bechandi	152	0 (0)	152 (100)
Bel	151	0 (0)	151 (100)
Kusum	129	0 (0)	129 (100)

Being dry deciduous forests the villagers mostly collect NTFP like Mahua, whose flowers are collected in large amounts mainly for consumption. Some species like Musli are collected exclusively for selling purpose, but most of the NTFP in the tribal areas are collected for self consumption as shown by the following Table 4.

**Table 4 - Purpose of collection of NTFP**

Classes (%)	Sale	Consumption
91-100	Musli (95)	Bans, Gataru, Baichandi, Bel, Kusum, Bhamauri, Jamun
81-90	---	Aam, Imlil
71-80	---	Tendu
61-70	Aachar (67)	Mahua
< 61	Mahua, Tendu, Jamun, Aonla, Aam, Imlil, Ber	Musli, Aachar, Aonla

Collection of NTFP like honey, fish, meat of wild animals is not included in the table, as their collection is limited and prohibited in the study area.

Some of the NTFP are used as source for additional income generation (Table 5).

**Table 5 - Income from sale of NTFP in percentage**

Name of NTFP	Chaurakund	Hataru	Kathabadi	Muda	Total
Aachar	0	2.7	19.35	20.43*	16.85
Aonla	3.3	0	10.05*	6.34	7.98
Mahua	23.33	53.61	67.57*	53.53	59.26
Musli	52.80*	43.64	2.45	5.68	10.28
Tendu	0.29	0	0.36	11.66*	3.02
Other	20.28*	0	0.22	0	2.58
Avg. Income (Rs) / household / season	67.00	23.30	305.76	99.65	122.62

*The figures with asterisks indicate the maximum contribution of individual species to the income generation by sale of NTFP (%).*

*Mahua* is an important income generating NTFP in all the villages, where as *Musli* is significant in Melghat region. But *Aachar* is a major cash-earner only in the Betul region of the study area.

The average range of income generated from NTFP at village level is Rs 305.75 per household per season (Kathabadi) and 23.30 (Hataru). Of the total income that accrues from sale of, about sixty percent is from sale of Mahua. This trend is more or less the same in Hataru, Kathabadi and Muda. Other species that are sold in the market are *Aonla*, *Musli* and *Tendu*. Sale of all other species comprises only 2.58% of the total income generated from NTFP. This is because of high consumption and low availability.

The average income of the households from sale of NTFP is Rs 122.62 in the project area. Income from sale of NTFP is lowest in Chaurakund (55% of the average income from sale of NTFP) and highest in Kathabadi (249% of the average income from sale of NTFP).

Income from sale of NTFP other than mentioned above is almost negligible in three out of four villages. In Chaurakund other NTFP like *Aam*, *Baheda*, *Ber*, *Imlil* and *Jamun* were also reported to be collected for sale in open market. Contribution of *Aachar* in Chaurakund and Hataru is insignificant but good in Kathabadi and Muda. On the other

hand contribution of Musli is significantly high in Chaurakund and Hataru while less in Kathabadi and Muda. The reason for this is that Musli is getting reduced over the years because of destruction by wild animals like wild boar and improper harvesting techniques over the years. NTFP like *Ber*, *Imli*, *Jamun*, *Aam* and *Baheda* are found in low quantity in Kathabadi.

## NUTRITIONAL ASSESSMENT OF THE TRIBAL COMMUNITIES

Village wise data on the Nutritional Assessment for the children and adults are discussed below. Categories of the Various groups according to the BMI ranges are given in the following tables.

### ***Nutritional Status of children in Hataru***

Three out of four male children in the village are underweight. More than sixty percent of the children are underweight in the village irrespective of sex (Table 6 A).

**Table 6. A: Nutritional status of children in Hataru**

Sex	Total	BMI (18.5 or less)	Percentage (underweight)
Girl	56	33	58.9
Boy	51	39	76.4
Total	111	72	64.8

### ***Nutritional Status of children in Chaurakund***

Figures in Chaurakund reveal the same as that of Hataru. More than half of the children in the village are underweight and the percentage is high in boys than in girls (Table 6 B).

**Table 6. B: Nutritional status of children in Chaurakund**

Sex	Total	BMI (18.5 or less)	Underweight (Percentage)
Girl	47	23	48.9
Boy	31	20	64.5
Total	78	43	55.1

### ***Nutritional Status of children in Kathabadi***

The difference in percentage of underweight Boys and Girls in the same village is not much, though the percentage of underweight adults is high when compared with all the other villages (Table 6 C).

**Table 6 C: Nutritional status of children in Kathabadi**

Sex	Total	BMI (18.5 or less)	Underweight (Percentage)
Girl	21	10	47.6
Boy	36	20	55.6
Total	57	30	52.6

### ***Nutritional Status of children in Muda***

Muda records lowest percentage of underweight children to the total number of children in the village. But the situation is not much better; more than two-fifth of the children in the village are underweight (Table 6 D).

**Table 6 D: Nutritional status of children in Muda**

Sex	Total	BMI (18.5 or less)	Percentage (underweight)
Girl	10	4	40

Boy	15	7	46.7
Total	25	11	44

Nutritional status of children in the project area is poor and more than fifty per cent children are underweight.

### **NUTRITIONAL STATUS OF ADULTS IN THE PROJECT AREA**

More than half of the adults in Cchaurakund are underweight and on an average two out of every five adults in the project area are underweight (Table 6 E).

**Table 6 .E. Nutritional status of adults in the project area**

Village	Total	BMI (18.5 or less )	% underweight
Chaurakund	135	70	51.80
Hataru	183	65	35.51
Kathabadi	106	41	38.70
Muda	136	59	43.40
Project area	560	235	41.96

More than half of the adults in Chaurakund are underweight and on an average two out of every five adults in the project area are underweight.

### **Chemical Analysis of the Species**

Some of the important NTFP consumed by the tribal communities were collected for chemical analysis to ascertain their nutritional values. The analyses of the samples were carried out at Laxminarayan Institute of Technology, Nagpur.(Table 7).

**Table 7 - Chemical analysis of selected species consumed**

S No	Name of the NTFP	Nutrient per 100 gm	Standard (ICMR)	Nutrients in collected samples (LIT)	% Deviation
1	Mahua ( <i>Madhuca latifolia</i> )	Energy (Kcal)	111	98	- 11.7 %
		Protein (gm)	1.4	2.2	+ 57 %
		Carbohydrate (gm)	22.7	19.7	- 13.2 %
		Fat (gm)	1.6	1.2	- 25 %
		Moisture (gm)	73.6	74.4	+ 0.01
		Fiber (gm)	Not available	1.5	****
2	Achar ( <i>Buchanania lanzan</i> )	Energy (Kcal)	88	325.9	+ 270.3 %
		Protein (gm)	1.9	12.9	+ 578.9 %
		Carbohydrate (gm)	19.8	60.7	+ 206.5 %
		Fat (gm)	0.1	3.5	+ 3400 %
		Moisture (gm)	76.2	3.4	+95.5
		Fiber (gm)	1.1	14.2	-1190.90
		Phosphorus (mg)	41	0.01	-99.97
		Vit. C. (mg)	7	2.38	- 66
K (mg)	Not available	0.1	****		
3	Doomer ( <i>Ficus glomerata</i> )	Energy (Kcal)	37	344.82	+ 831.9 %
		Protein (gm)	1.3	17.2	+ 1223.07 %
		Carbohydrate (gm)	7.6	263.8	+ 3471.05 %

		Fat (gm)	0.2	2.3	+ 1050 %
		Moisture (gm)	88.1	3.3	- 96.25 %
		Fiber (gm)	2.2	8.6	+ 290.9
		Vit. C. (mg)	5.0	2.72	+ 45.6 %
4	Pihari ( <i>Psalliota campestris</i> )	Energy (Kcal)	43	365.6	+ 750.23 %
		Protein (gm)	3.1	30.4	+ 880.64 %
		Carbohydrate(gm)	4.3	5.1	+ 18.6 %
		Fat (gm)	.8	4.4	+ 450 %
		Moisture (gm)	88.5	8.3	- 90.62 %
		Fiber (gm)	0.4	2.3	+ 475 %

Nutrient content of the some of the major NTFP species used for consumption

#### **Achar- *Buchanania lanzan***

The seed contents 35.38-47.23% of its which shows moisture 4.9-5.6; Nitrogen 10.81-11.57 and Protein 67.56-72.31 (Mitra and Malhotra 1980).

#### **Ber-*Zizyphus jujuba***

Nutritious and rich in vitamins. It is reported to be richer than apple in vitamin 'C' protein, phosphorus and minerals and has higher Iron and calorific value than Oranges (Sood et al 1980).

#### **Tendu- *Diospyros melanoxylon***

Fruit has Ash 3.75, Nitrogen 1.43, Phosphate 0.0125; Potassium 0.146; and Calcium 1.32. The seeds contain Ash 4.10; Nitrogen 1.36; Phosphate 0.0425; Potassium 0.132 and Calcium 1.35% (Rathore 1972).

#### **Imli- *Tamarindus indica***

The pulp contains moisture 20.9; Protein 3.1; Fat 0.1; Fibre 5.6; other Carbohydrate 67.4; and minerals 2.9%; Calcium 170; Phosphorus 110 and Iron 10.9mg / 100gm; Carotene 60g /100gm

#### **Bel -*Aegle marmelos***

Contains 61.5gm water; 1.8 gm Protein, 55gm Carotene, 0.13mg, Thiamine 1.19mg, Riboflavin 1.1mg, Niacin 8mg per 100gm of edible portion of vitamin 'C', edible Protein 64% (Gopalan et al 1971)

#### **Gataru - *Dioscorea bulbifera***

Albuminoids 7.36-13.31; Ash 3.31-7.08; Fat 0.75-1.28; Carbohydrates 75.11-81.39; Fibre 3.28-9.64 and P2O5 4.45-7.7% (WI 3:72)

#### **Aonla -*Embllica officinalis***

89% edible Protein; Moisture (g) 81.08; Carbohydrates (g) 13.7; Protein (g) 05; Fat (g) 04; Vitamin C (mg) 600.

#### **Mango-*Mangifera indica***

Edible Protein % (74), Moisture (g) 81.0; Carbohydrate (g) 16.1; Protein (g) 06; Fat (g) 04; Vitamin C (mg) 16.

#### **Jamun - *Syzigium cumini***

Edible protein % 75.0; Moisture (g) 83.7; Carbohydrate (g) 14.0 ; Protein 2.; Fat (.3), vitamin C (mg) 225

#### **Gular - *Ficus glomerata***

Moisture 13.6; Albuminoids 7.4; Fat 5.6; Carbohydrate 49.0; Colouring matter 8.5; Fibre 17.9; Ash 6.5; Silica 0.25 and phosphorus 0.915 (WI4:35)

**Baichandi - *Dioscorea hispida***

Albuminoids 7.20-9.12; Ash 4.05-4.61; fat 0.97-1.10; Carbohydrate 81.45-81.89; Fiber 3.28-6.28 and P205, 0.52-0.77% (WI3;74)

**Mahua - *Madhuca latifolia***

Edible Protein 2.2; Moisture 74.4; Fat 1.2; Minerals 1.1; Fibers 1.5; Carbohydrate 19.7; Calories 98 (A. P. Dwivedi 1993)

**Kusum - *Schleichera oleosa***

Moisture 86.2; Protein 1.5; Fat 0.8; Minerals 1.0; Fibers 0.6; Carbohydrate 9.9 and Calories 53.

(Source : Analysis by Laxminarayan Institute of Technology, Nagpur)

## CONCLUSION

The role NTFP in the life of people living in villages in and around forests cannot be gainsaid. The study area, i.e. the two forest divisions of Melghat and Betul, has huge forest resources and the tribal communities of the areas are quite dependent on these resources. Forest produce like fruits and berries are collected and consumed by children throughout the year. Other forest produces like vegetables, leaves and other food items are collected by women for domestic consumption. Adults are involved from time to time on collection of NTFP for domestic as well as for selling in the market. Income generating activities, though, are few and barely able to meet the cash requirement of the households. Therefore, purchase of food items is limited and villagers have at times no option but to dwell in forests for survival, especially in the lean season. Malnutrition among children is a common phenomenon in the study area. Weight-height for age criterion used to calculate the nutrition status of children indicated the malnutrition and underweight status of the children. The percentage of malnourished (underweight) children is high. Results for adults were not different signifying an inadequate diet lacking both in quality as well as quantity.

Cash income sources to the villagers are limited but this do not reflect the true status of poverty; many of their needs are met through the forest resources. Average income of almost all the households surveyed was less than defined by the government of India as above poverty line (income more than 24,000), therefore all these families need to be covered under schemes like Swarnjyanti Gram Swarojgar Yojna; however, very few development schemes reach people in real sense. 30 NTFP were found to be collected by the villagers. Out of these, mahua, *gataru*, *aonla*, *aachar*, *bhamuari*, *bans* and *musli* are commonly collected by villagers for sale as well as for domestic consumption. Mahua is the most important NTFP of the area. Mahua is collected for both consumption as well as sale by most of the households covered in the study. The percentage of underweight is the maximum in Chaurakund out of the four villages. The percentage of underweight children is highest in Hataru and lowest in Muda. Muda has lowest of NTFP consumption and lowest of agricultural production in the project area and still the percent of underweight is lowest in the project area. The conclusion that can be drawn from the above analysis is that NTFP plays a significant role in the present livelihood and nutritional status of the tribal communities in the study area.

## RECOMMENDATIONS

The recommendations have been made on the basis of the following basic parameters, which emerged during the study -

- Income generating activity
- Decreased diet both in quantity as well as in quality
- Decreased literacy rate
- Decreased development schemes

The following recommendations have emanated from the study -

1. Traditional management and conservation methods must be promoted for these natural resources and the concern should be addressed at national, state and local levels.
2. There must be strict regulatory measures to curb the widespread practice of overexploitation including overgrazing.
3. New policy ought to be established on traditional systems and local level initiatives to develop strategies for management of community resources.
4. Action-oriented research should be carried out to investigate and test alternative approaches in improving the delivery of such services (like Integrated Child Development Scheme, Family Welfare Programmes, etc) and showing greater responsiveness to the PTG needs.
5. Government should support the efforts by NGOs and private sector in this field, whose flexibility, innovative methods and field experiences allow them to design and implement services with objectives and components that cut across sectors, thereby addressing broader development concerns.
6. Subsidised commercial marketing and incentives should be designed for employment related insurance policies.
7. An effective participatory strategy should be developed for further development of production, marketing and integration consumption of NTFP into the health care system. The development strategies have to be planned with both short term and long-term perspective.
8. Efforts should be made to generate and share information regarding the species of medicinal and economic importance and conservation concerns.
9. NGOs may be identified and encouraged which will go a long way in supplementing and complementing the efforts of the state in bringing about the comprehensive development of the tribal communities.
10. The focus on management, conservation and sustainable development of forest ecosystems, forest enhancement and greening and ensuring equity through participatory management (ICFRE 1994)<sup>10</sup> should be strengthened.
11. Socio-economic research and development of forest communities living below poverty line should be enhanced through the development of NTFP.



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<sup>10</sup> Tewari DN, 1994. ICFRE and Sustainable Development. *Indian Forester* Vol . 120(11) Nov.1994.

43.

## SEASONAL AVAILABILITY AND CONSUMPTION PATTERN OF NON WOOD FOREST PRODUCTS (NWFP) AS FOOD AMONG BAIGA PRIMITIVE TRIBE GROUP OF DINDORI DISTRICT OF MADHYA PRADESH, INDIA

A K Bhattacharya, Piyusha Tiwari, Krishna Patra, and V K Sinha

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### **Abstract**

NWFP constitute an integral component of the food for the communities dependent on forests. Their role becomes more significant for less agricultural dependent communities with small land holding residing in remote forests. In order to assess the role of NWFP based food habits of such communities, a preliminary study was carried out in one of the most forest dependent tribes of India i.e. Baigas, living in remote "Chadha" village of Dindori district of Madhya Pradesh.

### **INTRODUCTION**

NWFP have been defined as "all goods of biological origin other than wood as well as services derived from forests and allied land uses" (Anon, 1995)<sup>1</sup>. From time immemorial people, especially tribals, have been dependent on the forests for various valuable biological resources like timber, fuel wood, food resources, medicines and other extracts many of which have no replacement by modern cultivation options. NWFP play an important biological and social role in local food systems for the people living in and around the forests as they depend heavily on forests resources to meet their day-to-day requirements. The communities living in close vicinity of forests are particularly more dependent for their needs of livelihoods and food security. NWFP are most extensively used to meet dietary shortfalls and to supplement household income during particular lean seasons in the year. Many agricultural communities suffer from seasonal food shortages generally known as "hunger periods". These commonly occur at the time of year when stored food supplies have dwindled and new crops are only just arriving (Anon, 2002)<sup>2</sup>. During this period the consumption of NWFP increases. In many States of India, specially, Bihar, Orissa, Madhya Pradesh and Himachal Pradesh, 80 percent of forest dwellers depend on forests for 25-50 per cent of annual food requirements (Malhotra et al, 1992)<sup>3</sup>.

### **OBJECTIVES**

The present study is an attempt to assess the role of NWFP in the food habit of one of the most forest dependent communities, the Baiga tribe of Dindori district. Baigas is one of the Primitive Tribe Groups (PTG) of Madhya Pradesh.

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<sup>1</sup> Anon, 1995. *Report of the Expert consultation on Non-Wood Forests Products*, Yogyakarta, Indonesia, 17-20 January 1995. Non-Wood Forests Products 3. FAO, Rome

<sup>2</sup> Anon, 2002. Non-Wood Forests Products and Nutrition, Food and Nutrition Division, FAO Rome, URL - Vs754015htm.

<sup>3</sup> Malhotra KC, Poffenberger M, Bhattacharya A & Dev D, 1992. *Rapid appraisal methodology trials in Southwest Bengal: assessing natural forests regeneration patterns and non-wood forests product harvesting practices*. *Forests, Trees and People Newsletter* 15/16:18-25.

The specific objectives of the study were as follows -

- *Analysis of the consumption pattern of NWFP among the Baiga PTG in different seasons*
- *Analysis of the food intake of Baiga tribe*
- *Identification of NWFP which play an important role in food availability during different seasons*

## METHODOLOGY

Dindori region of Madhya Pradesh is tribal dominated area. Baiga is the most dominant tribe of the District. They are not limited to one place, but inhabit inaccessible, difficult and treacherous areas (Mishra & Tiwari, 1989)<sup>4</sup>. The *Chadha* village of Dindori District was selected for the present study because of the dominance of the Baiga PTG in the area, location and accessibility. 75 families out of total 85 families of Chadha belong to Baiga PTG. The survey was carried out through focus group discussions and scheduled interviews. Six focus group discussions were carried out in six different settlements of *Chadha* village, while survey through scheduled interviews was carried out in one of these settlements with fifty out of the total seventy-five households in the settlement. The information collected through the focus group discussions and the household survey were validated through the official records, like Working Plans and the officials of the local Forest Department.

## RESULTS AND DISCUSSION

Detailed information about the seasonal availability of the NWFP, the collection period, consumption pattern and quantity collected have been summarised in Table -1.

### **Food (agricultural produce) availability in different seasons**

Agriculture crops like *Zea mays* (Maize), *Paspalum scrobiculatum* (Kodo), *Panicum sumatrense* (Kutki) and *Guizotia abyssinica* (Ramtila) are grown in the area. Inadequate irrigation infrastructure restricts farmers to only *Kharif* crop during rainy season. Land holding of the villagers is small (about one ha per household) and the average family size is 5.5. The total population of the study area is 481, and the population of the adult (in the age group of 19 to 60) is 232. *Zea mays* (Maize) and *Cassia tora* (Charota Bhaji - NWFP) form staple diet of the villagers and are consumed throughout the year. Availability of food declines in summers and during onset of rainy season. During this time of the year villagers are most dependent on forests food to meet the shortfall in agricultural produce and daily food requirement of the family.

### **NWFP availability in different seasons**

Thirty-three major NWFP species (as explained in Table 1) have been reported to be collected by the villagers in *Chadha* for bonafide consumption. These do not include fish and flesh availability to villagers. However the villagers resort to fishing on regular basis. Most of the species collected are used for domestic consumption, however few species like Sal (*Shorea robusta*) seeds, Tendu (*Diospyros melanoxylon*) leaves and Harra (*Terminalia chebula*) are collected by the villagers and sold to the Forest Department. Besides, some NWFP are sold after meeting the domestic consumption in open market, as well. The collection period and quantity depend on the availability of the NWFP. Majority of species are available during the months of April to July, maximum being

<sup>4</sup> Mishra Seema and Tiwari PD, 1989. *Food Habits of Baiga tribe of Mandla (M.P.)*. In : *Tribal Ecosystem and Malnutrition in India*, Edited by P.D.Tiwari, pp143-146.

available during June (62.78%) followed by May (44.18%), April (41.86%) and July (41.86%).

### Collection and consumption pattern

Out of the total NWFP being consumed, 59 % are consumed as fruits, whereas 25% are consumed as leaves, 13 % as tubers and 3 % as entire plant.

Most of the NWFP other than mushroom and leaves are collected during March to June. For collection of NWFP villagers go deep inside the forests and cover long distances, ranging from 2 to 5 kms. Some NWFP, like Charota Bhaji (*Cassia tora*), Gular (*Ficus glomerata*) etc., primarily used for consumption are found adequately in and around villages. Some of the NWFP are consumed mainly as leaves, for example Charota (*Cassia tora*), Pipal (*Ficus religiosa*), Dudhia (*Euphorbia hirta*), Saroota (*Polycarpon prostratum*), etc. These leaves are collected from June to September when the leaves are new and young. Leaves of *Charota* are collected from July to September and dried and stored for consumption throughout the year. Tubers (rhizomes) of few *Dioscorea* species like *Kanhaya Kand*, *Birar Kand*, *Kadukand* etc are collected and consumed throughout the year. Mushroom (*Agaricus sp*), locally called as "Pihari" in local dialect, is collected by villagers from July to August. Many varieties of mushrooms like *Chirkoo*, *Bhodo*, *Sarai*, *Kathor* etc are collected by villagers. Consumption of mushrooms depends upon the quantity collected; larger the collection, higher the consumption.

The average collection period per household varies from species to species and also depends on the availability in a particular year. In good production year the period goes up to two months for few species like *Agaricus sp* (Mushroom), *Mangifera indica* (Mango), *Dioscoria spp* (Lohrangi Kand and Birar Kand), *Cassia tora* (Charota Bhaji), *Bauhinia purpurea* (Kolar Bhaji) etc. The average collection days for majority of the NWFP collected are ten to thirty.

The average total quantity of the NWFP collected per year per household has been found to be 493.88 kgs *Embllica officinalis* is collected in maximum quantity (46 kg / HH / year) followed by *Terminalia chebula* (44.16 kgs / HH / year), *Agaricus spp* (43.63 kgs / HH / year) and *Mangifera indica* (40 kgs / HH / year). The majority of the NWFP are consumed as raw (36.25 %). 32.87 % NWFP are consumed both raw as well as cooked and others as cooked (30.87 %).

**Table-1 : Seasonal availability and Consumption Pattern of NWFP**

<b>Botanical name (Family)</b>	<b>Local Name (Edible Part) (Collection area - number)</b>	<b>Collection Period (days - Av / HH)</b>	<b>Quantity Collected (kg) - Av / HH</b>	<b>Mode of Consumption (Consumption period)</b>
<i>Aegle marmelos</i> (Rutaceae)	Bel (Fruit) (Chada -1)	May- June (10 - 30)	3.5	Raw (May- June)
<i>Agaricus spp</i> (Agaricaceae)	Putu / Pihari / Chirku / Bhodo (Entire) (Chada -2-5)	July - August (15-60)	43.63	Cooked (Throughout the year)

<i>Antidesma acidum</i> (Euphorbiaceae)	Amlar (Leaves) (Chada -6)	March –June (15- 30)	12.0	Cooked (March –June)
<i>Bauhinia purpurea</i> (Leguminosae)	Kolar (Leaves) (Chada -7)	June – July (5-20)	4.3	Cooked (March– June)
<i>Buchanania lanzan</i> (Anacardiaceae)	Achar (Fruit) (Chada - 8)	April- May (5-15)	11.0*	Raw (Throughout the year)
<i>Bauhinia variegata</i> (Leguminosae)	Kachnar (Fruit/ Flower) (Chada - 9)	March- April (5- 20)	2.2	Raw / Cooked (March – April )
<i>Cassia fistula</i> (Leguminosae)	Amaltas (Fruit) (Chada -10)	June- July (5-15)	1.83	Raw (June – July)
<i>Cassia tora</i> (Leguminosae)	Charota (Leaves) (Chada -11)	Aug- Sept. (15-60)	35.0	Cooked (Throughout the year)
<i>Catunaregam spinosa</i> (Rubiaceae)	Maener (Fruit) (Chada -12)	June – July (10-30)	23.75	Raw/ Cooked (June- July)
<i>Chlorophytum tuberosum</i> (Liliaceae)	Musli (Tuber) (Chada -13)	March – June (15-40)	12.25*	Raw/ Cooked (March –June)
<i>Coccinia indica</i> (Cucurbitaceae)	Kundru (Fruit) (Chada -14)	July – Aug (5-15)	1.00	Cooked (July- August)
<i>Dioscorea Bulbifera</i> (Dioscoreaceae)	Karukanda (Tuber) (Chada -15)	June – July (15-30)	14.5	Cooked (June- July)
<i>Dioscorea hispida</i> (Dioscoreaceae)	Baichandi (Tuber) (Chada -16)	Dec- June (10-30)	15.0	Cooked (Dec- June)
<i>Dioscorea spp</i> (Dioscoreaceae)	Kirchi Kand Kanhaiya Kand Lohranghi Kand Bihar Kand (Tuber) (Chada- 38- 41)	Oct - Feb (5 - 30)	38.95	Raw (Throughout the year)
<i>Diospyros melanoxylon</i> (Ebonaceae)	Tendu (Fruit) (Chada-17 - 18)	April- June (10-30)	6.8	Raw (April –June)
<i>Emblica officinalis</i> (Euphorbiaceae)	Aonla (Fruit) (Chada -19)	Dec- March (10-30)	46.0*	Raw/ Cooked (Throughout the year)
<i>Euphorbia hirta</i> (Euphorbiaceae)	Dudhia (Leaves) (Chada -20)	June – July (5-15)	3.25	Cooked (June – July)
<i>Ficus glomerata</i> (Moraceae)	Gular (Fruit) (Chada -21)	March – June (10-30)	8.66	Raw (March –June)

<i>Ficus religiosa</i> (Moraceae)	Pipal (Leaves) (Chada -22)	May – June (5-15)	7.5	Cooked (May- June)
<i>Ficus virens</i> (Moraceae)	Pakri (Leaves) (Chada -23)	March – June (5-15)	9.2	Cooked (March- June)
<i>Gmelina arborea</i> (Verbenaceae)	Khamar (Fruit) (Chada -24)	March – June (10-15)	0.6	Raw (March - June)
<i>Homonoia riparia</i> (Euphorbiaceae)	Soore (Fruit) (Chada -25)	May (5-30)	12.0	Raw (May)
Flowering spp	Honey (Chada -26)	November - January (5 - 10)	5.6	Raw (Throughout the year)
<i>Madhuca indica</i> (Sapotaceae)	Mahua (Fruit) (Chada-27 - 28)	March – April (5-20)	30.0	Raw/ Cooked (Throughout the year)
<i>Mangifera indica</i> (Anacardiaceae)	Aam (Fruit) (Chada -29)	April – July (15-40)	40.0***	Raw/ Cooked (Throughout the year)
<i>Polycarpon prostratum</i> (Caryophyllaceae)	Saroota (Leaves) (Chada -30)	June – July (10-30)	2.6	Cooked (June- July)
<i>Schleichera oleosa</i> (Sapindaceae)	Kusum (Fruit) (Chada -31)	Feb – March (5-15)	8.16	Raw/ Cooked (June – July)
<i>Semecarpus anacardium</i> (Anacardiaceae)	Bhilwa (Fruit) (Chada -32)	March- April (10-30)	15.75	Raw (March – April)
<i>Syzygium cumini</i> (Myrtaceae)	Jamun (Fruit) (Chada -33)	June – July (10-15)	12.33	Raw (June – July)
<i>Strychnos nuxvomica</i> (Loganiaceae)	Kakodi (Leaves) (Chada -34)	June-August (10-30)	4.5	Cooked (June-August)
<i>Terminalia bellerica</i> (Combretaceae)	Baheda (fruit) (Chada -35)	March – June (5- 30)	12.66**	Raw (Throughout the year)
<i>Terminalia chebula</i> (Combretaceae)	Harra (fruit) (Chada -36)	April – June (10-30)	44.16**	Raw (April- June)
<i>Zizyphus mauritiana</i> (Rhamnaceae)	Ber (Fruit) (Chada - 37)	Oct- Feb (5-30)	5.2	Raw (Throughout the year)

(Source – Primary data)

\* 50 % sold; \*\* 75 % sold; \*\*\* some HH sale

(Besides above species, leaves of three NTFP species, having the local names - Bramharkas, Dhobe, and Kachar, and fruits of one species, having local name - Ghui, are also consumed by the community. Since the botanical names of these plants could not be

confirmed, these have not been included in the list and analysis. The total annual average consumption per HH of these leaves and fruits are 41.9 kg and 9.6 kg respectively)

## CONCLUSION

NWFP form an integral part of food intake of the people of Baiga tribe. Some NWFP like Mushroom (*Agaricus*) and Charota (*Cassia tora*) leaves are stored and consumed throughout the year. Consumption of Mushroom to a large extent depends on availability in the area, while other NWFP are collected and consumed from March to September. After the Kharif crop is harvested, there is less priority given to the NWFP collection partly because of low availability and partly because of availability of agricultural crop. Charota (*Cassia tora*) leaves and Mushroom form a significant part of food intake, throughout the year, and their consumption does not decline with seasonal availability of agriculture produce to a large extent. Leaves of Dudhia (*Euphorbia hirta*), Saroota (*Polycarpon prostratum*), etc are consumed only during rainy season. NWFP like Khamar (*Gmelina arborea*), Kachnar (*Bauhinia variegata*), Bhilwa (*Semecarpus anacardium*), Gular (*Ficus glomerata*), Aam (*Mangifera indica*) etc, are consumed as fruits from March to June depending upon availability. The ethno-biological interface of the PTG and NWFP indicates the significance of the NWFP for the sustenance of this tribal community and the management interventions should capture and address the issues, like conservation of the resource, effective utilisation etc, which can help to improve the interface for the long term sustainable development of the both the NWFP resource and the resource dependent PTG.

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## FEASIBILITY STUDY FOR CULTIVATION AND MARKETING OF MEDICINAL PLANTS AS LIVELIHOOD FOR FARMERS IN HARDA AND DEWAS DISTRICTS OF MADHYA PRADESH, INDIA

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### Abstract

*The paper examines in detail various issues and factors influencing the marketing of important and the most widely cultivated medicinal and aromatic plants, viz Ashwagandha (Withania somnifera), Isabgol (Plantago ovata), Kalmegh (Andrographis paniculata), Lemon grass (Cymbopogon racemosus), Mentha (Mentha arvensis), Safed Musli (Chlorophytum tuberosum), Satawar (Asparagus racemosus), and Senna (Cassia angustifolia) in Madhya Pradesh. The paper highlights the existing and potential marketing channels and the feasibility of effective marketing for these species inside and outside Madhya Pradesh.*

### BACKGROUND

The medicinal plants sector has traditionally occupied an important position in the socio-cultural, spiritual and medical arena of rural and tribal lives of India. The global context suggests several tremendous opportunities in both medical material and know-how for India, a country unrivaled in terms of diversity of medicinal systems and practices, in addition to being a major store house of biological diversity with two of the 14 mega-biodiversity area of the world located within its borders. Moreover, medicinal plants are one of the most important components of the non wood forest products sector which supplies over 80% of India's net forest annual export earnings (FAO 1995, Jain 1987).

The nature and dynamics of domestic trade of MAPs involves central and regional markets through a number of private dealers and agencies, government or government controlled corporations and cooperatives all having upstream linkages with numerous local and "road-head" markets, which in turn have myriad middlemen, petty shopkeepers and agents feeding them with primary supplies. This complex web of transactions makes the exercise of a consolidated regional or country level assessment of domestic cultural diversity.

Projections of a consolidated picture of domestic trade have thus per force been a matter of intelligent estimates only rather than through rigorous data collection and analysis.

EKLAVYA is trying to introduce medicinal plants cultivation in the two blocks-Khategaon and Khirkia in Dewas and Harda district respectively.

The goal of the study is to test feasibility of introducing medicinal plants cultivation and marketing as a livelihood for farmers in the proposed area. The farmers have limited set of agricultural skills lack ability to take risk.

The objectives of the study were to

- identify the suitable species that can be successfully grown in the area.
- identify the inputs required.
- identify the cultivation practices prevalent in the area.
- identify the training required.
- identify the possibility of processing /value addition of the produce.
- gather the market related information.
- assess the Socio-economic and environmental impacts

The study has emphasized on the collection of quantitative and qualitative information with an aim to meet the set of objectives. In order to get the wholesome picture of the existing scenario institutes working in the field were visited and literature review was done and primary data was collected from traditional farmers, people in trade and cultivation of MAPs.

The financial and statistical tools were employed to draw conclusion from the data obtained. On the basis of crops suggested by experts certain crops were identified and out of these eight MAPs were shortlisted as per technical suitability. These were compared with the traditional crops and cultivation of MAPs was found to be profitable proposition. On comparisons of the scores of the different species for the three criteria, i.e., Economic feasibility, market feasibility and Environment /Resource Management feasibility, four medicinal plants were selected to be grown in the proposed area. These can effectively utilize the waste and fallow lands and can become the source of additional livelihoods. Four MAPs suggested to be taken up for cultivation by the farmers of the study area are

- *Ashwagandha (Withania somnifera)*
- *Senna (Cassia angustifolia)*
- *Isabgol (Plantago ovata)*
- *Lemon Grass (Cymbopogon flexuosus)*

However it was observed that before the cultivation of MAPs is taken up there is need for some ground work to be done. The outcome of the study and recommendations made are as under:

1. Cultivation of medicinal plants is a bit difficult owing to the fact that there is a lack of standard agronomic practices for most species and unavailability of sources of sources of quality planting materials and technical guidance , hence, following steps may be undertaken to overcome the above problem:
  - Exposure visits to farms where medicinal plants are already being cultivated.
  - Government Institutions like SFRI, Jabalpur may be contacted for quality planting material.
  - Proper technical training should be arranged for the people who are going for the cultivation of MAPs.
  - Purchasers should be contacted in advance to get reasonable price for the produce and to ascertain the market of the particular crop beforehand.
2. The traditional crops have very low cost and low risk associated with it. Special purpose crops like MAPs offers cultivators an additional source of income and greater profitability. However, the risks associated with these crops can be substantial.
  - In view of the risks associated with the cultivation of MAPs should be initially taken up in a small scale.
  - Possibilities of intercropping should be utilized to get additional returns and diversify the risks.
  - EKLAVYA is expected to play an important role to establish networking among the key institutes in the region and the target group, to strengthen information exchange, technology transfer, development of region specific cultivation technique and propagation method.
3. Extension programme should be organized to educate and motivate the farmers about the cultivation of MAPs.
4. It may not be possible for the poor farmers to bear the initial expenses occurring in the cultivation of MAPs as they are relatively higher those incurred by them on the



cultivation of traditional crops. Thus Government schemes, subsidies and other incentives to farmers going for cultivation of MAPs should be availed for the benefits of farmers. Some support in the form of subsidies or credit are given through:

- Medicinal Plant Board, New Delhi.
  - Khadi Gram Udyog
  - SGSY Scheme.
  - Funding agencies like SPWD.
- The possibility of linkage of Micro-finance and MAPs cultivation should also be explored.
5. Introduction of buy-back and similar measure to boost farmers confidence and ensure the proper price for farmers is recommended.
  6. It is recommended that proper market support should be provided to farmers, specially, in the initial phase, as it may be difficult for them to market their produce and get desired returns.
  7. Ensure high quality scientific and technical backup to the cultivators both field of cultivation and market.

## **OBSERVATIONS AND RESULTS**

### **TECHNICAL ANALYSIS**

From the Technical Suitability of MAPs dealt in the previous Chapter, the following observations can be drawn:

- Both the study area, *Khrkiyan* and *Khategaon*, have relatively same impacts on the cultivation of the eight shortlisted MAPs species. So both these areas can be taken together and can be considered as one for the further comparisons.
- Almost all the species listed, except *Mentha* and *Satawar*, are technically suitable and favorable plants. *Mentha* needs intensive and repeated irrigation, which is not possible in the proposed area due to its arid nature, high cost of irrigation and low capacity and income of the farmers. So *Mentha* can be eliminated from the list. Though, *mentha* is highly ranked on economic front, but the technical aspect supersedes the economic aspect.
- For *Satawar*, sandy loamy soil is more suitable as their tuberous roots can be dugout from this type of soil without any harm to it. The deep black soil has high water retention capacity and also holds the roots tightly, which can possibly damage the tubers. But *Satawar* as observed by the researchers, is being grown in the proposed area, so this crop can be considered for further comparison and analysis.
- The disease/insect proneness is “high” for *Mentha* and *Isabgol*. Cases of disease attack on *Mentha* in the proposed area have been reported but no such disease attacks on *Isabgol* have been reported in the study area.
- The training needs of the cultivators can be met by the institutional interventions and support.
- So at the end of technical suitability analysis one can shortlist the seven MAPs , viz., *Ashwagandha*, *Isabgol*, *Kalmegh*, *Lemon Grass*, *Safed Musli*, *Satawar* and *Senna*.

### **ECONOMIC ANALYSIS**

Results of comparison of the seven short-listed MAPs made on the basis cost/acre, Income/acre/year, Incomes as % to cost are shown in Table 1.

**Table 1 - Comparison of the short-listed MAPs on the Economic Parameters**

Species	Cost/ Acre*	Income /** Acre/Year	Income as** % to Cost	Total	Rank	Score	Score x Weight 3
<i>Ashwagandha</i>	1	4	4	9	I	7	21
<i>Isabgol</i>	4	2	5	11	II	6	18
<i>Kalmegh</i>	3	6	6	15	IV	4	12
<i>Lemon Grass</i>	6	5	1	12	III	5	15
<i>Safed Musli</i>	7	1	7	15	IV	4	12
<i>Satawar</i>	5	3	3	11	II	6	18
<i>Senna</i>	2	7	2	11	II	6	18

\*The lowest cost is ranked 1

\*\*The highest income is ranked 1

#The lowest total for each species is ranked highest

On the basis of this comparison one can assign these MAPs scores on the basis of 7 point scale, with the highest ranked score 7 and the lowest ranked score 1. These scores for individual species has been multiplied by weightage 3 as the economics of MAPs is the most vital point for the farmers having very poor socio-economic conditions.

Economic, Market, Environment/Resource Management Results and their comparisons for different products

Seven MAPs have been compared on the basis of three broad criteria, i.e., Economy, Market and Environment/Resource Management in Table 2.

**Table 2 - Comparison of the Scores of the different species**

Criteria Species	Economy	Market	Environment / Resource Management	Total	Rank*
<i>Ashwagandha</i>	21	18	9	48	I
<i>Isabgol</i>	18	17	8	43	III
<i>Kalmegh</i>	12	13	9	34	V
<i>Lemon Grass</i>	15	18	8	41	IV
<i>Safed Musli</i>	12	12	9	33	VI
<i>Satawar</i>	18	15	8	41	IV
<i>Senna</i>	18	18	11	47	II

\*Here, Rank I means the best recommended and the rank Vi means the least recommended on a relative comparative scale.

The scores for criterion "Economy" are taken from the Table 1

From the above table following indisputable first three choices can be obtained:

- *Ashwagandha*
- *Senna*
- *Isabgol*

*Satawar* and *Lemon Grass* need some further comparisons to ascertain the fourth choice, which is dealt in Table 3.

**Table 3 - Comparison between Lemon grass and Satavar**

Criteria	<i>Lemon grass</i>	<i>Satawar</i>
Time	100 Days- low (F)	540 days- Very High (U)
Harvesting process	Easy (F)	Difficult (U)
Processing Cost	Capital Intensive-Costly (U)	Lower Costs (F)
Perishability	Less (F)	More (U)
Disease/Insects Proneness	Moderate (U)	Negligible (F)
Soil Suitability	More (F)	Less (U)
Weeding Needs	Less (F)	More (U)
Grazing Problems	Nil (F)	Slight (U)

(F)= favourable; (U)=Unfavourable

The criteria of the above table, except the time factor, were not previously used to rank or score the species. So one can now use these criteria for the above comparison. Also the time factor becomes an important criterion, due to the huge difference, being 540 days for *Satawar* and 100 days for *Lemon grass*.

From the above comparison, one can see that *Lemon Grass* have 6 favorable (F) points while *Satawar* have 2 favorable (F) points.

There is also a proposal to install an aromatic plants oil extraction plant in *Harangaon* of the *Khategaon* block by the Forest Department. Many other oil-extraction plants already exist in the proposed area. Thus it is expected that farmers are not going to face any problem in getting oil extracted.

Following four MAPs are selected that can be taken up for the cultivation in the proposed area.

- *Ashwagandha (Withania somnifera Dunal)*
- *Senna (Cassia angustifolia)*
- *Isabgol (Plantago ovata)*
- *Lemon Grass (Cymbopogon flexuosus)*

However, *Satawar* and *Kalmegh* may also be taken up for the cultivation as these crops are satisfying the most of the cultivation requirements and these crops have also been observed being cultivated in the proposed area.

*Safed Musli* can also be grown in the proposed area as it is very well satisfying the technical suitability, but considering the socio-economic conditions of the target group, this crop is not recommended for the following reasons:

- Initial investment (Rs. 250000 /acre) is very high and not affordable by the target group.
- Possibility of fungal infestation if the roots are not properly processed after harvesting.
- Due to its highly capital-intensive nature, it also bears a high risk.

The results indicate that medicinal plants can be grown in the proposed area which can also effectively utilize the waste and fallow lands and can become the source of additional livelihoods for the farmers.

Based on the regress analysis of available data and information following four MAPs are selected that can be taken up for the cultivation in the proposed area.

- *Ashwagandha(Withania somnifera Dunal)*
- *Senna(Cassia angustifolia)*
- *Isabgol(Plantago ovata)*
- *Lemon Grass(Cymbopogon flexuosus)*

## RECOMMENDATIONS

### AREA SPECIFIC MARKETING MODEL

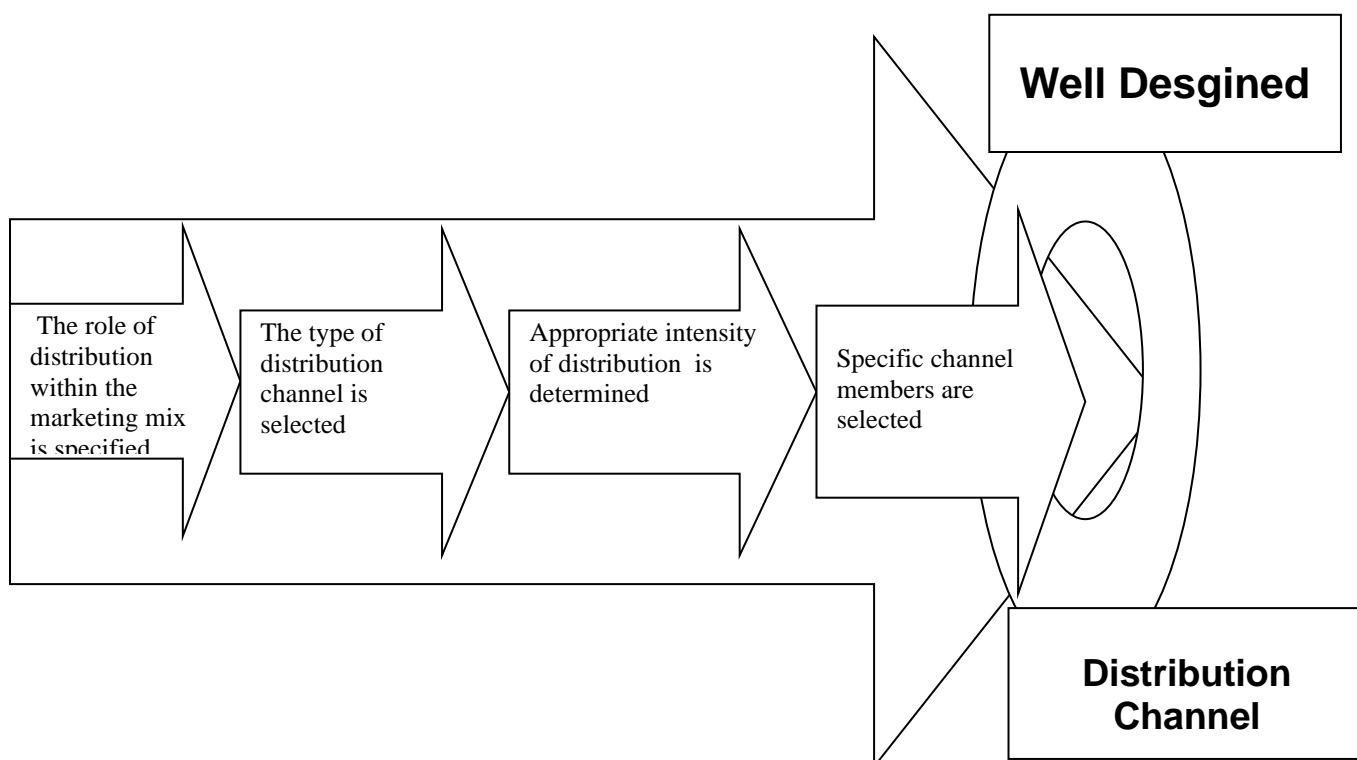
The nature and dynamics of this domestic trade in India, and in most other developing countries as well, is far from simple as it is made out to be. It involves central and regional markets through a number of private dealers and agencies, government or government controlled corporations and cooperatives all having upstream linkages with numerous local and "road-head" markets, which in turn have myriad middlemen, petty shopkeepers and agents feeding them with primary supplies. There are cases where some industries procure raw materials (at least partly) directly from local collectors or even cultivate them on their own land.

However in order to implement the project regarding cultivation of MAPs successfully in the proposed area it is necessary to understand the complex web of these transaction and there should be some mechanism to assess the domestic trade. This will be of great help to the persons involved, at any level in the trade cycle of MAPs .

In the following section an effort is made to identify the suitable marketing channel which may minimize the losses, due to exploitation by clever traders, to the farmers of the *Khrkiyan* and *khategaon* block

The following diagram (Figure 1) shows the approach adopted in developing the marketing model and to take decision on marketing channel.

**Figure 1 - Steps in Developing the Marketing Model**



### Marketing Mix

**Product:** The target group, that is farmers of the study area should place themselves as the producer of the environmental and people friendly MAPs. Efforts should be taken to raise the crops by organic manure and green fertilizers and bio-insecticides, bio-fungicides and bio-pesticides to fetch the higher prices and for "market differentiation". Chemical fertilizers and other inorganic chemicals should be avoided.

**Price:** Cultivators can obtain higher price from the processor/manufacturer, although, they also had to factor in additional costs, such as storage, packing, transportation and management..

The demand of the well, packed, certified and tested, pure, Eco-friendly MAPs raised with organic manure was compared to those untested and uncertified MAPs cultivated by using chemical fertilizers.

Though it is difficult to distinguish between the two types of MAPs even by proper testing, it was found that traders have a very sound knowledge of these and that they can easily distinguish between the two categories of MAPs described above. Their expertise might have come from a long experience in the field of MAPs.

**Place of Distribution:** The assessment that whether the cultivators could take over some of the functions of the intermediary agents in order to increase their share of profits was done. The conclusion was drawn that it would be possible only if the cultivators could obtain more up-to-date market information, could gain more control over the prices. Therefore their marketing strategy should involve:

- Training and sending members of the groups to collect information on a regular basis.
- Develop a communication arrangement with partners living close to markets for the produce.
- Keep themselves up-to-date with the Marketing Information System (MIS) of MP

Minor Forest Produce Federation, Bhopal; MIS based “Van-Dhan” of SFRI, Jabalpur; and TRAFFIC, New Delhi for the national and international level marketing information. These strategies will definitely need the support of institutions or NGOs, like Eklavya.

**People:** The target groups should be assisted in identifying the interests and needs of the prospective buyers of their produce. A visit to manufacturer’s factory for attaining information from the buyer about the demand, quality and other preferences which the traders might not share with them.

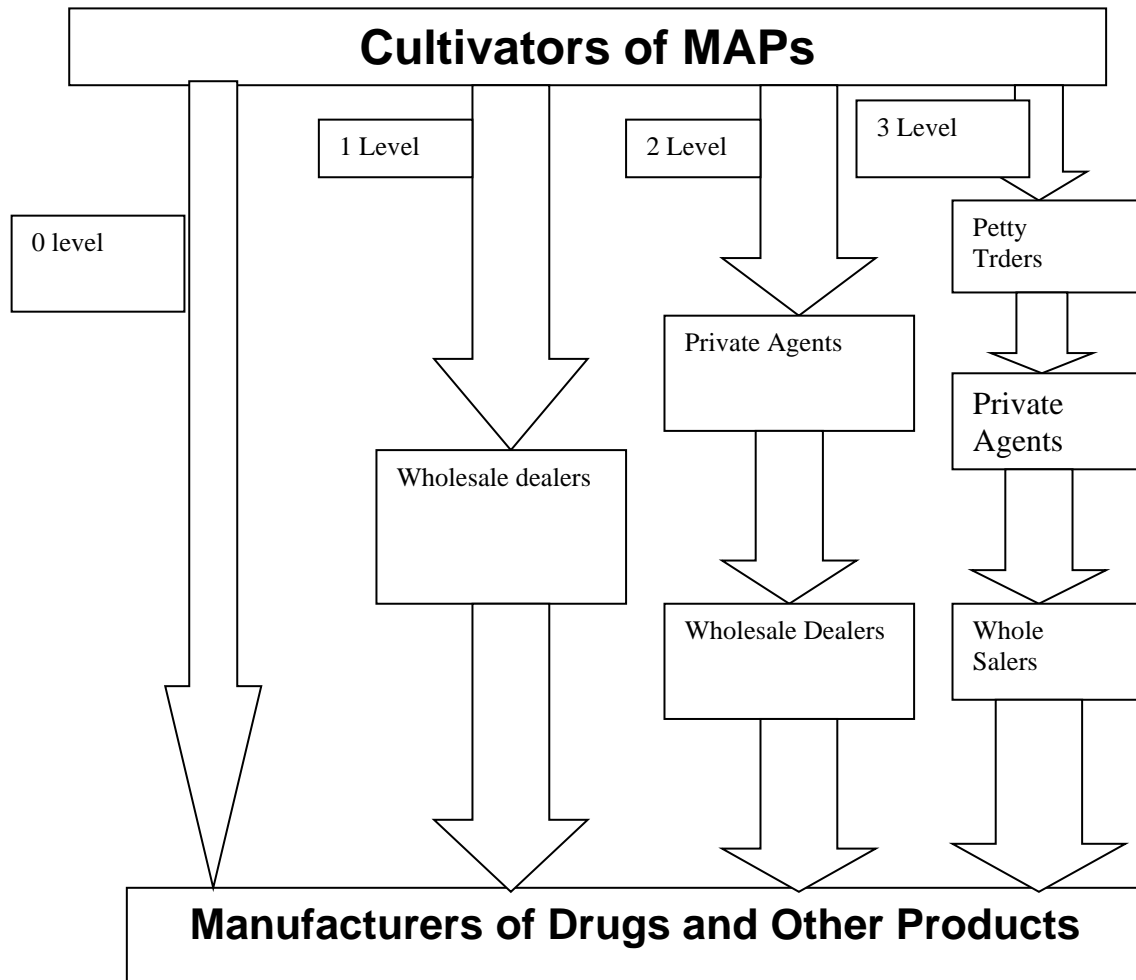
**Promotion:** The means of promotion available to the MAPs cultivators were reviewed and it was found that this sector has got very little product differentiation and, hence, the limited scope for promotion.

However, if the cultivators can project their produce as ‘producing clean MAPs free of chemicals’, as a promotion tool for gaining a very good place and share in the market. The importance of better packaging, storage, as well as the Life Cycle Analysis (LCA) of the product should also be taught to the farmers with the help of institutional support.

### **Marketing Channel Available**

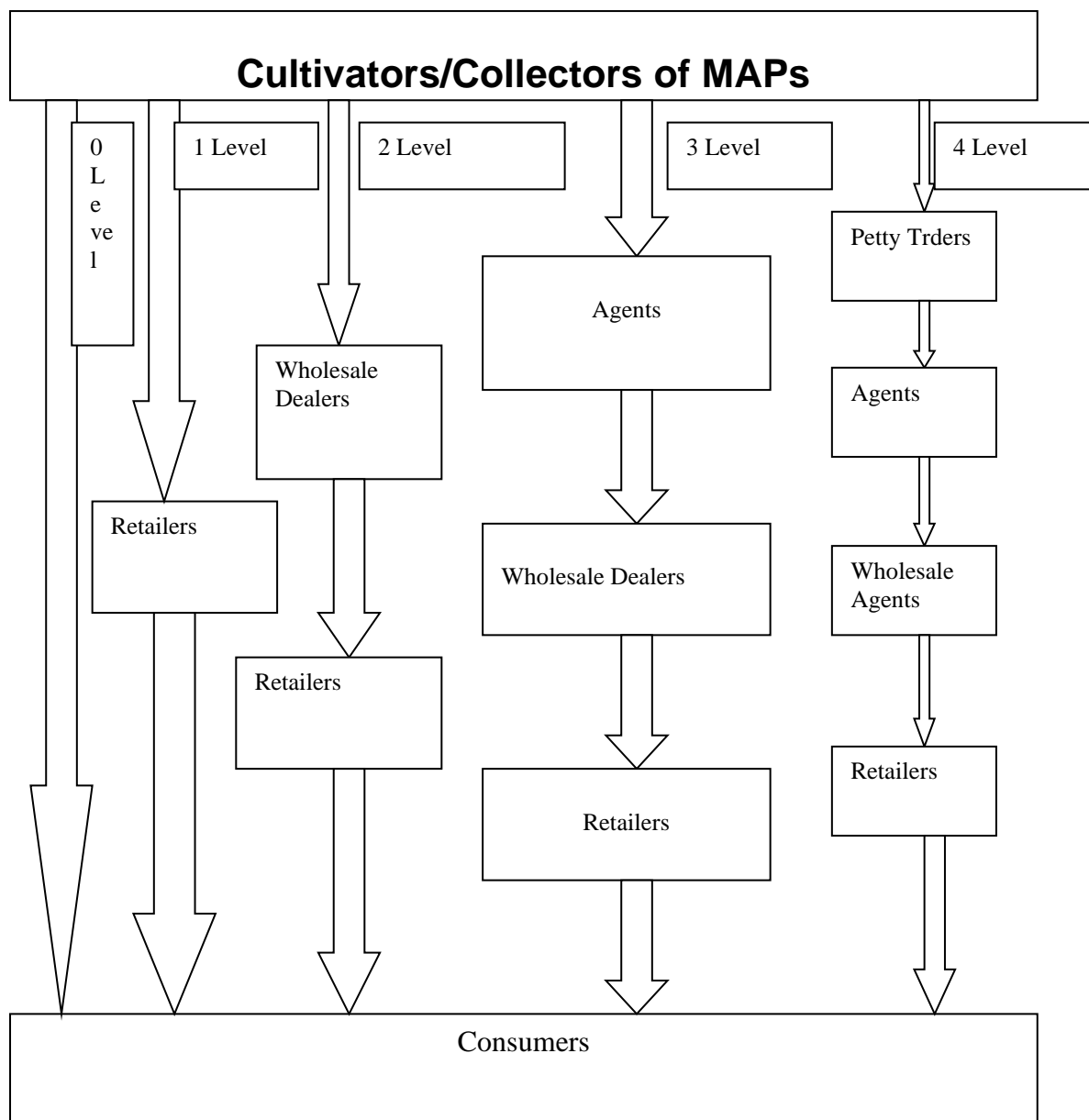
For the commercial cultivation of MAPs on a large scale it would be beneficial that the produce goes for the end-use, i.e., for the manufacturing of Drugs and other products from MAPs. The available channels for this is depicted in the following Figure 5.

**Figure 2 - Marketing Channels available for the cultivators when the produce goes to manufacturers**



It was observed that cultivators also follow the channels in which the produce goes to the consumers in the unprocessed form but this route is generally applied by the collectors of the medicinal plants rather than the established cultivators.

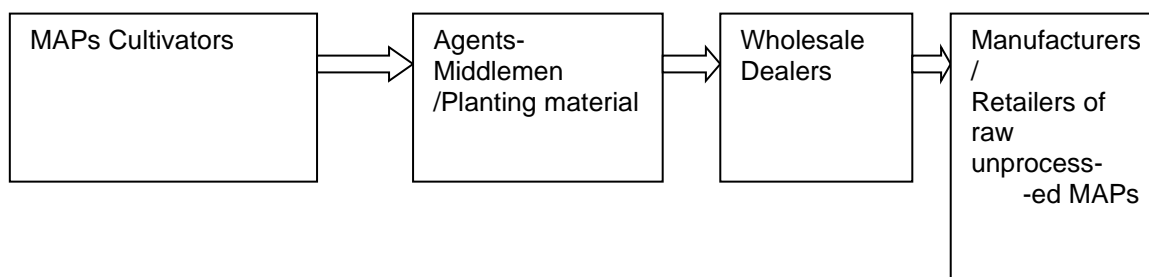
**Figure 3 - The available channels when the product goes to the consumers in the raw /unfinished form**



When both of the above figures (2 and 3) are analysed, the following options available to the cultivators of MAPs to sell their produce can be seen:

- Consumers directly
- Retailers
- Manufacturers of drugs and other products
- Wholesale dealers
- Agents
- Petty traders

**Figure 4 - The most common channel followed by the MAPs cultivators**



It was observed that the MAPs cultivators generally sell their produce to the agents who in turn sells it to the wholesale dealers. The MAPs cultivators also sell their produce to another cultivators as the planting material. The wholesale dealer or the big trader may either sell it to the manufacturers of the medicinal drugs or other products or they also sometimes sells the MAPs to the retailers in the raw /unprocessed form. This channel is depicted in the above Figure8.

**Selection of Type of Distribution Channel**

To maximize the profit, the cultivators can jump some of the levels of the channels. But for this, it is very necessary to consider the role, stakes , typical activities and services provided by the middlemen and other stakeholders of each level as their aid to the distribution process. Here, the agents are considered as the ‘middlemen’. The typical activities of the middlemen in the MAPs sector are summarized in Table 4.

**Table 4 - Typical Activities of a Middleman**

Sales Specialists for Producers		Purchasing Agent for Buyers
Provide market information Interprets consumer wants Promotes producers’ products Create assortments Store products Negotiates with customers Provides financing Owns products Shares risks	←-----→	Anticipates wants Subdivides large quantities of a product Stores products Transports products Creates assortments Provides financing Makes products readily available Guarantees products Share risks

As most of these roles/ sales services of the middlemen could be provided by the implementing agency, Eklavya, the levels of agents and petty traders in the marketing channel can be foregone.

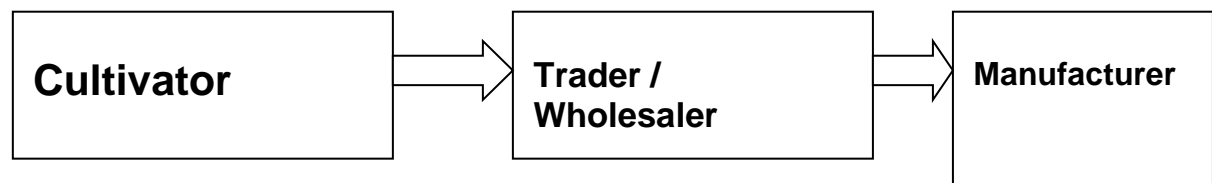
It is not possible to sell the produce directly to the 4 manufacturers in the initial stage. It is also not advisable to sell the produce to the retailers or consumers because their demand needs and prices are very fluctuating and volatile as so many local factors influence the



demands and prices of the local retailers and consumers. It would also not help in capacity building of the cultivators and establishing market presence as well as the contacts with the big traders and manufacturers. When the MAPs would be cultivated in the large scale, then it would be beneficial, for the reasons cited above, if the produce goes to the end-use, i.e., for the manufacturing of the drugs and other products. It would also help in strengthening and the establishing the formal market for the particular species.

There is a need to identify the traders/wholesale dealers in the nearby/neighborhood big market and sell the collective produce of the whole village together to them. Base on the above discussions, the following marketing channel is depicted in the Fig 5.

**Figure 5 - Proposed Marketing Channel**



### **STAKES OF THE MIDDLEMAN**

It was seen that the player in the higher level of the marketing channel exploits players of each lower levels of the channel. It should also not be forgotten that in a particular area many so-called middlemen exist who also compete with each other.

It was also understood that their stake could not be neglected abruptly. Their capacity should also be built, side by side, so that they can get better bargains with the traders and other higher level players and in the due course of time they should be able negotiate directly with manufacturers. This will increase the margins of profitability of both the cultivators and middlemen.

### **Channel Conflicts**

Channel conflicts exist when one channel member perceives other channel member to be acting in a way that prevents the first member from achieving its distribution objectives. It is difficult to neglect or forego of any players or stakeholders in the MAPs marketing channel due to the possibility of this channel conflicts.

### **Who Controls Channels?**

Channel power is the ability to influence or determine the behavior of another channel member. There are various sources of powers in the context of channels. They include:

- Expertise (for example, possessing vital technical knowledge about the product- in MAPs sector the traders enjoys this power),
- Rewards (providing financial benefits to cooperative channel members- can be enjoyed by the MAPs cultivators and middlemen), and
- Sanctions (removing uncooperative members from the channel –like the agents in the MAPs marketing channel).

### **A Channel Viewed as a Partnership**

-Instead of looking at the channel as a fragmented collection of independent competing firms, suppliers and middlemen should think channel as partnership aimed at satisfying the end users' needs.

-Its time for cultivators to give due importance to channel management as they give importance to the cultivation.

### **Legal Considerations in Managing Channels**

Attempts to control distribution are subject to legal considerations such as:

- Exclusive dealing
- Tying contracts
- Refusal to deal
- Exclusive-territory policy

### **RECOMMENDATIONS**

It is recommended that the medicinal and aromatic plants, *Ashwagandha*, *Senna*, *Isabgol* and *Lemon Grass* can be cultivated in the proposed area with the following suggestions.

1. Cultivation of medicinal plants is a bit difficult owing to the fact that there is a lack of standard agronomic practices for most species and unavailability of sources of sources of quality planting materials and technical guidance, hence, following steps may be undertaken to overcome the above problem:

- Exposure visits to farms where medicinal plants are already being cultivated.
- Government Institutions like SFRI, *Jabalpur* may be contacted for quality planting material.
- Proper technical training should be arranged for the people who are going for the cultivation of MAPs. Technical know-how on plant cultivation should be imparted to the target group.
- The relevant information and literature related to the MAPs should be collected and should be used to educate to educate the field workers of the organisation who can further train the target group.
- Purchasers should be contacted in advance to get reasonable price for the produce and to ascertain the market of the particular crop beforehand.

2. The low prices for traditional commodities, special purpose crops like MAPs offers cultivators an additional source of income and greater profitability. However, the risks associated with these crops can be substantial, and without accurate information, the producers can find these new crops as financially devastating. Thus it is strongly recommended that the first and foremost step should be aimed towards educating the target group about the merits of going for the cultivation of medicinal plants along with the risks associated with it.

- In view of the risks associated with the cultivation of MAPs should be initially taken up in a small scale. For example , the cultivation of *Ashwagandha* should be taken up on more than one acre of land for each farmer.
- Possibilities of intercropping should be utilized to get additional returns and diversify the risks. *Anwla* grows very well in our proposed area. Its demand is constantly increasing and it also fetches good price in the market, so it can also be planted around the farmlands.
- Eklavya is expected to play an important role to establish networking among the key institutes in the region and the target group, to strengthen information exchange, technology transfer, and development of region specific cultivation technique and propagation method.

3. It has been observed that most of the farmers engaged in the cultivation of MAPs are financially strong and have good educational background, which has helped them to keep themselves updated with the information regarding MAPs. On the other hand , the target group is financially weak with poor educational background. Thus some extension

programme should be organized to educate and motivate the farmers about the cultivation of MAPs.

It may not be possible for the poor farmers to bear the initial expenses occurring in the cultivation of MAPs as they are relatively higher those incurred by them on the cultivation of traditional crops. Thus Government schemes, should be availed for the benefits of farmers. Some are:

- Medicinal Plants Board of India, New Delhi, that provides subsidies and other incentives to farmers going for cultivation of MAPs,
- Khadi Gram Udyog that provides subsidies for establishing processing units like extraction plants under Margin Money Scheme.
- SGSY Scheme.
- Some funding agencies like SPWD.
- The possibility of developing linkage of Micro-finance with the MAPs cultivation should also be explored.

5. Introduction of buy-back schemes and similar measure to boost farmers' confidence and ensure the proper price for farmers is recommended. Buy-back guarantee, such as, that provide by National Remedies Industry to *Karnataka* farmers to grow *Kalmegh* must be extended to other threatened species through Government intervention.

6. It is recommended that proper market support should be provided to farmers, specially, in the initial phase, as it may be difficult for them to market their produce and get desired returns.

7. The market of MAPs is prone to price fluctuations. The price of a particular species may certainly go down in case of surplus and overproduction. But farmers should not worry about this, as even the minimum price of MAPs would fetch higher profitability than the traditional crops.

- Ensure high quality scientific and technical backup to the cultivators both field of cultivation and market.
- It was observed that the big drug manufacturers and export agents prefer the tested MAPs and give stress on its certification for the required chemical constituents of the MAPs. Hence, there is a need to work in this direction.
- MAPs raised without using any inorganic chemical fertilisers fetches more price in the market so these fertilisers should be avoided and green manure and bio-fertilisers should be used in its place.
- The name of the MAPs species being cultivated should be registered with the local Government authority as there is a legal need to distinguish the cultivated crop with those growing in the forest to get transit pass (TP) from the Forest Department. This will also help the cultivators in getting the subsidies and loans.

## **NEED FOR FURTHER STUDY**

- Possibility of intercropping of MAPs with other produce and plantations.
- All relevant stakeholders can be linked to work together in a coordinated and responsive manner.
- If some oversight body can be set up which will have overall responsibility to ensure contract farming is beneficial for the both side of parties, i.e., seller and buyer side.
- Effect of land holding on the productivity of the MAPs.
- Quality of plantation material available from institutions and farmers.
- Marketing Information system.
- Certification, testing and grading of medicinal plants.
- Linkage of Micro-finance with MAPs cultivation.

45.

## IMPACT OF CONSUMPTION OF NON WOOD FOREST PRODUCTS (NWFP) ON THE NUTRITURE OF PAHADI KORWA PRIMITIVE TRIBAL GROUP - A STUDY FROM SARGUJA DISTRICT OF CHHATTISGARH

A K Bhattacharya and Krishna Patra

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### Abstract

*The paper deals with the relationship between the Primitive Tribal Group (PTG) and the Non Wood Forest Products (NWFP) used for their nutritional fulfillment in the forests of central India, with special reference to the Pahadi Korwa PTG of Surguja District of Chattisgarh. The study area, methodology and the village demographics have been discussed. The consumption pattern of NWFP has been examined. Thirty eight major NWFP species are consumed by the villagers of the study area. Nutritional assessment of the NWFP indicates that 77% people (49% male and 51 % female) have been found to be underweight. The chemical analysis of the species reveals that the values of the nutrient contents of species vary significantly as compared to those prescribed by the ICMR (taken as standard). The species that have high nutritional value and also consumed in sufficient quantities include Achar (*Buchanania lanzan*), Dumar (*Ficus glomerata*), Mahua (*Madhuca latifolia*), and Pihari (*Psalliotia campestris*). Based on the results and the analysis, recommendations for better utilisation of NWFP have been made. There should be adequate emphasis on the traditional management and conservation methods of NWFP along with proper concern at national, state and local levels.*

### INTRODUCTION

The PTG, including the *Pahadi Korwa* depend to a large extent on the forest resources for their food needs; it is, therefore, imperative to estimate the contribution of NWFP as a source of food (Bhattacharya et al, 2004)<sup>1</sup>. PTG are those communities that still lead a secluded and archaic mode of life. They are at a very backward stage of economic development. These groups can be identified by three important criteria, namely, pre-agricultural level of technology, extremely low level of literacy, i.e. below 2% and near stagnant or diminishing population. The PTG being backward and deprived must receive adequate attention to join the mainstream of the society. 75 communities have been identified so far in 15 States and UT of country. Five scheduled tribes in Chhattisgarh, namely Abhujmadia in Bastar District, Baiga of Bilaspur and Rajnandgaon Districts, Kamar of Raipur and Dhamtari Districts, *Pahadi Korwa* of Surguja, Raigarh, and Bilaspur Districts, Birhor of Raigarh District fall under the category of PTG. The PTG residing in the villages within forest areas suffer from GDL - geographically disadvantageous location (Sharma, 1997)<sup>2</sup>. These villages are far away from the pockets of development i.e. smaller towns and cities. Due to difficulties in communication, the goods and services are dearer for these villagers both in terms of value and availability. This injury is further

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<sup>1</sup> Bhattacharya AK, Sinha VK, Patra K, Shanker T & Tiwari P, 2004. Contribution of the non-wood forest products in the nutrition and the livelihood of the Baiga and the *Pahadi Korwa* Primitive Tribe Groups in Ddindori forests of Madhya Pradesh and Surguja forests of Chhattisgarh. Project Report, Ministry of Tribal Affairs, GOI, New Delhi.

<sup>2</sup> Sharma RC, 1997. *Total Forest Management - an innovative approach for conservation of natural forests with human face*. Paper presented at International Workshop on 'Forestry research in conservation of natural forests', Dehradun.

compounded by the poor economic status of the tribal families as the agriculture is also on marginal lands. Thus the PTG villages form the most backward pockets in the remote forest areas and there is an urgent need for their immediate development as per the needs of the local people, otherwise they will continue to be below the subsistence level of living and migrate as labourers where they will be in culturally alien environment and thus prone to exploitation. The economic dependence, the socio-cultural links of the PTG with forests and NWFP is highest in the country. This necessitates an immediate and special attention about PTG - NTFP interface (Anon, 1999)<sup>3</sup>. Widespread poverty resulting in chronic and persistent hunger is the single biggest scourge of the developing world today. The physical condition of this continuously re-enacted tragedy is the condition of the under-nutrition, which manifests itself among large sections of the poor, particularly the PTG. Under-nutrition is a condition resulting from inadequate intake of food or more essential nutrients resulting in deterioration of physical growth and health. The inadequacy is relative to the food and nutrients needed to maintain good health, provide for growth and allow a choice of physical activity levels, including work levels that are socially necessary. This condition of under-nutrition, therefore, reduces work capacity and productivity and enhances mortality and morbidity. Such reduced productivity translates into reduced earning capacity, leading to further poverty, and the vicious cycle goes on (National Nutritional policy, 1993)<sup>4</sup>. On the question of nutrition, seasonal dimensions are also given importance because the rainy months are the worst months for the rural landless poor. Evaluation of Nutritional status should form an integral part of medical examination, as it would evaluate an individual risk of malnutrition so as to permit early nutrition intervention whenever required. A range of measures and tests are available to determine the likelihood and severity of malnutrition. These include dietary history, anthropometrical measurements including height, weight, Body Mass Index, skin fold measurements. Clinical assessment is sometimes considered but as it is insignificant to assess the health status accurately.

## OBJECTIVES

The study was carried out with the objectives to

- identify the NWFP that are consumed as food by the *Pahadi Korwa* PTG
- assess the nutriture of the *Pahadi Korwa* PTG

## STUDY AREA

The study was carried out for the *Pahadi Korwa* PTG of Sarguja District, one of the 16 districts in the State of Chhattisgarh. Chhattisgarh has the total forest area of 59772.389 sq km, out of which Sarguja covers 8654.968 sq. km. of forest area. The total population of *Pahadi Korwa* PTG in Chhattisgarh is 27109 with 6142 families in 320 villages (Anon, 1999). Sarguja is tribal majority district, the tribal population being 19.55%. Average rate of growth of population in the 90s was 27.22%. The literacy rate (according to 1990 census) is 24% (36% for male and 14% for female). The two villages, namely Lalmati and Jooriepara, selected for the study, are located in the North Ambikapur Forest Division of the District. The area is situated between latitudes 23° 09' North and longitudes 82° 32' and 84° 05' East at an elevation varying from 326 m to 1223 m above mean sea level. The whole Division lies in the catchment of two main rivers viz. Kanhar and Rend. Laterite, bauxite, Deccan traps and older metamorphic are the main geological formations occurring in the tract. The average rainfall of the area is 1366.52 mm. Frosts and droughts are common periodic occurrences. The total population of the division is 4,48,941 and forests cover about 59.5% of the total area. The local population mostly

<sup>3</sup> Anon, 1999. Special scheme for the development of the Primitive Tribe Groups of Madhya Pradesh. Madhya Pradesh Forest Department, Bhopal.

<sup>4</sup> Anon, 1993. National Nutritional Policy, Govt of India, Department of Women and Child Development, Ministry of Human Resource Development, New Delhi .

consists of Gonds, Uraons, Majhawars, Panika, Cherwa, Rajwars, Mehto, Dhanwars, Korwas, Kodakus and Pandoas. Agriculture is the main occupation and forests play an important role in their daily life fulfilling a large number of their requirement like fuel, fodder, timber, thatching grass, edible fruits , roots and flowers. The division is not surplus in forest produce for Nistar (forest produce required for domestic and agricultural purposes). No forest-based industry is situated in the division. Timber, Fuel, Bamboo, Khairwood, Sal seed, Tendu Patta and Harra are the main forest produce of the tract.

## **METHODOLOGY**

### **APPROACH**

Three approaches have been adopted in the study -

- Systematic Information Collection & Analysis Approach.
- Consultative Approach.
- Participatory Approach.

Since the study was exploratory in nature two villages selected in such a way that one is in the interior forest and one towards the exterior touching the urban lifestyle, so that the impact of NWFP is easily comparable. This approach of the site selection has been employed because the study area falls in the tribal sub plan and the study aims to explore changing food habits caused by exposure to the urban lifestyle. Since NWFP food consumption among tribal and non-tribal villages is not the context for this study, this categorization has been ignored. If the members of the households are not present during the period of the field visits, such households have been ignored. A participatory approach was adopted for the selection of the villages. The local frontline staff and the communities were involved in the process.

The study was carried out through Focus group discussions and scheduled interviews. The interview schedule was framed keeping the various objectives of the study in mind .The information gathered through the secondary data also helped in constructing the interview schedule. The focus group discussions were carried out to identify groups having different NWFP Consumption pattern. Subsequent FGDs were carried out among such groups.

Interview schedule covered the queries regarding the types of foods consumed by the vulnerable groups, viz. infants, pre-school children, pregnant and lactating mothers. The information about the sources of supply of foodstuffs, daily menu, methods of storage and cooking practices, food likes and dislikes, taboos and superstitions regarding some foods, if any, the demographic information, the socioeconomic stratification, health statistics, cultural factors, the multiple uses of NWFP etc were also recorded. For the interview 100% households of *Pahadi Korwa* were surveyed as per the availability and convenience of the respondents. The data and the output were validated by making repeated queries and triangulation with the tribal people in the same or other villages.

### **NUTRITIONAL ANALYSES OF THE WIDELY USED NWFP**

Nutritional values of common crops obtained from the standard sources were supplemented by the analysis of the NWFP food samples for ascertaining the nutritional value of the NWFP in the tribal households. The experts of the Laxminarayan Institute of Technology , Nagpur were involved in analysis of the NWFP food material.

## RESULTS AND DISCUSSION

The list of the NWFP consumed by the villagers has been given in Table 1.

Table 1. List of NWFP used for consumption

S No	Species	Common name
1.	<i>Aegle marmelos</i>	Bel
2.	<i>Bauhinia malabarica</i>	Ameta / Amta
3.	<i>Bauhinia variegata</i>	Kachnar
4.	<i>Buchanania lanzan</i>	Achar
5.	<i>Cassia fistula</i>	Amaltas
6.	<i>Cassia tora</i>	Charota Bhaji
7.	<i>Chlorophytum tuberosum</i>	Musli
8.	<i>Dalbergia paniculata (NC)</i>	Dhobe Bhaji
9.	<i>Dendrocalamus strictus</i>	Bans
10.	<i>Dioscorea hispida</i>	Baichandi
11.	<i>Dioscorea sp.</i>	Birarkand
12.	<i>Dioscorea sp.</i>	Gataru Kand
13.	<i>Dioscorea sp.</i>	Gethi Kand
14.	<i>Dioscorea sp.</i>	Kirchi kand
15.	<i>Dioscorea sp.</i>	Nakwa Kand
16.	<i>Diospyros melanoxylon</i>	Tendu
17.	<i>Ficus glomerata</i>	Doomer
18.	<i>Ficus religiosa</i>	Peepal
19.	<i>Ficus semicordata</i>	Ghui
20.	<i>Gum oblibanujm (NC)</i>	Kundru
21.	<i>Madhuca latifolia</i>	Mahua
22.	<i>Mangifera indica</i>	Aam
23.	<i>Momordica chinensis</i>	Khiksa / Kakora
24.	<i>Momordica sp</i>	Jangli karela
25.	NC	Kolar Bhaji
26.	NC	Pakri bhaji
27.	NC	Sure Bhaji
28.	<i>Phyllanthus emblica</i>	Aonla
29.	<i>Polycarpon prostratum</i>	Saruta Bhaji
30.	<i>Psalliota campestris</i>	Pihari
31.	<i>Schleichera oleosa</i>	Kusum
32.	<i>Semecarpus anacardium</i>	Bhilwa
33.	<i>Strychnos nuxvomica</i>	Kakodi
34.	<i>Syzigium cumini</i>	Jamun
35.	<i>Tamarindus indica</i>	Imli
36.	<i>Terminalia bellerica</i>	Baheda
37.	<i>Wrightia tinctoria</i>	Dudhi Bhaji
38.	<i>Zizyphus mauritiana</i>	Ber

NC - Botanical names not confirmed

The details of PTG dependent on agriculture for food in both the villages is given in Table 2.

**Table 2. Consumption pattern of the agricultural items in an year (in Kgs )**

Items	Area wise consumption (Kgs)	
	Joorie Kg - ( % )	Lalmati Kg - ( % )
Wheat	197 - (5.92)	0
Rice	1325 - (39.78)	1050-(52.92)
Jowar	54 - (1.62)	45- (2.26)
Kutki	759 - (22.79)	0
Kodo	0	0
Sama	253 - (7.59)	0
Makka	590 - (17.71)	720 - (36.3)
Dal	58 - (1.74)	45 -(2.3)
Oil	22 - (0.66)	21- (1.1)
Vegetables	72 - (2.16)	102 - (5.1)
Total	3330	1983

Thus , the total consumption from agriculture is 5313 kgs.per year in the study area. In both the villages, Jooriepara and Lalmati the maximum intake is of rice or its products locally named as “*Pej*” i.e. rice powder cooked in water added salt to taste.

The details of consumption pattern of NWFP by the *Pahadi Korwa* are given in Table 3.

**Table 3. Average Annual Consumption Pattern of NWFP in an year (in Kgs)**

S No	Common name of the species	Jooriepara Village		Lalmati Village		Total NWFP Consumed in Study area (kgs)
		Collected amt.in Kgs	Consumed amt. in Kgs	Collected amt.in Kgs	Consumed amt. in Kgs	
1.	Aam	329	269	62	62	331
2.	Achar	112	77	4	4	81
3.	Aonla	70	20	4	4	24
4.	Ameta	32	32	0	0	32
5.	Baheda	91	3	0	0	3
6.	Bans	76	56	15	15	71
7.	Bel	144	59	0	0	59
8.	Ber	66	66	4	4	70
9.	Bhilwa	1	1	1	1	2
10.	Charota	20	20	21	21	41
11.	Dhobe	56	56	7	7	63
12.	Doomer	104	104	3	3	107
13.	Gataru	214	203	68	68	271
14.	Gethi Kand	442	442	119	91	533
15.	Ghuin	185	136	1	1	137
16.	Imli	226	76	9	9	85
17.	Jamun	195	195	42	42	237
18.	Jangli Karela	119	81	0	0	81
19.	Kachnar	2	2	0	0	2
20.	Kakodi	28	28	0	0	28
21.	Khiksa	107	96	4	4	100
22.	Kolar bhaji	18	18	88	83	101
23.	Kundru	16	16	0	0	16
24.	Kusum	85	72	0	0	72



25.	Mahua	1476	756	560	351	1107
26.	Nakwa Kand	274	274	36	36	310
27.	Pakribhaji	51	51	78	78	129
28.	Peepal	8	8	0	0	8
29.	Pihari	410	327	245	205	532
30.	Sarutabhaji	177	177	22	22	199
31.	Sure	107	107	0	0	107
32.	Tendu	52	52	1	1	53
	TOTAL	5293	3880 (73.32%)	1394	1112 (79.77%)	4992

The survey indicates that 73% of NWFP is consumed in Joorie para and 80 % in Lalmati. Taking the study area as a whole 4992 kgs of NWFP are consumed by the PTG as food. The average annual dependence of the Pahari Korwa PTG on agriculture products and NWFP for the self food consumption are 51 % and 49 % respectively. The contribution of the NWFP as food during the lean and critical season is specially significant.

The total number of households taken for study from both the villages was 35. On an average, Jooriepara has five members per household and Lalmati has 4 members per household. Out of the total 152 persons living in these two villages, 95 persons, 37 from Lalmati and 58 from Jooriepara, were assessed for nutritional aspects, depending on the availability of the persons during the survey for the height and weight measurements. Based on the nutritional assessment, the persons were categorised in the relevant BMI ranges accordingly (Table 5).

**Table 5 - Nutritional assessment of the study area**

Age in yrs	Gender	Village wise BMI (ranging underweight)		Study area(%)	Avg / HH
		Lalmati	Joorie		
1-3 (Babyhood)	Boys	1 (3.8/25)	3(6.8/75)	4(5.71)	0.042
	Girls	1 (3.8/33.33)	2 (3.4/66.66)	3(4.28)	0.031
4-6 (Early childhood)	Boys	2 (7.7/40)	3 (6.8/60)	5(7.14)	0.052
	Girls	1 (3.8/100)	---	1(1.42)	0.010
7-9 (Childhood)	Boys	1 (3.8/100)	---	1(1.42)	0.010
	Girls	1 (3.8/25)	3(6.8/75)	4(5.71)	0.042
10-12 (Childhood)	Boys	---	4(9.1/100)	4(5.71)	0.042
	Girls	2 (7.7/66.66)	1 (2.3/33.33)	3(4.28)	0.031
13-15 (Preadolescent)	Boys	---	1(2.3/100)	1(1.42)	0.010
	Girls	---	---	---	---
16-18 (Post adolescent)	Boys	---	1 (2.3/100)	1(1.42)	0.010
	Girls	1 (3.8/50)	1 (2.3/50)	2(2.85)	0.02
19-40 (Adulthood)	Male	5 (19.2/29.4)	12(27.2/70.58)	17(24.28)	0.17
	Female	7(26.9/43.7)	9(20.5/56.25)	16(22.85)	0.168
41-60 (Middle hood)	Male	3(71.5/75)	1(2.27/25)	4(5.71)	0.042
	Female	1 (3.8/33.33)	2 (3.44/66.66)	3(4.28)	0.031
>60 (Old age)	Male	---	---	---	---
	Female	---	1 (2.27/100)	1(1.42)	0.010
Total person	Male	12(8.2/32.4)	25(56.8/67.56)	37(52.85)	0.389
	Female	14(9.7/42.4)	19 (43.1/57.57)	33 (47.14)	0.347
Grand total		26(8.9/37.14)	44 (75.8/62.85)	70	0.736

(Note - Numbers in parenthesis represent percentage per village; figures after the slash represent the percentage of village against the value of total area)

Following inferences can be drawn from the analysis of the above table -

- No infant of 0-12 months age group was available at the time of survey.
- Out of total surveyed population of 91 (45 male and 46 female), 77% people (49% male and 51 % female) have been found to be underweight. Among male the %age is 82 and among female the %age is 72.
- Among Babyhood age group (2 - 6) 6% boys and 4% girls are underweight.
- In Pre- Schooling age both the genders are having equal percentage of underweight i.e. 1% each.
- In Schooling group again both the genders have equal percentage of underweight i.e. 6% each.
- In Pre and Post Adolescent groups, both the genders are equally underweight, 2% each.
- In Adult group, 24% male and 23% female are underweight.
- Among middle-aged persons, 6% male and 4% female are underweight.
- In old age group, only 1% female are underweight.

To analyze the nutrient content of NWFP chemical analysis of the major species was carried out through Laxminarayan Institute of Technology, Nagpur. It has been observed that the results of the nutrient content of the species show significant variation against the values of the nutrient contents prescribed by ICMR (taken as standard) (Table 6).

**Table 6 - Chemical analysis of selected species consumed**

S No	Name of the NWFP	Nutrient per 100 gm	Standard (ICMR)	Nutrients in collected samples (LIT)	% Deviation
1	<i>Madhuca latifolia</i> (Mahua)	Energy (Kcal)	111	98	- 11.7 %
		Protein (gm)	1.4	2.2	+ 57 %
		Carbohydrate (gm)	22.7	19.7	- 13.2 %
		Fat (gm)	1.6	1.2	- 25 %
		Moisture (gm)	73.6	74.4	+ 0.01
		Fiber (gm)	NA	1.5	*****
2	<i>Buchanania lanzan</i> (Achar)	Energy (Kcal)	88	325.9	+ 270.3 %
		Protein (gm)	1.9	12.9	+ 578.9 %
		Carbohydrate (gm)	19.8	60.7	+ 206.5 %
		Fat (gm)	0.1	3.5	+ 3400 %
		Moisture (gm)	76.2	3.4	+95.5
		Fiber (gm)	1.1	14.2	-1190.90
		Phosphorus (mg)	41	0.01	-99.97
		Vit. C. (mg)	7	2.38	- 66
3	<i>Ficus glomerata</i> (Doomer)	K (mg)	NA	0.1	*****
		Energy (Kcal)	37	344.82	+ 831.9 %
		Protein (gm)	1.3	17.2	+ 1223.07 %
		Carbohydrate (gm)	7.6	263.8	+ 3471.05 %
		Fat (gm)	0.2	2.3	+ 1050 %
		Moisture (gm)	88.1	3.3	- 96.25 %
		Fiber (gm)	2.2	8.6	+ 290.9
4	<i>Psalliota campestris</i> (Pihari)	Vit. C. (mg)	5.0	2.72	+ 45.6 %
		Energy (Kcal)	43	365.6	+ 750.23 %
		Protein (gm)	3.1	30.4	+ 880.64 %
		Carbohydrate (gm)	4.3	5.1	+ 18.6 %
		Fat (gm)	.8	4.4	+ 450 %
		Moisture (gm)	88.5	8.3	- 90.62 %
		Fiber (gm)	0.4	2.3	+ 475 %

Source : Analysis by Laxminarayan Institute of Technology, Nagpur

## **Nutrient content of the significant NWFP species consumed in larger quantities**

### ***Buchanania lanzan* (Achar)**

Seed contents 35.38-47.23%; moisture 4.9-5.6; Nitrogen 10.81- 11.57 and Protein 67.56-72.31 (Mitra and Malhotra 1980).

### ***Zizyphus jujuba* (Ber)**

Nutritious and rich in vitamins; richer than apple in vitamin 'C', protein, phosphorus and minerals; higher Iron and calorific value than Oranges (Sood et al 1980).

### ***Diospyros melanoxylon* (Tendu)**

Fruits with the property to cure the palpitation of heart and nervous breakdowns; Fruit has Ash 3.75, Nitrogen 1.43, Phosphate 0.0125; Potassium 0.146; and Calcium 1.32; Seeds contain Ash 4.10; Nitrogen 1.36; Phosphate 0.0425; Potassium 0.132 and Calcium 1.35% (Rathore 1972).

### ***Tamarindus indica* (Imli)**

Pulp contains moisture 20.9; Protein 3.1; Fat 0.1; Fibre 5.6; other Carbohydrate 67.4; and minerals 2.9%; Calcium 170; Phosphorus 110 and Iron 10.9mg / 100gm; Carotene 60g /100gm

### ***Aegle marmelos* (Bel)**

61.5gm water; 1.8 gm Protein, 55gm Carotene, 0.13mg, Thiamine 1.19mg, Riboflavin 1.1mg, Niacin 8mg per 100gm of edible portion of vitamin 'C', edible Protein 64% (Gopalan et al. 1971)

### ***Dioscorea bulbifera* (Gataru )**

Albuminoids 7.36-13.31; Ash 3.31-7.08; Fat 0.75-1.28; Carbohydrates 75.11-81.39; Fibre 3.28-9.64 and P<sub>2</sub>O<sub>5</sub> 5.45-7.77% (WI3:72)

### ***Emblica officinalis* (Aonla )**

89% edible Protein; Moisture (g) 81.08; Carbohydrates (g) 13.7; Protein (g) 05; Fat (g) 04; Vitamin C (mg) 600.

### ***Mangifera indica* (Mango)**

Edible Protein % (74), Moisture (g) 81.0; Carbohydrate (g) 16.1; Protein (g) 06; Fat (g) 04; Vitamin C (mg) 16.

### ***Syzizium cumini* (Jamun)**

Edible protein % 75.0; Moisture (g) 83.7; Carbohydrate (g) 14.0 ; Protein 2.; Fat (.3), vitamin C (mg) 225

### ***Ficus glomerata* (Gular)**

Fruit : Moisture 13.6; Albuminoids 7.4; Fat 5.6; Carbohydrate 49.0; Colouring matter 8.5; Fibre 17.9; Ash 6.5; Silica 0.25 and phosphorus 0.915 ( WI4:35)

### ***Dioscorea hispida* (Baichandi)**

Tubers: Albuminoids 7.20-9.12; Ash 4.05-4.61; fat 0.97-1.10; Carbohydrate 81.45-81.89; Fiber 3.28-6.28 and P<sub>2</sub>O<sub>5</sub> 0.52-0.77% (WI3:74)

### ***Madhuca latifolia* (Mahua)**

Edible Protein 2.2; Moisture 74.4; Fat 1.2; Minerals 1.1; Fibers 1.5; Carbohydrate 19.7; Calories 98 (A. P. Dwivedi 1993)

### ***Schleichera oleosa* (Kusum)**

Moisture 86.2; Protein 1.5; Fat 0.8; Minerals 1.0; Fibers 0.6; Carbohydrate 9.9 and Calories 53.



## CONCLUSION

The *Pahadi Korwa* PTG depend to a large extent on the subsistence agriculture and Non Wood Forest Products for meeting their nutritional demands. Non wood products denote all kinds of forest produce other than timber and firewood and consist of a wide spectrum of plant and animal products, being used by the tribals for various purposes, specially food and medicines, for generations. In the study area, it has been assessed that 73% of NWFP is consumed in Joorie para and 80 % in Lalmati. Contribution of NWFP in the total food intake is 49% in the whole study area. Of the total NWFP collected by the villagers, 76 % are consumed by them as food whereas 24 % are sold for income generation. The nutritional Screening can help in identifying patients who are nutritionally at risk. The percent of malnourishment has been observed as high in both children and adults, signifying an inadequate diet lacking both in quality and quantity.

## SUGGESTIONS

- ◆ Large-scale multi-centric studies on the representative population groups with inputs from clinicians, nutritionists, social workers and psychologists are needed for the complete and multidimensional assessment of the tribals - nutrition interface. Based on the research findings appropriate nutrition intervention strategies should be planned for community living as well as for the elders through an institutionalised mechanism.
- ◆ Mid-day meal programme can enhance the health status of the children fulfilling all the nutritional requirements.
- ◆ Traditional management and conservation methods of NWFP must be promoted with a consensus at national, state and local levels.
- ◆ There must be strict legal and administrative measures to curb the widespread practice of overgrazing, which is leading to mass destruction of NWFP.
- ◆ New policy ought to be established on traditional systems and local level initiatives to develop strategies for management of community resources for effective management of NWFP for the PTG.
- ◆ Action-oriented research should be carried out to investigate and test alternative approaches in improving the delivery of such services (International Community Organisations, Family Welfare Programmes, etc) and showing greater responsiveness to the PTG needs.
- ◆ Efforts should be strengthened to generate and share information regarding the species of medicinal and economic importance and conservation concerns.

46.

## A STUDY ON UTILISATION OF MEDICINAL PLANTS BY LOCAL COMMUNITIES OF SATPURA - MAIKAL REGION OF MADHYA PRADESH, INDIA

A.K.Bhattacharya and Rajeshwari Dubey

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### **Abstract**

*The paper attempts to examine the importance and utilisation pattern of the major medicinal plants among the local communities of Satpura – Maikal range of Madhya Pradesh. The important medicinal plants which are commonly used by the local communities have been discussed.*

### **BACKGROUND**

India has rich heritage of knowledge on plant based drugs both for use in preventive and curative medicines. Besides the classical work of the “Atharva Veda”, ancient Indian scholars like “Charak”, “Sushruta” and others produced remarkable descriptions of Indian medicinal plants. These describe the properties of medicinal plants and preparations in such details that most of these plants and their preparations are still held in high repute in the medical profession. In fact, our Ayurvedic system of medicine is predominantly a plant-based *materia - medica*, making use of most of our native plants to make the health care cheap and acceptable.

In the beginning of the Nineteenth Century researchers in India began the reclassification and rearrangement of old Ayurvedic texts and compiled their work in various ways. Every method of classification has rendered some help in the progress of the drug science. Sarmah (1968-69) has listed about 248 botanical drugs from Atharvaveda and Rigveda itself. Chunekar (1972) has published a full glossary of medicinal plants included in the ancient classical works of ‘Charak Samhita’ and ‘Sushruta’ (SFRI Bulletin, JBP, 1998).

Forests of Madhya Pradesh are richly endowed with natural genetic resources of tropical broad leaf species. Medicinal plants are found as under-storey in the natural forests. Although on account of past misuse, over utilization and biotic pressures in certain areas many plant species of medicinal importance have become rare.

There are still a large number of areas in the State, which can be said to be the storehouse of such plants. The present study is an attempt to identify the plants of medicinal importance of Satpura - Maikal region and their use by the local Tribal Community.

A number of ethnobotanists, foresters and researchers have attempted to work on medicinal plants of Madhya Pradesh. In 1960 Dr.S.K.Jain started intensive field studies among tribals of Central India. Jain (1963)<sup>1</sup> identified the plants used in medicinal plant lore and medico religious beliefs about plants among tribals of Bastar. Saxena and Shukla (1971-72)<sup>2</sup> surveyed medicinal plants of Patalkot, Chhindwara (M.P.). Some other significant studies on medicinal plants of the State include survey of medicinal plants of Pachmarhi, Betul and Chhindwara region (Shah, 1980)<sup>3</sup>, medicinal plants from Satpura

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<sup>1</sup> Jain SK, 1963. Plants used in medicine by the tribals of M.P. Regional Research Lab. Jammu.

<sup>2</sup> Saxena HO & Shukla SG, 1972. Medicinal Plants of Patalkot (Chhindwara) M.P. *SFRI Bulletin* No.13.

<sup>3</sup> Shah NC, 1980. Survey Report of Pachmarhi, Betul and Chhindwara regions of M.P. CIMAP, Lucknow. mountains (Karnik, 1996)<sup>4</sup>, indigenous wild medicinal plants in the forests of Baiga Chak of Mandla district (Pandey and Shrivastava, 1994)<sup>5</sup>, less known medicinal plants in the forests of Chhindwara District (Mishra, Prasad and Bhattacharya, 1994)<sup>6</sup> and status survey of indigenous medicinal wealth in natural forests of Seoni District (Pandey and Shrivastava, 1989)<sup>7</sup>.

Madhya Pradesh lying in the central region of the country is floristically one of the richest and most interesting sectors of the country. The State lies between the latitudes of 21°00" and 26° 46" N and between the longitudes 74° 2" E to 84° 24"E. The undulating topography characterized by low hills, narrow valleys, well defined plateau and plains is the general physiography. Catchments of many important rivers like Narmada, Son, Chambal, Betwa lie in the State. The elevation varies from 61 to 1438 metres above sea level. The hilly areas like Amarkantak, Pachmarhi enjoys cool climate while Gwalior region is the hottest part of the State. The annual rainfall varies in both the regions. Gwalior receives 851 mm average rainfall. Due to such extreme climatic and topographic variations, the State is very rich in flora and affords better chances of large varieties of medicinal plants in this area. 25% of the total tribal population of the country lies in Madhya Pradesh. About 59 tribes are found here. According to 1981 census the tribal population in Madhya Pradesh was 120 lakh that has increased to 154 lakh in 1991. Population statistics of the study area is given in Table 1.

**Table 1 - Tribal Population of the study area**

Districts	Population 1981	Percentage of Tribal Population	Population 1991	Percentage of Tribal Population
Balaghat	1147810	21.8	1365870	21.9
Betul	925387	36.2	1181501	37.5
Chhindwara	1233131	33.4	1568702	34.5
Hoshangabad	1003939	16.0	1267211	17.4
Mandla	1037394	60.4	1291263	60.8
Seoni	809713	36.4	1000831	37.0
Shahdol	1345125	47.5	1743869	46.3

Source : *The M.P. Human Development Report 1998.*

Due to harsh geographical conditions and lack of transportation facilities these tribals are not in constant contact with the outer world. Tribal people live in close harmony with the forests and draw their sustenance largely from the forests. The forests not only provide them food material, timber, fodder, firewood but also satisfy their cultural needs. They are found in large number in Madhya Pradesh as the climatic and the geographical conditions are suitable for them. The main tribes are Gond, Bhil, Kanwar, Seharua, Baiga, Halwa, Maaria, Kol, Bhabaria and Korku.

In Satpura–Maikal region (Map 1) districts (Betul, Chhindwara, Seoni, Hoshangabad, Mandla, Balaghat, Shahdol) with dense forests (having more than 40% forest density) and rich tribal population have been selected (Table 2). The main tribes of these districts are Gond, Korku, Saharia, Kanjar. Maria, Bhabaria Primitive Tribe Group (in Patalkot of Chhindwara District).

<sup>4</sup> Karnik CR, 1996. Some medicinal plants from Satpura Mountains. *Indian Forester*, 173-182.

<sup>5</sup> Pandey RK & Shrivastava JL, 1989. Status survey of indigenous medicinal wealth in natural forests of Seoni District of M.P., *Jour of Trop Forestry*, 5 : 111.

<sup>6</sup> Mishra GP, Prasad Ram & Bhattacharya P, 1994. Less known medicinal plants in the forests of Chhindwara district of M.P. National Seminar at MPRVVN, October

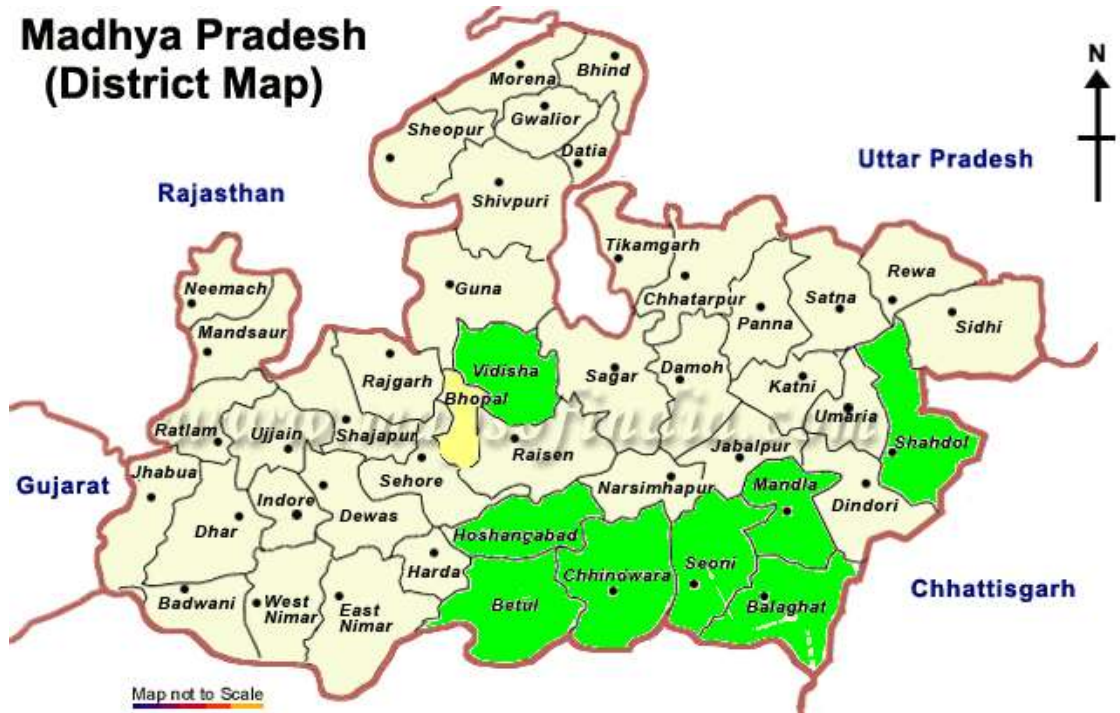
- <sup>7</sup> Pandey RK & Shrivastava JL, 1994. Indigenous wild medicinal plants in the forests of Baiga Chak of Mandla district. *Vaniki Sandesh* Vol. XVIII-2.



# Map - 1

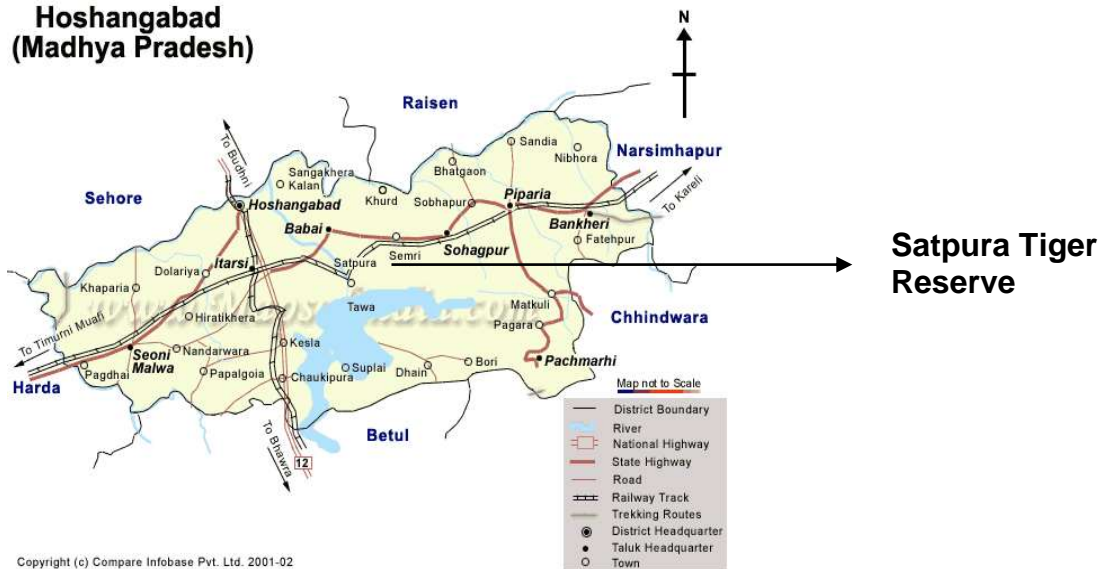
a k bhattacharya

## Madhya Pradesh (District Map)



 The Study Area

## Hoshangabad (Madhya Pradesh)



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**Table 2 - Forest cover of the study area**

District	Geographic area in sq km	Total area under forest in sq km	Percentage of forest area apropos geographical area
Balaghat	9229	4052	43.91
Betul	10043	3939	39.22
Chhindwara	11815	4336	36.70
Hoshangabad	10037	3412	33.90
Mandla	13269	6666	50.24
Seoni	8758	2840	32.43
Shahdol	14028	5499	39.20

Source : District Gazetteers and Working Plans of the Districts

During various visits to these districts efforts were made to collect information regarding the plants which are of medicinal importance in this area and locally used by the tribal people. Forests villages of these districts were surveyed. Villagers are using a number of wild plants as household remedy in various diseases. The uses of many medicinal plants by tribal people are however not known outside their restricted community. This knowledge has descended through generations and it has survived through times among the present days primitive societies living in remote areas of the state.

The information about the uses of various plants was obtained from the local inhabitants, Vaidyas, Gunias and forest officials. The information about the methods of application, parts of the plant and its quantity to be used, was obtained from the local Vaidyas. It has been observed that different people have different opinion regarding the application of same species. The details of most commonly used medicinal plants of the region are given in Table 3.

**Table 3 - List of commonly used medicinal plants in the study area**

Botanical name (Local name) Family	Morphology and Medicinal Use
<i>Asparagus racemosus</i> Willd. (Satawar or Dashmool) Liliaceae	It is a climber with woody prickly branches. It is found in the forests from September to February. Flowers are white. Used in boils, leucorrhoea, Epilepsy and gastro-intestinal disorders.
<i>Asphodelus tenuifolius</i> , Cav. (Banpyaji) Liliaceae	Found in cultivated fields as weeds from October to February. It is an annual herb. Externally applied to ulcers and inflamed parts.
<i>Azadirachta indica</i> , A. Juss. (Neem) Meliaceae	Evergreen tree. Found throughout the area. Every part is medicinal. Used in fever, ulcers, and chronic skin diseases, round and thread worm.
<i>Bauhinia vahlii</i> , Wight & Arn. (Mahul / Maljhan) Caesalpiniaceae	It is a huge Climber with long leaves. Its seeds are used by local people as tonic.
<i>Berberis asiatica</i> , Roxb. ex Dc. (Chitra / Dar-hald / Daruharda) Berberidaceae	Spiny shrub with thick leaves. Roots are used for healing ulcer and the decoction of entire plant with butter is used to stop bleeding.
<i>Beta vulgaris</i> , L. (Chukandar) Chenopodiaceae	It is an herbaceous plant. It is cultivated from November to January. Seeds are cooling. Local people use the leaves as an antiseptic for burns.

<i>Chloroxylon swietenia</i> , DC. (Bhirrah / Ghiria) Flindersiaceae	It is a small tree. Its leaves are antiseptic applied on wounds.
<i>Cleome viscosa</i> , L. (Hulhul / Hurhur) Capparaceae	It is an annual herb found in wastelands, forest margins from May to January. It is used in worms and convulsions.
<i>Clerodendron serratum</i> , (L.) Moon (Bharangi) Verbenaceae	Shrub, available from August to October. Its seeds are laxative, also used in nausea.
<i>Conscora diffusa</i> , (Vahl) R. Br. ex Roem. & Schutt. (Bhuin Neem) Gentianaceae	Much branched herb. Generally found in shade along drains and streams. People prepare a tonic from the leaves. It is available from October to May.
<i>Costus speciosus</i> , (Koen.)Sm. (Keokanda) Costaceae	Found in damp sites besides cultivated fields from August to June. Rhizome is used as medicine. Vaidyas use it for snakebite. It is astringent and purgative.
<i>Cuscuta reflexa</i> , Roxb. (Amarbel) Convolvulaceae	Parasitic plant found on road side trees and shrubs, used in headache.
<i>Cymbopogon martinii</i> , (Roxb.) Wats. (Roshia or Gandhbel) Poaceae	It is an astringent herb found in wastelands from September to February. Oil of this plant is called 'Roshia Oil' which is useful in baldness and skin diseases. Oil is also used on skin as mosquito repellent.
<i>Dendrocalamus strictus</i> , (Roxb.) Nees (Bans) Poaceae	It is a tall bamboo. Siliceous substance found inside old stem is of medicinal importance. It is used in Cough, Asthma and Fever.
<i>Helicteres isora</i> , L. (Marorphali) Sterculiaceae	It is a deciduous shrub. Very commonly found in dry deciduous forests. Flowers in August and fruits can be seen from October to June. According to local people its fruits and bark constitute the drug. It is used as an expectorant and an astringent. Commonly used in dysentery, diarrhea, diabetes, and in scabies.
<i>Hibiscus rosa-sinensis</i> , L. (Gudhal) Malvaceae	Commonly known as Jason, an ornamental plant. Found throughout the region. Flowers are red and pink. Flowers and leaves are used as conditioner for hair. Petals are used as drink in fever and dysentery.
<i>Phyllanthus emblica</i> , Gaertn. (Aonwla) Euphorbiaceae	It is a tall tree found in forest along streams. Commonly planted in villages. Used in diarrhea, dysentery, jaundice and anemia. Seeds used in asthma and bronchitis.

47.

## **EX SITU CONSERVATION OF MEDICINAL AND AROMATIC PLANTS IN INDIA WITH SPECIAL REFERENCE TO MADHYA PRADESH**

A K Bhattacharya and Regina Hansda

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### **Abstract**

*The paper embodies the recent trends in ex situ cultivation of Medicinal and Aromatic Plants (MAPs) as an alternative to biodiversity conservation and as an additional source of income with special reference to Madhya Pradesh (MP). Efforts have been made to highlight the problems encountered in the said cultivation for necessary policy considerations if this emerging sector is to become a financially rewarding and ecologically sustainable one. The Study was sponsored by the MP Minor Forest Produce Federation as an activity to promote the cultivation of the MAPs.*

### **INTRODUCTION**

Rise in Population, inadequate supply of drugs in certain parts of the world, prohibitive costs of treatment for common ailments, side effects of several allopathic drugs in current usage and development of resistance to currently used drugs for infectious diseases have led to increased emphasis of plant materials for a wide range of human ailments. As a result, interest among people the world over in the use of plant based pharmaceuticals is growing at a very fast pace. According to an estimate by World Conservation Union (IUCN) the global market for MAPs is estimated to be worth U.S. \$800 billions a year. International trade in Medicinal Plants has been dominated by China, which exports 1,21,900 tonnes a year, and on the contrary India exports about 36,000 tonnes in toto (Rajashkharan and Ganeshan, 2002)<sup>1</sup>.

The gap in growing demand with depleting resource base has propelled the *ex situ* cultivation of MAPs and more so to take the pressure off from the wild. MAPs constitute a very important national resource and India has one of the richest plant based ethno-medical traditions in the world. The growing importance as a bio-cultural resource on one hand and the threats to its survival on the other has necessitated action plan on national level. Setting up of the National Medicinal Plants Board of India in November 2000 was a step in this direction to explore the problems and prospects of this sector. MP with its wide variety of soil and climatic conditions is especially suited to the growth and cultivation of umpteen numbers of MAPs and emerging as a herbal State.

### **CONSERVATION THROUGH CULTIVATION AS AN ALTERNATIVE**

Until a decade ago, no large-scale cultivation of MAPs had taken place. There are two major reasons for this: (i) Lack of institutional support for production and dissemination of key species for cultivation; (ii) Lack of organized market for the trade of MAPs.

If cultivation is to succeed in providing an alternative source of supply for the present medicinal plants based manufacturing units and traditional health practitioners, then plants have to be produced cheaply and in large quantity. In all cases where cultivation has taken place, whether Europe, Asia or Africa the crops chosen are those yielding good

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<sup>1</sup> Rajashekharan PE & Ganeshan S, 2002. Conservation of Medicinal Plant Biodiversity – An Indian Perspective. *Journal of Medicinal and Aromatic Plant Sciences*, 24 : 132-147.

economic returns (Cunningham, 1997)<sup>2</sup>. Also these are either fast growing species or species with multiple benefits. The trend is almost similar in India with adoption of fast growing aromatic plants, which yield profits over consecutive years. In India cultivation for profit is therefore restricted to a small number of high priced and fast growing species such as *Safed Musli (Chlorophytum borivillianum)* Lemon Grass (*Cymbopogon flexuosus*), *Mentha (Mentha arvensis)*, *Palmarosa (Cymbopogon martini)*, *Ashwagandha (Withania somnifera)* etc.

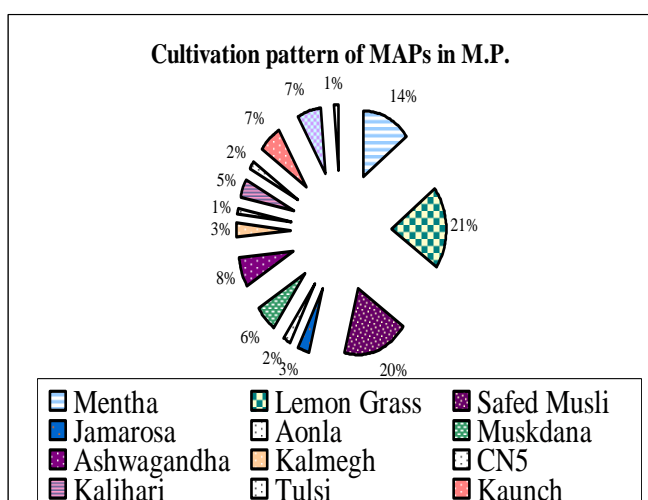
### MAPS UNDER EX-SITU CULTIVATION IN INDIA AND MADHYA PRADESH

In India, agro-technology for only about 100 species and agronomics of just 40 species have been developed by the premier research organizations in MAPs research like Central Institute of Medicinal and Aromatic Plants (Hussain, 1994)<sup>3</sup>, The Indian Council of Agricultural Research, New Delhi and various Regional Research Laboratories.

In actual practice, however, very few species are grown on a large scale. For instance, in MP only about 15-20 species are commonly cultivated by the traditional and neo-farmers. Though on experimental basis, farmers also try species with non-standardized agro-techniques. There are species with great international demand and tremendous potential for growth in the Indian sub-continent, e.g. *Matriacaria chamomilla*, but not much research has gone into it. And whatever research work has been done, the extension work has not been satisfactory enough for the enterprising farmers at least to adopt and be a role model for other farmers. Moreover the farmers resort to mono cropping especially in aromatic plants rather than adopting any kind of inter-cropping models for the sake of convenience as far as management of crop is concerned and also because of lack of knowledge of different inter-cropping models that has been researched upon with satisfactory results without hampering the medicinal properties of the intended main crop.

### CULTIVATION OF MAPS IN MADHYA PRADESH

MP with its wide variety of agro-climatic zones is a home to a large number of MAPs occurring naturally in various ecosystems such as Satpura and Maikal Ranges, the Narmada and Sone river valley and the Vidhyan plateau of Rewa, Panna and Malwa.



Species such as those of *Cholorophytum*, *Withania* and various aromatic grasses occur in great abundance in these regions. Therefore, cultivation of MAPs is being done as easily as any other agricultural crops, the inputs being more for medicinal plants as the cost of planting material is comparatively higher.

For the capacity building in cultivation of the MAPs, approximately 5000 farmers have been formally trained in MP alone and are practicing cultivation of MAPs successfully along with traditional crops. The estimated

<sup>2</sup> Cunningham AB, 1997. *An Africa-wide overview of Medicinal Plant Harvesting, Conservation and Health care*. In: Non Wood Forest Products (11). *Medicinal Plants for forest conservation and health care*. FAO, UN, Rome.

<sup>3</sup> Hussain A, 1994. *Essential Oil Plants and their cultivation*. Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow

total area under MAPs cultivation is more than 4000 hectares (CEDMAP, 2000)<sup>4</sup> and there are farmers who have also resorted to MAPs cultivation without any formal training but on the basis of inputs from neighbouring farmers.

### IMPACT OF COMMERCIAL CULTIVATION OF MAPS

It is evident that the commercial cultivation and trade in MAPs will have long term implications for the different stakeholders. If one considers the fact that 70-90% of materials exported are harvested from wild (Holley and Cherla. 1998)<sup>5</sup>, the survival of some of these species may be under threat, given the increasing demand for MAPs. Although there are only a relatively small number of species that are traded in significant volume, the fact that so few species (<40) are produced entirely under cultivation is a matter of great concern. (National Medicinal Plants Board, 2002)<sup>6</sup>

### IMPACT OF MAPS CULTIVATION ON THE PEOPLE

The study on the economics of few species for which agronomics has been developed as per validation on field indicates that though the initial investments are higher as compared to the traditional crops but the profits realized are manifold. The unpredictable monsoons and drought in the last few years have resulted in loss in income from many of the traditional crops. Cultivation of MAPs of late is being preferred because of the following reasons;

- Most of the species are not browsed or grazed.
- Crops are not prone to attack by diseases and do not require constant monitoring as in case of traditional crops.
- There is very little danger of theft of crops mainly because lack of knowledge about the market and processing becomes as hindrance factor.
- Profits realized are on the higher side.

No doubt cultivation of MAPs holds much opportunities and promises for the farmers provided proper marketing linkages are determined prior to their cultivation.

The proverb “ Early bird rules the roost” holds good even in the MAPs sector; people have simply minted money in this sector especially the early innovators. The educational profile of cultivators has got a lot to convey. A significant number of cultivators are neo-farmers having professional degrees like medical, engineering and management apart from those in service or holding an alternative business. These respondents have adopted the cultivation of MAPs on their ancestral land as this sector is considered to be an unbeaten track, opportunities are immense but people into its cultivation are few.

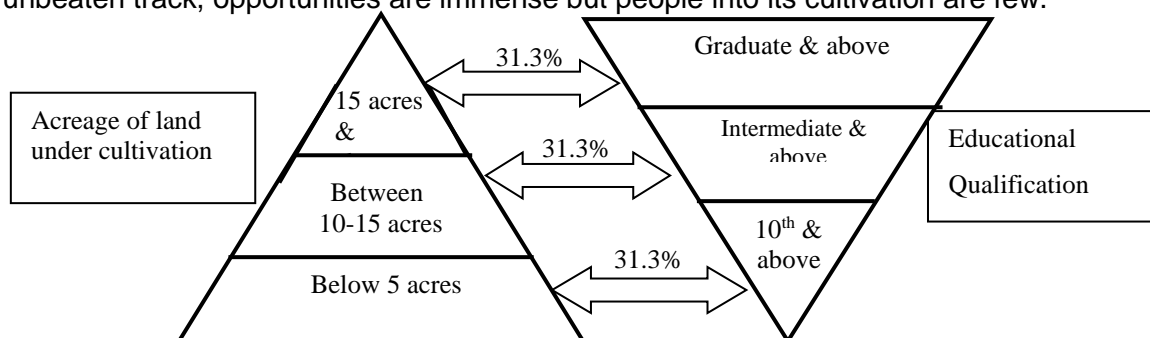


Figure 2: Cultivation of MAPs vis-à-vis educational accomplishment  
Source: Primary data

<sup>4</sup> CEDMAP, 2000. *How to Cultivate MAPs?* Centre for Entrepreneurship Development in Medicinal and Aromatic Plants, Bhopal (MP).

<sup>5</sup> Holley Jason & Cherla Kiran, 1998. *The Medicinal Plants Sector in India: A Review* South Asian Regional Office, IDRC, Canada

<sup>6</sup> National Medicinal Plants Board, 2002. *Cultivation practices of some commercially important Medicinal Plants*. Ministry of Health and family welfare, GOI (Department of ISM & H)

## MAPs TRADE

With large scale cultivation of MAPs on private or public lands either through individual or community-based initiatives, the MAPs trade is sure to benefit from it, both for domestic consumption as well as international trade.

### **Biodiversity conservation**

The first and foremost challenge for any country or state is of preserving the natural wealth it possesses, to stop further loss and utilize biotic common resource for larger common good of the society.

Large-scale cultivation on private or public lands as it is obvious and anticipated too will take off pressure of harvesting MAPs from the wild.

### **Marketing trend vis-a vis the current cultivation practices**

It is evident from the projections made on the demand aspect of few of the medicinal plants (Table - 1) that this sector offers lot of opportunities. However, no such statistics are available for aromatic plants sector, which is also an emerging field, and especially in MP, the cultivation of aromatic plants such as Mentha and Lemon Grass are done more compared to other crops with Safed Musli being an exception.

**Table1: Demand supply gap: 2001-02 and 2004-2005 of top 8 Medicinal Plants**

Botanical name	Common name	Quantity (tonnes)	
		2001-2002	2004-05
<i>Emblica officinalis</i>	Aonla	7582.8	26636.2
<i>Asparagus racemosus</i>	Shatawar	2678.4	8412.2
<i>Withania somnifera</i>	Ashwagandha	1123.6	3222.4
<i>Ocimum sanctum</i>	Tulsi	925.1	3038.4
<i>Aloe barbadensis</i>	Gheekwar	641.5	2684.5
<i>Swertia chirata</i>	Chiraita	167.5	487.0
<i>Andrographis paniculata</i>	Kalmegh	118.8	311.1
<i>Rauwolfia serpentina</i>	Sarpagandha	83.5	248.6

(Source: Ministry of Health and Family Welfare et al, 2002)<sup>7</sup>

Fluctuations in demand and supply are characteristic of this sector owing mainly to the unorganized nature of trade but the wide variations in domestic and international prices (Table: 2) is a cause of concern. Supply of crude drugs and lack of value addition could be few of the reasons these fluctuations, but certification of the product could be an alternative, which could help the Indian stakeholders of MAPs, realize better proceeds from their cultivation and trade.

**Table 2:Market trend in domestic and international prices**

Essential Oils (in Rs/ Kg)	June 1998	June 1999	September 2000	June 2001	March 2002
Basil Oil	4685	4685	3930	4204	4204
Chamomile Oil	35,610	35,610	36,450	38,963	39,000 (18,000)

Citronella Oil	490 (300)	490 (300)	480 (300)	411 (300)	353 (325)
Lemon Grass	930 (650)	955 (450)	910 (450)	1016 (450)	1060 (450)
Palma Rosa	960 (450)	960 (450)	990 (450)	1051 (450)	1075 (560)
Mentha Oil	400 (375)	400 (375)	400 (360)	356 (350)	356 (350)
Tulsi Oil	-	-	-	-	2100

Figures in brackets: Domestic Indian Prices

Sources: International: New York Market Price, Chemical Marketing Reporter

Indian: CIMAP Records, Chemical Weekly

**Table 3 - Some of the major Commercial Cultivation Areas of MAPs in India**

Crop	Common name	Area (ha)	Production	Exported (in tonnes)	Value (in lakhs)
<i>Ocimum basilicum/sanctum</i>	Basil	500	-	215.65	25.55
<i>Mentha arvensis</i>	Japanese mint	15,000	(12,500)	1095.40	3929.87
<i>Cymbopogon flexuosus</i>	Lemon grass	20,000	1300 (600)	22.63	125.55
<i>Cymbopogon maritini</i>	Palmarosa	2,000	-	12.90	82.46
<i>Cymbopogon winterianus</i>	Citronella	2,000	1800 (600)	-	-

Sources: Compilation of data from Amruth, CEDMAP Bhopal, CIMAP Records, and Centre for Planning, Research and Action, New Delhi (2000-2001), Monthly Statistics of the Foreign Trade of India, Vol-1, Exports, April 2000- March 2001<sup>8</sup>.

## PROBLEMS AND PROSPECTS

Cultivation of MAPs is one of the major mechanisms whereby conservation, sustainable harvesting as well as utilization can be drawn simultaneously (Hussain, 1994)<sup>3</sup>.

Though there are many risks associated with large-scale commercialization of MAPs, but through proper marketing strategies and appropriate cost-effective technologies, *ex situ* cultivation is likely to be successful, sustainable and rewarding.

With the increasing demand for herbal products for health cure and cosmetics (Table: 1), there are good prospects for the large-scale production and use of MAPs.

The experience has not been that easy for these farmers who have adopted the cultivation of MAPs. Some of the problems as articulated by the farmers are enlisted in the table below.

**Table 4 - Distribution of respondents as per their opinion on the prevalent state of affairs on MAPs in Madhya Pradesh**

Distribution of respondents as per their opinion on the prevalent state of affairs on MAPs	
	Percent of respondents (n = 32)*
Lack of marketing facilities	92.1
Lack of availability of certified seeds / planting material	88.9
Lack of testing facilities.	36.4
Lack of availability of market information on demand of the produce and production by other farmers	35.7
Lack of financing schemes by the government.	15.3



\*The percentage response is higher because of multiple responses for a particular parameter by an individual farmer. (Source: Primary data)

<sup>7</sup> Ministry of Health and Family Welfare, 2002. *Demand Study for Selected Medicinal Plants, Vol-1*. Centre for Research, Planning and Action, New Delhi, Govt of India, Department of ISM & H and World health Organisation

<sup>8</sup> Foreign Trade of India, 2001. *Monthly Statistics of the Vol-1, Exports, April 2000- March 2001*.

The major bottleneck in the cultivation of MAPs, as is evident from the Table – 4 is the lack of proper marketing facilities (92.1%) along with the lack of availability of certified planting material (88.9%) and market information (35.7%) about the product. Though few organizations have come forward to provide training inputs to interested cultivators but it is mostly restricted to the resourceful few having alternative means of income.

**Table 5 - Distribution of respondents as per their expectations from a regional level institutional set -up by the government**

Distribution of respondents as per their expectations from a regional level Institutional set -up by the government	
	Percent of respondents (n = 32)*
Proper marketing facilities	84.6
Monthly publication of cost-effective and up-to-date literature on MAPs cultivation and trade	77.9
Adequate arrangements for standard testing laboratories	48.5
Declaration of support prices at least in the initial stages as a confidence building measure	32.5
Supply of quality planting material at reasonable prices	25.2
Playing the role of a responsible third party mediator incase of any trade related problems	22.3

Source: Primary data

\* Percentages are higher and not tallying to be hundred due to multiple responses.

Though at present agro-technologies are available for over 100 MAPs but very little of technology has been disseminated or are in practice and the same 100 odd plants continue to be harvested from the wild. The main reason for non-implementation of agro-technology is the lack of agronomics especially for undertaking mixed cropping and also for saving on the expenditure part. Thus focused efforts are required to ensure that proper knowledge about these species are disseminated to the farmers.

As is evident from Table-5 marketing facilities and upto date information about trade and cultivation of MAPs are the core issue areas where institutional level interventions are required. Therefore, to address all these problems, various support services need to be arranged through various schemes of the government from time to time such as structures for processing and marketing. Considering the large amount of scope for improvement in this sector it would not be possible for any government agencies to provide all the services efficiently and hence efforts towards roping in independent private players could be worked out.

## MEASURES FOR ACHIEVING A THRIVING MAPS INDUSTRY

Since medicinal plants fall under the purview of many departments such as Horticulture, Medicinal Plants Board, Forest Department and other allied branches of Agriculture, formation of an exclusive wing in each of these departments to look into the various issues plaguing this sector is imperative and needful too.

Problems should be tackled with a multi-pronged approach in to ensure integrated development of MAPs. The various tasks, which should be addressed in a well-planned and co-coordinated manner, include the following:

- Research and Development
- Training
- Extension
- Follow up actions

Apart from these, attention should also be paid to address following issues -

- Strong support and commitment are needed if cultivation is to succeed as a means of meeting the requirements of pharmaceuticals (whether for local consumption or export). If cultivation does not take place on a large scale to meet demand then it would merely becomes a convenient bit of ‘window dressing’ making the continued exploitation of wild populations.
- Improvement in the trade and the marketing practices while giving due considerations to the institutional aspects as well.

### ***Making sense of the domestic market***

Most essential for the process of developing the industry and the sector will be the gathering and dissemination of information. Currently little is known about the market except for the places where they are sold and the prevalent market rates of few of the products. Consolidation of these information on a regular basis will be essential for the co-coordinated planning for this sector in order to deal effectively with all the stakeholders.

### ***Dissemination of market information and making provisions for value- addition at the local level***

Towards information collection and dissemination the Minor Forest Produce Federation of Madhya Pradesh has recently created a website ([www.mfpfederation.com](http://www.mfpfederation.com)) for maintaining an inventory of all the farmers in the trade of MAPs, for putting up any offer for sale and procurement of different produce etc. Though the initiative is commendable but some cheaper alternatives which are up-to-date as well as cost-effective need to be devised and made functional both at the state and national level projecting the current status with demand and supply statistics and trend.

Little value addition is done both at the local as well as national level. Most of the MAPs find its way to the international market in a less processed state thereby not realizing the value it should. Lack of processing facility and knowledge about the same also comes as a hindrance factor.

## **FORMALISING AND ORGANIZING THE MARKET**

Almost 90% of the respondents in the study area articulated the need for a proper marketing system of the produce and this is the scenario in the country at large. Therefore, a key task is to bring a greater degree of formality and organization to a market, which has been known to be inefficient, imperfect, informal an opportunistic most of the times. Without certain amount of formality in this sector especially of *ex situ* cultivated crops it is unlikely that all efforts towards sustainable production and consumption of MAPs would be realized.

## **POLICY CONSIDERATIONS**

The government need to extend support to this emerging field of herbal medical cure and herbal products either by way of subsidies, new schemes for promotion of *ex situ*

cultivation of MAPs like the one formulated by the National Medicinal Plants Board but efforts have to be made whereby small farmers can come forth to benefit from such schemes.

Trade regulations at every level of marketing chain remain unenforced of the existing policies. Human resource development with a focus exclusively to this sector for proper monitoring and control could be an alternative.

48.

## MEDICINAL PLANTS FOR RURAL WOMEN AND CHILD HEALTH CARE – ISSUES, OPTIONS AND STRATEGY

A K Bhattacharya and Krishna Patra

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### **Abstract**

*The paper examines the significance and potential of medicinal plants for rural women and child healthcare. The trends and the existing use of the major species of medicinal value for the cure of women and children diseases have been described. The critical issues have been identified and analysed, and the short term and long term strategies have been suggested.*

### **BACKGROUND**

The history of medicine in India can be traced to the remote past in the vedic period. The Rig-Veda perhaps the oldest repositories of human-knowledge having been written about 4500-1600 B.C. claims about 99 medicinal plants, Yajur Veda (82 plants) and in Samveda too. "Atharva – Veda" deals with 288 plants almost all have medicinal ingredients and were used to cure deadly-diseases. As per the Vedas, the Brahmins deals with 129 plants and Kalpsutras describe some about 519 plants (Kaushik and Dhiman).

Ayurveda (about 2500 B.C.) contains a more detailed account of many drugs and their uses. Ayurveda in fact is the foundation stone of the ancient medicinal science of life and art of healing. "Chakra Samhita" is another earlier treatise of "Ayurveda" (600 B.C.) which list a total of 341 plants and plant products for use in health management. "Susruta Samhita" also dealt with plants related to medicine. Subsequent authors of later treatises have extended the list of ayurvedic single plant drugs to the 600 species of plants.

Bhikshu Atreya, a well known Professor of the University of Taxila, his student named Juaka, who later became the physician of Bimbisara of Magadha, Dhanvantari and Nagarjuna were the well-known persons, whose works deal primarily with the characteristics of the medicinal plants and medicines and its 7<sup>th</sup> Chapter is taken up entirely with the consideration of purgatives and emetics.

It is interesting to mention that during ayurvedic-period the chemistry of natural products isolated both from flora and fauna was well understood at least for practical purposes.

Nagarjuna is considered as a learned person in Hindu-chemistry, was the inventor of Kajli (a compound of Sulphur and mercury) and art of calcination (Bhasma). He was not only a renowned vaidya but was an authority on astronomy, chemistry and magic as well. Bhoja Prabandha, a treatise written about 980 A.D. contains a reference to inhalation of medicaments before surgical – operations and an "anaesthetic called "Sammohini" is said to have been used in the time of Buddha.

The traditional use of medicinal plants (MPs) for women and child health care (WCHC) has been specially significant as during the period when the women and children need special attention and medication, the herbal medicines from the closest nature are not only easily accessible and immediately available, but also most effective, dependable and curative. Historical evidence of the use of traditional herbal medicines for the women and

child health care indicate that there have been synergistic relation between the herbal medicines and the rural and child health care, which, over the last few decades, has faded and the use of the modern medicines has increased phenomenally (Kaushik and Dhiman, 2000)<sup>1</sup>.

### SIGNIFICANCE OF MPs IN WCHC

Nature has always been a first – rate drugstore, with its enormous range of plants that are known to have effective therapeutic qualities. The Foundation for Revitalisation of Local Health Traditions (FRLHT) in India has come up with a tested package of plants and medical herbs that are useful in the treatment of common illnesses like fever, headache, dysentery , jaundice, stomach problems and which can be easily grown in household gardens and directly consumed by people who may require them for preventive and promotive health care.

Some of the herbal medicines have been found to be very effective for the cure of the diseases of the females and the children and thus can play an important role in the WCHC. Large number of herbal species have been reported to have proven curative effects for the common and specific diseases among the women and children. The following gives an idea of the wide range of the medicinal plants that are used in WCHC (Sinha, 1996)<sup>2</sup>

#### Children

##### *Poliomyelites*

##### The Oral Drugs

S No	Common name	Botanical name	Parts used
1	Satavari	<i>Asparagus racemosus</i>	Dried roots
2	Safed musli	<i>Asparagus adscendens</i>	Dried roots
3	Semal musli	<i>Salmalia malabaricum</i>	Dried bark of stem
4	Kiwanch	<i>Mucuna pruriens</i>	Seeds
5	Vidari kand	<i>Pueraria tuberosa</i>	Dried tubers
6	Asvagandha	<i>Withania somnifera</i>	Dried roots
7	Kamarkas gond	<i>Butea monosperma</i>	Gums
8	Salab misri	<i>Orchis latifolia</i>	Dried rhizome
9	Shyam musli	<i>Curculigo orchioides</i>	Dried roots
10	Sanjiwani	<i>Selaginella bryopteris</i>	Leaves
11	Amaltas	<i>Cassia fistula</i>	Fruits and seeds
12	Shilapushpa	<i>Parmelia tinctorium</i>	Thallus
13	Giloy	<i>Tinospora cordifolia</i>	Dried stems
14	Saqaqul misri	<i>Pastinca secacul</i>	-
15	Chota gokhru	<i>Tribulus terrestris</i>	Dried fruits
16	Wanshlochan	<i>Bambusa bambos</i>	Secretions
17	Babuna	<i>Cotula anthemoides</i>	Stems
18	Dikamali	<i>Gardenia gummifera</i>	Gums

To these are added the common dry fruits such as almond (*Prunus amygdatus*), Chironji (*Buchnaniania latifolia*), Saffron (*Crocus sativus*), Cashewnuts (*Anacardium occidentale*), Pista (*Pistacia vera*), raisins of *Vitis vinifera*, Date Palm (*Phoenix sylvestris*) and Turmeric

<sup>1</sup> Kaushik Purushottam & Dhiman AK, 2000. Medicinal Plants and Raw Drugs of India. Bishen Singh Mahendra Pal Singh publishers, Dehradun, (India).

<sup>2</sup> Sinha RK, 1996. Ethnobotany: The Renaissance of the Traditional Herbal Medicine. INA Shree Publishers, Jaipur.

(*Curucuma longa*). The exact proportion of the products to be added to prepare a mixture is not known as it is the professional secret. However, as per rough indications, it is recommended to take about 1200 gms each of the item nos. 1 to 10 and 50 gms each from 11 to 18. The dry fruits are to be taken 100 gms each.

### The Herbal Massage Oil

S No	Common name	Botanical name	Parts used
1	Chota Gokhru	<i>Tribulus terrestris</i>	Dried Fruits
2	Bada Gokhru	<i>Pedaliium murex</i>	Dried Fruits
3	Babuna	<i>Cotula anthemoides</i>	Dried stem and leaves
4	Dikamali	<i>Gardenina gummifera</i>	Gums
5	Suranjan	<i>Colchicum luteum</i>	Dried Corm
6	Kaiphali	<i>Myrica nagi</i>	Dried Root bark
7	Baibirang	<i>Embelia ribes</i>	Dried Fruits
8	Nagakesar	<i>Mesua ferrea</i>	Flower buds and Fruits
9	Ratanjyot	<i>Onsoma echoides</i>	Dried Flowers
10	Jaiphali	<i>Myristica fragrance</i>	Dried Fruits
11	Azwain	<i>Carum copticum</i>	Seeds
12	Zingam Gond	<i>Odina woodier</i>	Gums

About 50 gms of each of the above herbal products are taken and made into powder. The mixture is then cooked in "Egg Yolk Oil" in earthen utensils taking 100 gms of each of them. The egg yolk oil is prepared by cooking the yellow portion of the hen's or duck's egg till it gives out oil. The oil is filtered to get clear oil, which is then used. Cow dung cakes are necessarily used as a source of fire for cooking.

### Women

#### Menorrhagia

Se No	Common name	Botanical name	Parts used
1	Lodh pathani	<i>Symplocos racemosa</i>	Dried stem bark
2	Jal jamani	<i>Cocculus villosus</i>	Leaves
3	Semal musli	<i>Salmalia malabaricum</i>	Stem bark
4	Mahee buti	<i>Rhus coriara</i>	Galls
5	Nagakesar	<i>Mesua ferrea</i>	Fruits and seeds
6	Kaiphali	<i>Myrica nagi</i>	Root bark
7	Kutki	<i>Picrorhiza kurroa</i>	Dried rhizome

#### Leucorrhoea

S No	Common name	Botanical name	Parts used
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1	Lodh pathani	<i>Symplocos racemosa</i>	Dried stem bark
2	Vidarikand	<i>Pueraria tuberosa</i>	Tuber
3	Kamarkas gond	<i>Butea monosperma</i>	Gums
4	Mochras	<i>Salmalia malabaricum</i>	Gums
5	Kala beej bandh	<i>Sida acuta</i>	Seeds
6	Asvagandh	<i>Withania somnifera</i>	Roots

Some other medicinal plants species, which are also commonly used, have a very special and significant contribution to WCHC (Bhattacharjee, 1999)<sup>3</sup>.

*Some common MPs which are widely known for their curative effect of certain diseases in women and children*

- *Adhatoda vasica* – expectorant and antiasthmatic
- *Aegele marmelos*
- *Plantago ovata* and
- *Allanthusmalabarica* – in chronic diarrhoea and dysentery
- *Bacopa monnieri* – for memory
- *Centella asiatic* – for intelligence
- *Melia azadirachta* – antiperiodic and many more

#### **Essential oils from plants used in medicines commonly used for WCHC**

- Eucalyptus oil from *Eucalyptus* spp.
- Peppermint oil from *Mentha piperita*
- Clove oil – *Eugenia caryphyllata*
- Anniseed – *Pipinella anisum* and many others

#### **ATTRIBUTES OF MPs THAT CONTRIBUTE TO WCHC**

Historically the MPs have played a significant role in the most convenient and effective WCHC, because these are not only natural, easily available, cost effective, safe and regenerative, but also because the tribal or rural womenfolk have had the natural inherited knowledge about these MPs as a result of their long term association with the forests for time immemorial.

#### **Safe and Low Cost**

The availability and maintenance of medicinal plants is low cost, already available with village populations, particularly women, and provides an effective way of treating illness without having to consume dangerous costly drugs and pills manufactured in remote factories. These can also be grown and maintained in herbal gardens at their own houses.

#### **Accessibility**

Accessibility to doctors and drugs is still a major problem for most people in rural areas. Available doctors are also expensive and the pharmaceutical drugs they are habituated to prescribe even more so. Thus, even physical accessibility to a modern doctor may not enable to afford his services. In many primary health centres in the country, the availability of even basic pharmaceuticals has indeed become a major problem. Such problems are invariably frequented by the poorer sections of the population, particularly women and children. Such primary health centres are also used as a base by authorities for administering the series of immunisations that children are given when very young.

#### **Indigenous Knowledge and Tradition**

The knowledge of the properties of these plants is not based on chemistry or pharmacology but on wholly indigenous category of knowledge called “*dravya guna shastra*” which cannot be converted into modern day chemistry or pharmacology. Even today, there are over a million traditional village – resident experts in herbal medicine and they include traditional birth attendants, herbal healers and even monks who are well versed in ‘*dravya guna shastra*’. There is also a vast tradition that is very well informed in

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<sup>3</sup>Bhattacharjee Supriya Kumar, 1999. Handbook of Medicinal Plants. Pointer Publishers, Jaipur (India).

various home remedies and their preparation by women, and in important aspects of food and nutrition in so far as they are related to health.

A large number of illness are of the category of common ailments, which are not only self limiting in nature, but whose symptoms can be easily recognised and treated with the use of several kinds of fairly effective remedies, including those in the category of “grandma’s medicines” and folk-remedies which mainly include plants and herbs.

### **Versatility of MPs for variety of diseases**

The natural plants are in most of the cases found to be highly versatile and can be effective in cure of variety of the common and special diseases

- ✓ Relating to mother and child health, morning sickness, anemia during pregnancy, breast milk purification and production.
- ✓ Gynecological problems : Red discharge, white discharge, irregularities in menstruation cycle.
- ✓ Promotion of positive health: General immunity, mental tonics, and liver tonics.

Plant medicines administered for the above conditions would work for better if accompanied by behavioural and diet changes and where the treatment can be self managed without endangering the person’s life.

### **As a viable alternative**

The planet today is looking for alternatives to the increasingly powerful and toxic drugs used in modern health care. Health care based on plants and herbs is a viable alternative. Governments are also on the look out for Medicare solutions that are cheaper than those offered by an over medicalised health set-up which leaves most people either impoverished, intimidated or unsatisfied. A sane public health should include reliance on effective herbs from natural niche or produced in herbal gardens. As a result, WCHC will not only be cheaper but less toxic as well.

### **Easy to reach**

Women and children constitute a marginalised section within tribal and rural communities. They face difficulties in reaching primary health centres, as a result, even minor health problems, which could be easily treated in initial, assumes chronic and serious proportions.

It is a feature of traditional health systems that they span a diverse range of policy areas that extend beyond the immediate domain of health of many traditional societies. *Women are the primary herb gatherers and also the herbalists.*

In traditional therapies of certain indigenous communities, herbs are administered along with chants, dance and spiritual ceremonies to expel bad spirits and to help reharmonising the sick person with his or her environment.



House wives are the traditional carriers of village based health traditions and the conditions treated are home – remedies, food and nutrition related number in millions.

### **PRESENT SCENARIO AND TRENDS IN USAGE OF MPs FOR WCHC**

In spite of the tremendous potential of MPs in the WCHC, over the last few decades the use of the MPs in WCHC has declined for various reasons including the degradation of forests and bioresources, change in traditions and institutions, popularity and easy availability of allopathic medicines, degeneration in traditional knowledge and non availability of learned Vaidyas (herbal doctors), influence of urban life etc.

### **Decline and Reasons**

#### ***Historical reasons***

From the period 980 A.D. down to Mohammedan invasion on India, Hindu medicine flourished. But after the period of the “Tantras” and “Siddhai”, the glories of the hindu-medicine rapidly declined, because during invasion of India by Mohammedan no original work could be done and Hindu medicine gradually began to decay. The Buddhistic doctrine of “Ahimsa” also influenced the work as no work could be done in surgery field as well. Consequently the thinking of “Study and Practice of the healing art led the pollution” and “to touch the body is sinful” etc., influenced the work. However, Greeks, Scythians and Mohammedans invaded Indian successively and enriched their materia-medica by coming in touches of Indian antiquity.

With the decline of Buddhism, degeneration of MPs set in all round. This decline became more rapid as invaders brought their own healing system which was well advanced for that period. Thus, the ayurved system of medicine got down rapidly. Then the Arabian medicines were prevailing during the regime of Pathan and Moghul dynasties but with the fall of Moghuls it too decayed. The contact between the Hindu and Arabic medicine lasted for many years, intermingling occurred and each utilised the materia medica of the other. Due to this both systems declined; and a rich source of combined materia-medica was left behind. Then, Europeans first, the Portuguese, then French and lastly English invaded India and decline was still further marked.

The British rule brought their own materia – medica adding to further intermingling and introduction of new medicinal plants into the country.

However, the very fact that the Indian system of ayurvedic medicine survived all trials and tribulations through centuries bears enough testimony to the efficacy of this indigenous system of medicine. Hence, the western scholars and medical practitioners could not ignore it. (Kaushik & Dhiman, 2000)<sup>1</sup>

#### ***Biological Reasons***

As habitats for plants disappear and over harvesting for commercial uses reduces stock of wild medicinal plant material, there is a corresponding drop in the availability of the plants used as the first and last resort for health care by many rural populations (Bodekar, 1997)<sup>4</sup>.

#### ***Knowledge gaps***

The consequent divorcement of aboriginal people from dependence upon the vegetal environment for the necessity of life has been set in motion, resulting in disintegration of knowledge of plants and their properties (Maheshwari *et al*, 2000)<sup>5</sup>. There is a steady decline in human expertise capable of recognising the various medicinal plants. The

continuous use of potent drugs is often associated with harmful side-effects of these medicines both in the affluent as well as in the poor east.

There is a steady decline in the human expertise capable of recognising various medicinal plants. Much of this wealth of knowledge is totally becoming lost as traditional culture gradually disappears (Maheshwari *et al*, 2000)<sup>5</sup>

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<sup>4</sup>Bodeker Gerard C, 1997. Medicinal plants for forest conservation and health care. Non-Wood Forest Products bulletin no 11, FAO-UN, Rome.

<sup>5</sup>Maheshwari JK, Lalranghiglova H & LK Jha, 2000. Ethnobotany: A Review. In : Ethnobotany and Medicinal Plants of Indian Subcontinent, Ed, J.K. Maheshwari, Scientific Publishers, Jodhpur.

### **ISSUE THAT NEED TO BE ADDRESSED**

Spreading and preserving the knowledge on medicinal plants and their use has become important for human existence. There is growing tendency all over the world to shift from synthetic to natural based products including medicinal plant. It is also timely now to consider neglected and little known medicinal plants (Bhattacharya, 1999)<sup>3</sup>.

- (1) The traditional knowledge of herbs and plants must be protected and passed on to future generations.
- (2) Traditions cannot be separated from land, territory or science. (the Kari-Oca – Declaration adopted by the Kari-Oca Conference of Indigenous people at UNCED in 1992 emphasized among other points).
- (3) Investments are needed for the development of appropriate conservation, cultivation and harvesting strategies which will simultaneously meet the demand for low-cost and locally available medicines. At the same time, there must be immediate effort to ensure the conservation of diverse biological resources and the preservation and application of local cultural knowledge on the use of these resources.
- (4) The need for the conservation and sustainable use of these natural resources (MPs) should be promoted (Bodeker, 1997)<sup>4</sup>
- (5) Schulters (Maheshwari *et al*, 2000)<sup>5</sup> has stated that as Scientists, “we should strive to maintain an equilibrium between those on the one hand who would brush aside the superstition of ignorant people – all native uses of plants as medicines and narcotics, and those on the other who glorify primitive man as possessing some uncanny intuition concerning plant properties”.
- (6) The data about the MPs used in children diseases have not been compiled and analysed for further utilisation where the child mortality is very high as in Indian Subcontinent. Thus, it is felt that a comparison and evaluation of the relevant data are useful, so that at least a few plants can be considered for efficacy and analysis for further studies.

### **STEPS ALREADY TAKEN**

Some of the organisations are already involved in promotional activities in this field and have contributed considerably to the strengthening of the traditional system of medicine and use of herbal medicines for WCHC.

- (1) Swayamsiddha : Women’s Health and Empowerment Project. The BAIF Development Research Foundation is the implementing organisation. It characterises this special proeject’s focus on improving the health of women and girls in rural India, and empowering them to address their own socio-economic and development needs through an array of gender responsive collective actions and institutionalising processes.
- (2) The FRLHT (the Foundation for Revitalising of Local Health Traditions in India) has package of plants for use in primary health care and for self consumption to

treat common illness. It also includes plants for the treatment of minor problems and deviations from normal health care of mother and child during pregnancy, and preventive and promotive health care.

## **STRATEGY**

Recognising that commercial demands may cause over harvesting from the wild, the medicinal plants linked stake holders which include representatives from industry, government, academia, tribes and environmental organisations, should aim to create a framework for discussions and action on behalf of medicinal plants. The primary focus should be to facilitate action on behalf of species of particular conservation concern as a means to balance biological and commercial needs and in the long term, minimise regulatory intervention. Within that framework, there may also be a need to provide public education on tribal interests and policies as these intersect with the conservation of plants. Attempt should be made to raise awareness about native medicinal plant issues and needs among partner agencies and cooperating organisations.

### **SHORT TERM STRATEGY**

- (1) Generate and share information regarding species of medicinal and economic importance and conservation concern.
  - ✓ Develop a list of all such plants.
  - ✓ Conduct inventory and monitoring of native medicinal plants.
  - ✓ Quantify and monitor production, consumption and international trade in selected species.
  - ✓ Assess the volume, intensity and ecological impact of harvesting from the wild for selected species.
  - ✓ Identify additional threats to native medicinal plants.
  - ✓ Identify native medicinal plants of particular conservation concern by eco-region.
  - ✓ Promote awareness of the concerns and policies of tribes and other groups that safeguard traditional knowledge of native medicinal plants as these pertain to confidentiality of information.
  - ✓ Encourage information sharing regarding selected MPs to help decision makers to evolve proper strategy.
  
- (2) Encourage active participation by tribes and other holders of traditional ecological knowledge pertaining to native medicinal plants.
  - ✓ Conserve indigenous plants and plant communities used in traditional medicine, ceremony, ethnobotany and the natural products industry.
  - ✓ Preserve indigenous and immigrant knowledge, culture and biodiversity through education aimed at retaining, reinforcing and revitalizing this knowledge of plants.
    - Establish an elder link, which involves inviting elders to participate and set direction for actions.
    - Establish regional centres as loci for farming and education as these tie into plant communities.
    - Encourage regional Ethno-conference sponsorship that would bring together tribal and non-tribal knowledge on the subject of medicines.
    - Establish MP Centres dedicated to conserving the plants, providing information about their uses and ensuring a sustainable supply for future extraction in partnership with the communities.

(URL1- <http://www.nps.gov/plants/medicinal/strategy.htm/23-10-2002>)

- (3) Points to be considered – there is no doubt about the efficacy of the plant; the recommended use must be drawn from actually prevalent practices and tested by authorities in the field.
- The plant should not have any toxic side effects; it should be safe.
  - One should be able to use the plant as a single drug or in simple combinations.
  - One should be able to grow the plant easily in one's immediate surroundings and harvest it in a short period of time.
  - Those plants need to be grown which can be used effectively in the treatment of more than one conditions; and
  - The method of preparing the plant drug must be simple and easy to understand.
- (URL2- [Growing herbal plants in home gardens for health care.htm / 28-10-2002](#))

### **LONG TERM STRATEGY**

- (1) Support law enforcement and the development of new methods of law enforcement.
- (2) Access current and planned ex-situ conservation activities for native MPs by federal agencies, botanical gardens, centre for plant conservation, etc.
- (3) Compile information on existing State laws or regulations that relate to medicinal plant conservation.
- (4) Promote sustainable production of Native Medicinal Plant products.
  - (a) Promote research for commercial scale cultivation and propagation of native medicines and encourage sustainable alternative cultivation and propagation techniques.
    - ✓ develop short list of endangered MPs with ongoing traditional and/or alternative cultivation/propagation research and current high consumer demand.
    - ✓ compile information about the research and production of these plants to be presented via links and other mechanisms.
    - ✓ develop a pilot research grant mechanism to encourage alternative plant production practices that allow natural ecologies to be reclaimed as sources of economic value to communities and to provide mechanism for farmers to find sustainable economic alternatives to large monocrops such as tobacco and wheat.
  - (b) Identify and promote market based incentive for consumption of products from sustainable sources.
    - ✓ develop a short list of ways in which the organic industry built consensus for their value – added approach to marketing products.
    - ✓ approach dietary supplement manufacturers, commodity brokers and retailers about how to create added value through sustainable produced bulk medicinal plant material.
    - ✓ develop list of individuals/groups interested in promoting sustainable production of medicines.

- (c) Identify target audiences and partners for information sharing (e.g., farmers and rural development experts).
- ✓ identify potential partners for the creation of a pilot MPs production cooperative (i.e., university research facilities extension agents, growers, manufacturers).
- ✓ identify the inherent hurdles to cooperative information sharing and production.
  - what are the incentives that would pull together varied community constitutions.
  - who are the target audiences that would be interested in these market driven incentives.
  - what are the problems that would stop involvement.
- ✓ Identify community development grants available for a pilot project.
- (5) Generate Financial Support for Native MPs Conservation Projects
- (a) Identify potential funding sources for coordinated projects.
  - ✓ Develop a list of organisations providing grants for plant related projects.
  - ✓ Identify federal agencies interested in plant conservation.
  - ✓ Develop an intra-governmental effort outlining the roles and interest of agency members pertaining to medicinal plant conservation, determine availability of funding.
  - ✓ Develop a packet of information for dissemination to potential donors.
  - ✓ Meet informally with potential donors to provide information on the importance of the medicinal plant conservation.
  - ✓ Hold a formal donors meeting and develop an action plan out of the meeting.
- (b) Facilitate development and coordination of project proposals.
  - ✓ Make the funding guidelines of pertinent donor organisations available in a centralised location.
  - ✓ Development a mechanism to assist with project proposal coordination among working group member organisations.
- (c) Promote the establishment of a conservation trust fund for NTFPs, including MPs.
  - ✓ Survey membership to determine who has financial/legal expertise and could assist with contacts/ideas.
  - ✓ Outline steps necessary to establish a conservation trust fund for medicinal plants.
  - ✓ Develop a mechanism to involve lawmakers in such a discussion.
  - ✓ Mesh pertinent steps for this goal with steps being taken to increase participation.
  - ✓ Research possibilities associated with product branding that could designate a percentage of profits to medicinal plant conservation.

## WHAT IS IMPORTANT?

Although there is decrease in the use of the MPs for WCHC as such, nevertheless there has been a phenomenal increase in the number of groups interested in native medicinal plants and the over all participation in Native Medicinal Plant Conservation is also growing. Participants ranging from consumers to policy makers, farmers and school children can be brought into the discussion through concerted outreach and education.

Some of the recent developments in this direction are the creation of the National Medicinal Plants Board and State Medicinal Plants Board for providing incentives, financial and technical support for the promotion and growth of the MPs for WCHC.

### The emphasis should be on

- to expand awareness of the native medicinal plant needs among those who could assist with their conservation, and
- to ensure that future generations grow into fuller – awareness of the value of these plants.
  - Educate policy makers, consumers, and the general public regarding the conservation status and importance of native MPs to focus attention on this issue and increase its profile.
    - Develop medicinal plant fliers that farmers could distribute to public visiting their farms.
    - Development stories for the web that demonstrates successful cultivation techniques.
    - Centralise a collection of free publications for distribution to interested publics.
    - Meet with Master Gardener Program, extension services, joint ventures and others to reach farmers and offer models demonstrating the benefits of public.
  - Identify, quantify and publicise trends in the conservation status of native medicinal plant, including cases of unsustainable use, the benefits of conservation.
  - Develop flier for public dissemination that lists what the general public can do to promote medicinal plant conservation.
  - Promote policy reforms and alternative consumer behaviours as appropriate.
    - Determine how to foster development of certification programme for sustainable use of MPs.
    - Seek out partners to support certification program.
  - Create a database of experts with knowledge of specific medicinal plant species.  
(URL- <http://www.nps.gov/plants/medicinal/strategy.htm/23-10-2002>)

## CONCLUSION

The MPs have a tremendous potential in the WCHC. Since herbs can be easily grown and are cheap, the costs of providing good medicare to people, can be considerably reduced and good health care made available and within the reach of all, specially the rural women and the children. Although the use of the MPs for the WCHC has reduced for various reasons, the interests in the MPs is still growing. Proper and effective strategy needs to be evolved for the dissemination of the knowledge about efficacy of the MPs in

healthcare and also the capacity building to use this knowledge properly to promote and strengthen the MPs programme for WCHC.

49.

## MARKETING OF CERTAIN CULTIVATED MEDICINAL AND AROMATIC PLANTS WITH SPECIAL REFERENCE TO MADHYA PRADESH, INDIA

A K Bhattacharya, Kunal Sekhar and Yogesh Kumar

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### **Abstract**

*The article embodies the findings of the field study undertaken to analyse various issues affecting the cultivation and marketing of the important medicinal and aromatic plants (MAPs) of Madhya Pradesh as an alternative source of livelihood for the local communities. The paper critically examines all possible factors influencing the marketing of eight important and most widely traded MAPs in the study area. The paper also discusses the existing marketing and distribution channels for these MAPs, analyses the pricing pattern and based on the conclusions drawn suggests marketing strategy.*

### **INTRODUCTION**

Marketing of medicinal and aromatic plants (MAPs) involves number of private dealers and agencies. It also entails direct competition with government or government controlled corporations, cooperatives and private dealers all having upstream linkages with numerous local and "road-head" markets of MAPs collected from forests, which in turn have myriad middlemen, petty shopkeepers and agents feeding them with primary supplies. Hence the nature and dynamics of this trade in India, and in most other developing countries as well, is far from simple as it is made out to be (Cherla and Holley, 1999)<sup>1</sup>. High fluctuations of prices, seasonality, very few established markets, lack of certification and lack of region specific tested cultivation technology are few of the most important lacunae of this trade making the marketing of Maps a very difficult and uncertain proposition. Even basic grading and cleaning operations tend to be centralized in major Indian cities (Edwards, 1993)<sup>2</sup>. The *ex-situ* cultivation and marketing of MAPs is in itself a recent development so very few farmers are aware of its cultivation and possible markets. Currently the major known markets for medicinal plants are found in Amritsar, Kolkata, Chennai, Cochin, Delhi, Kanpur, *Mandsaur*, Dhamtari (Chattisgarh), Mumbai and Tuticorn. (Bhatnagar and Bisen, 1996<sup>3</sup>; Olsen Smith 1996<sup>4</sup>). A proper study of the market and up-to-date market information can make this trade a highly profitable option while increasing the livelihood options and diversifying the portfolio of products. In the above context a study was done jointly by Indian Institute of Forest Management and Eklavya on the feasibility of introducing medicinal plants cultivation and its marketing as a livelihood for farmers in the Harda and Dewas districts of Madhya Pradesh. The present article deals with the marketing aspects of the MAPs cultivated outside the forest.

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<sup>1</sup> Cherla K & Holley J, 1999. The Medicinal Plants Sector in India: A Review. IDRC, New Delhi.

<sup>2</sup> Edwards DM, 1993. Marketing of Non-Timber Forest Products from the Himalayas: The Trade Between East Nepal and India. Overseas Development Institute, London.

<sup>3</sup> Bhatnagar P & Bisen SS, 1996. Marketing and Trade of Medicinal Plants. *In* : The Medicinal Plants Sector in India, IDRC, New Delhi.

<sup>4</sup> Olsen-Smith C, 1996. Medicinal Plants, Markets, and Margins: Implications of Development in Nepal. IDRC, New Delhi.



## METHODOLOGY

First the work plan schedule for the project was prepared. The different phases in which the work was to be carried out were decided. Interview Schedules were prepared for first hand field trial. For testing these schedules, field study was carried out in Village Kukdapani of Harda District.

Secondary information were collected from books and journals on medicinal and aromatic plants. Institutes like RRL, CEMAP, CEDMAP, JNKVV, Forest Departments, Forest Federations, SFRI and TFRI were visited and consulted for technical aspects of MAPs. Their reports on marketing of medicinal and aromatic plants were also consulted.

Primary data were collected from the farmers using checklist to collect information on the total land holding, the traditional and standard crops being cultivated, their economics in terms of input, output, time and labor; number of people in the family, their various livelihood sources, their literacy level and status, their knowledge of MAPs, NTFPs collected by them and their awareness about the markets and prices of MAPs. Several medicinal plants' markets and fields were visited and various traders, dealers, retailers, cultivators, suppliers and manufacturers were interviewed. Marketing linkages at various levels of channels were also studied. The cost of inputs as well as the cost of processing, equipment required and transportation costs were collected from the market and the medicinal plant cultivators.

To collect the data from the study area stratified convenient sampling was used. To use stratified sampling the sample was divided into relatively homogeneous groups called strata. In the present study the strata were formed on the basis of different community *Dhanas*. The traders and dealers of MAPs were selected based on the type of MAPs being traded and their availability.

The target group of the study were the farmers of Dhar and Dewas districts. The major part of the village population in both the districts is constituted by scheduled tribes. In case of Ratanpur the people are from Gond Tribe who are relatively less backward as compared to Korku Tribe in Kukdapani of *Khirkuyan*. Agricultural earnings are not sufficient for their survival so these people also work as laborers.

## MARKET FEASIBILITY OF SELECTED MAPS

The analysis of market suitability has been done on the basis of criteria like raw material supply, market potential, competition for finding market niche, constraints to business entry, margins/profitability, market maturity and export potential.

**Scoring for the criteria is done as under:**

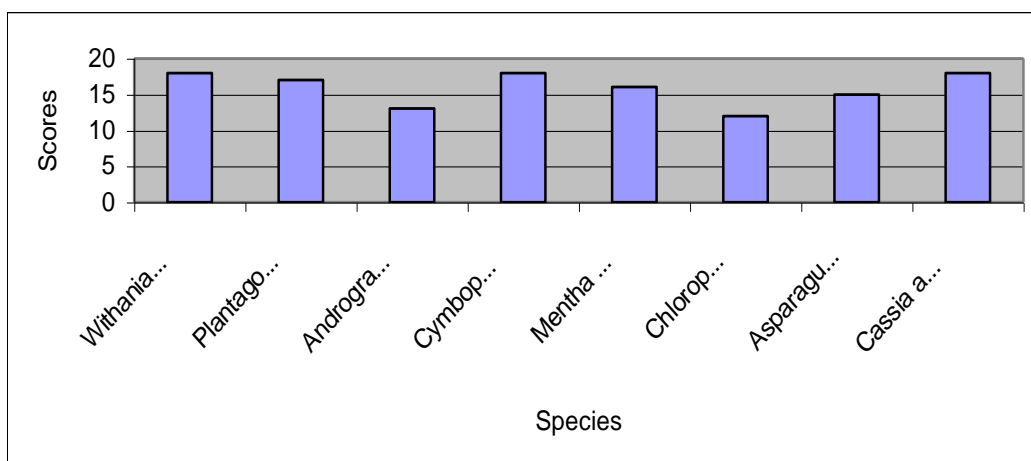
Criteria	Scale wise score		
	<i>Large</i>	<i>Moderate</i>	<i>Limited</i>
Raw material supply	3	2	1
Market potential	3	2	1
Competition (for finding market niche)	3	2	1
Constraints to business entry	3	2	1
Margins/profitability	3	2	1
Market maturity	3	2	1
Export Potential	3	2	1

In this ranking method, parameters have been ranked 1,2 or 3 according to their potential contribution or influence in achieving the product and market development. grais the contribution towards the parameters being assessed.

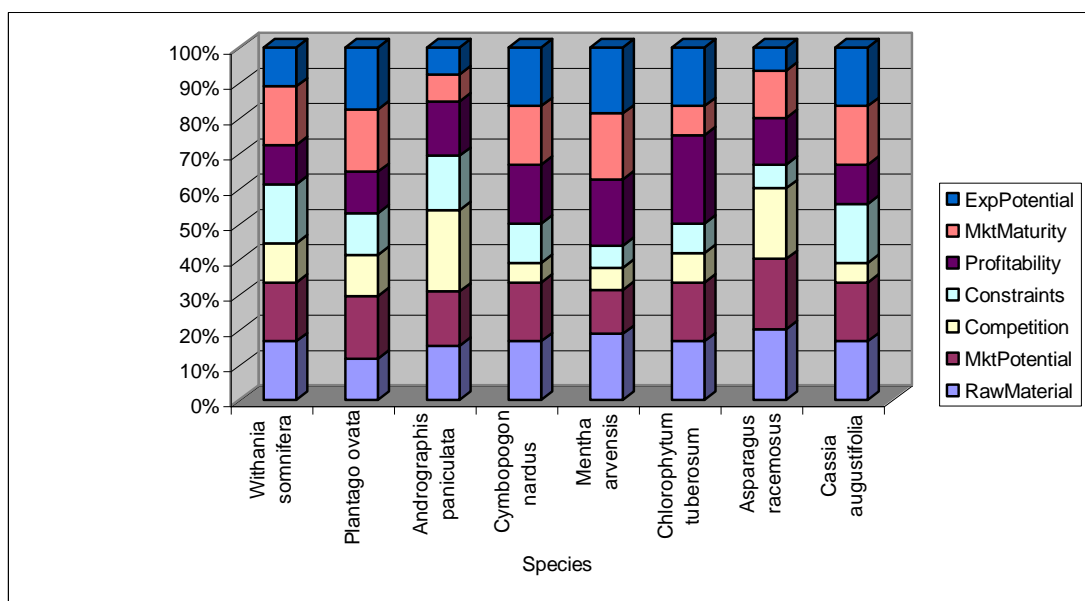
## RESULTS AND DISCUSSION

Eight MAPs, viz. Ashwagandha (*Withania somnifera*), Isabgol (*Plantago ovata*), Kalmegh (*Andrographis paniculata*), Lemon Grass (*Cymbopogon nardus*), Mentha (*Mentha arvensis*), Safed Musli (*Chlorophytum tuberosum*), Satawar (*Asparagus racemosus*), Senna (*Cassia augustifolia*) were tested on the above parameters. The result is demonstrated in the Graphs 1 and 2.

**Graph 1**



**Graph 2**



In the above Graphs 1 and 2, higher the score or percentage, greater is the positive contribution to the marketing potential of the species.

The scoring in above graphs is based on the market information generated by the experts and traders in the field of MAPs. Institutions like SFRI and TFRI (*Jabalpur*), *Jawaharlal Nehru Krishi Vishwavidyalya (Indore)* and CEDMAP (*Bhopal*) were also consulted. Secondary data from institutions like Medicinal Plants Board (New Delhi), CIMAP (Lucknow) and Centre for Research and Planning and action (New Delhi) were also referred for this purpose. The magazine "*Van – Dhan*" on Marketing Information System of MAPs published by SFRI proved very helpful.

*Aswagandha*, *Senna* and *Lemon grass* were found to be the most promising MAPs as far as their marketing is concerned.

## MARKETING OF SELECTED MAPS

### ***Ashwagandha (Withania somnifera)***

Cultivating *Ashwagandha* in the study areas has an advantage that there is a very well established market in the State in districts of *Mandsaur* and *Neemach*. *Mandis* of *Rampura*, *Manasa* and *Neemach* of the two districts are famous for the trade of *Ashwagandha*. Marketing links may be established from these *Mandis* to ensure good price for the produce.

The present selling price for *Ashwagandha* varies from Rs. 40 to 80 per Kg.

According to the report by Centre for Research, Planning and Action, New Delhi, the demand for year 1999-2000<sup>5</sup> was 5905.1 tonnes which is expected to increase to 9127.5 tonnes by year 2004-2005 (CIMAP, 2002)<sup>6</sup>. Thus average growth rate of demand is 9.1% per annum, which seems to be promising. Main medicinal and cosmetic producers and exporters of our country are also promoting its commercial cultivation. Therefore there is scope to increase its cultivation in India.

### ***Senna (Cassia angustifolia)***

The *Senna* has well-established market in *Mandsaur* and *Neemach*. It may also be sold in *Indore*. *Senna* has established market at National (*Delhi*, *Mumbai*, *Madras*) as well as International level (CEDMAP, 2002)<sup>7</sup>. The export figure for year 1999-2000 is 7466.3 tonnes. Demand of *Senna* in year 1999-2000 was 4356.2 tonnes, which is expected to increase upto 9828.7 tonnes by 2004-2005 at the average growth rate of demand of 21.8% per annum (CRPA, 2002)<sup>5</sup>.

However, there is need to explore the marketing channels so that the crops grown in the area may be easily sold in the existing *Mandis* like *Neemach* and *Indore* in Madhya Pradesh itself.

### ***Lemon grass (Cymbopogon flexuosus)***

One of the major advantages with the cultivation of *Lemon Grass* is that there is no problem regarding the extraction and selling of oil. There is a private extraction plant owned by a farmer in *JunaPani* of *Kihrkiyan* block and a multipurpose extraction plant is proposed to be set up in *Harangaon* of *Khategaon* block by the Forest Department for the purpose of *Nagar Motha* oil extraction. This extraction plant is also supposed to be open for local farmers for the extraction of *Lemon Grass* oil.

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<sup>5</sup> CRPA, 2002. Demand Study for Selected Medicinal Plants: 2001-02. Vol. I & II. Centre for Research Planning and Action, New Delhi.

<sup>6</sup> CIMAP, 2000. *Production Technology of Medicinal Plants*. Lucknow

<sup>7</sup> CEDMAP, 2002. *Vipnan Nirdeshika*. Bhopal.

Selling of Lemon Grass oil is also easy as the oil extraction plant owners themselves buy the oil. In addition, there are large numbers of dealers/purchases already trading in both the districts. The lemon grass oil is sold at the rate of Rs. 350-400 per litre.

There is immense scope for the cultivation of Lemon Grass, as its future market seems to be promising owing to huge requirements of Lemon Grass oil manufacturing of perfumes, cosmetics, toiletry products etc. Thus there is great increase in its demand not only on national level but also in International market. The export figure for the essential oils in 1994-95 was US \$ 13250000 (Lambert, 1996)<sup>8</sup>.

## AREA SPECIFIC MARKETING MODEL

However in order to implement the project regarding cultivation of MAPs successfully in the proposed area, it is necessary to understand the complex web of these transactions and there should be some mechanism to assess the domestic trade. This will be of great help to the persons involved, at any level in the trade cycle of MAPs .

In the following section an effort is made to identify the suitable marketing channel which may minimize the losses, due to exploitation by clever traders, to the farmers of the *Kihrkhiyan* and *Khategaon* blocks.

### Marketing Mix

The first step is to decide on the marketing mix, which is discussed in the following section.

### Product

It was observed that the big drug manufacturers and export agents prefer the tested MAPs and give stress on its certification for the required chemical constituents of the MAPs. The target group, that is small and marginal farmers, of the study area should place themselves as the producer of the environmental and people friendly MAPs. Efforts should be taken to raise the crops by organic manure and green fertilizers and bio-insecticides, bio-fungicides and bio-pesticides to fetch the higher prices and for "market differentiation". Chemical fertilizers and other inorganic chemicals should be avoided.

### Price

The market of MAPs is prone to price fluctuations. The price of a particular species may certainly go down in case of surplus and overproduction. But farmers should not worry about this, as even the minimum price of MAPs would fetch higher profitability than the traditional crops.

Introduction of buy-back schemes and similar measures to boost farmers' confidence and ensure the proper price for farmers is recommended. It will also help in stabilizing the fluctuating prices of MAPs. National Remedies Industry is providing one such buy-back guarantee to *Karnataka* farmers to grow *Kalmegh*. The buy-back guarantee must be extended to other threatened species through Government intervention.

The demand of the well, packed, certified and tested, pure, eco-friendly MAPs raised with organic manure was compared to those untested and uncertified MAPs cultivated by using chemical fertilizers. Though it is difficult to distinguish between the two types of MAPs even by proper testing, it was found that traders had a very sound knowledge of these and that they could easily distinguish between the two categories of MAPs described above. Their expertise might have come from a long experience in the field of MAPs.

Cultivators can also obtain higher price from the processor/manufacturer, although, they also had to incur in additional costs, such as storage, packing, transportation and management.

<sup>8</sup> Lambert JJ, Srivastava J & Vietmeyer, 1996. Medicinal Plants: Rescuing a Traditional Heritage. Agriculture and Natural Resources Department, World Bank, Washington D.C.

### **Place of Distribution**

The assessment that whether the cultivators could take over some of the functions of the intermediary agents in order to increase their share of profits was done. The conclusion drawn was that it would be possible only if the cultivators could obtain more up-to-date market information and could gain more control over the prices.

Therefore their marketing strategy should involve:

- Training and sending members of the groups to collect information on a regular basis.
- Develop a communication arrangement with partners living close to markets for the produce.
- Keep themselves up-to-date with the Marketing Information System (MIS) of MP Minor Forest Produce Federation, Bhopal; MIS based “Van-Dhan” of SFRI, Jabalpur; and TRAFFIC, New Delhi for the national and international level marketing information.

These strategies will definitely need the support of institutions or NGOs. It is also important that the name of the MAPs species being cultivated should be registered with the local Government authority as there is a legal need to distinguish the cultivated crops with those growing in the forests to get transit pass (TP) from the Forest Department (Jariyal, 2002)<sup>9</sup>. This will also help the cultivators in getting the subsidies and loans.

### **People**

The target groups should be assisted in identifying the interests and needs of the prospective buyers for their produce. A visit to manufacturers' factory for attaining information from the buyer about the demand, quality and other preferences which the traders might not share with them.

### **Promotion**

The means of promotion available to the MAPs cultivators were reviewed and it was found that this sector had very little product differentiation and, hence, the limited scope for promotion. However, if the cultivators can project their produce as 'producing clean MAPs free of chemicals', as a promotion tool for gaining a very good place and share in the market. The importance of better packaging and storage of the product should also be taught to the farmers with the help of institutional support. Government agencies or big traders can give technical support to get the Life Cycle Analysis (LCA) of the cultivated MAPs done for higher export potentials.

### **Marketing Channel**

This is second step for marketing of MAPs. For the commercial cultivation of MAPs on a large scale it would be beneficial that the produce goes for the end-use, i.e., for the manufacturing of drugs and other products from MAPs.

It was observed that cultivators also follow the channels in which the produce goes to the consumers in the unprocessed form but this route is generally applied by the collectors of the medicinal plants rather than the established cultivators.

From the analysis of the the figure 49.2, the following options available to the cultivators of MAPs to sell their produce have been observed:

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<sup>9</sup> Jariyal GS, 2002. *Aushadhiya Awam Sugandhiya Poudhen*. CEDMAP, Bhopal.

- Consumers directly
- Retailers
- Manufacturers of drugs and other products
- Wholesale dealers
- Agents
- Petty traders

It has been observed that the MAPs cultivators generally sell their produce to the agents who in turn sell it to the wholesale dealers. The MAPs cultivators also sell their produce to another cultivators as the planting material. The wholesale dealer or the big trader may either sell it to the manufacturers of the medicinal drugs or other products or they also sometimes sells the MAPs to the retailers in the raw / unprocessed form.

### **Selection of Distribution Channel**

To maximize the profit, the cultivators can jump some of the levels of the channels. But for this, it is very necessary to consider the role, stakes, typical activities and services provided by the middlemen and other stakeholders of each level as their aid to the distribution process.

It is not possible to sell the produce directly to the manufacturers in the initial stage. It is also not advisable to sell the produce to the retailers or consumers because their demand needs and prices are very fluctuating and volatile as so many local factors influence the demands and prices of the local retailers and consumers. It would also not help in capacity building of the cultivators and establishing market presence as well as the contacts with the big traders and manufacturers. Hence the traders or wholesale dealers should be identified in the nearby/neighborhood big market the collective produce of the whole village should be sold together to them.

When the MAPs are cultivated in the large scale, then it would be beneficial, for the reasons cited above, if the produce goes to the end-use, i.e., for the manufacturing of the drugs and other products. It would also help in strengthening and the establishing the formal market for the particular species.

### **Stakes of the Middleman**

It has been observed that the player in the higher level of the marketing channel exploits players of each lower levels of the channel. In a particular area many so-called middlemen exist who also compete with one another. It has also been understood that their stake could not be neglected abruptly as it might lead to channel conflicts. Their capacity should also be built, side by side, so that they can get better bargains with the traders and other higher level players and in the due course of time they should be able to negotiate directly with manufacturers. This will increase the margins of profitability of both the cultivators and middlemen.

### **Who Controls Channels**

Channel power is the ability to influence or determine the behavior of another channel member. There are various sources of powers in the context of channels. These include:

- Expertise (for example, possessing vital technical knowledge about the product- in MAPs sector the traders enjoys this power),
- Rewards (providing financial benefits to cooperative channel members- can be enjoyed by the MAPs cultivators and middlemen), and
- Sanctions (removing uncooperative members from the channel –like the agents in the MAPs marketing channel).

However, attempts to control distribution channel are subject to legal considerations such as:

- Exclusive dealing
- Tying contracts
- Refusal to deal
- Exclusive-territory policy

### **A Channel Viewed as a Partnership**

Instead of looking at the channel as a fragmented collection of independent competing firms, suppliers and middlemen should think channel as partnership aimed at satisfying the end users' needs. Its time for cultivators to give due importance to channel management as they give importance to the cultivation.

### **CONCLUSION**

At the macro level, a wide gap exists between the supply and demand of the MAPs with demand being more than the supply. However, in the micro level or at the regional level several factors like seasonality, high fluctuations of prices, lack of established markets and prevalence of large number of traders and middlemen dealing in medicinal plants harvested from natural forests becomes the constraints for the marketing of MAPs. With proper study of the market, up-to-date market information, better marketing mix and proper selection of marketing channel, the trade of MAPS can become a highly profitable option. This will increase the livelihood options and will also diversify the portfolio of products of the farmers.

**PART - V**

**PUBLIC-PEOPLE-PRIVATE**

**PARTNERSHIP**



50.

## **PUBLIC PEOPLE PRIVATE PARTNERSHIP (PPPP): A NOVEL APPROACH FOR THE REHABILITATION OF THE DEGRADED FORESTS / WASTELANDS**

A K Bhattacharya and Manoj K Dubey

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### **Abstract**

*For the integrated ecological development of forests and promotion of the multiple forest products for use by the communities, it becomes inevitable to explore all possibilities of participation of communities, individuals and corporate in forest development program. To achieve the target of 33 % forest cover, the rehabilitation of degraded forests / wastelands cannot be accomplished without assured sustained financial support. The role that the corporate sector can play to raise large- scale plantations on government lands, whether forest or revenue, is severely restricted on account of statutory land ceilings. However, in recent years a large number of wood-based industries have attempted to promote tree cultivation among farmers in order to secure their raw material supplies. The driving forces behind these initiatives are the declining supply of cheap raw material from government forests on account of policy changes, and increased competition due to economic liberalisation. This article investigates the scope of partnership among government, local people and corporate sector for the rehabilitation of degraded forests/wastelands.*

### **INTRODUCTION**

The phenomenal increase in forest degradation in the country has assumed an alarming proportion over the last two decades. Approximately 57% forest area of the country is in degraded state. As per NRSA survey report, the estimated wastelands in the country account for about 75.5 million ha area which includes 16.3 million ha of degraded forests. Degraded non-forest lands available for plantations are about 33 million ha. The pace of degradation is faster than the present human endeavor to rehabilitate (Bhattacharya 2003)<sup>1</sup>. In the last decade, the country heralded in an era of market reforms in the country. Apart from this, the nation embarked on a massive program of people's participation in forest management. Involvement of people in forest management practices has improved the prospects of rehabilitating degraded forests in many parts of the country. The beginning of an era of liberalization in the year 1991, unfolded enormous opportunities for the private sector to invest in activities which were presently undertaken by the State. However, after a decade, the forestry sector has failed to attract significant private participation. It is also a fact that without sufficient financial support, it is impossible to rehabilitate all the degraded forests.

The wood-based industry, especially the pulp and paper industry, has been lobbying for the past several years to be leased degraded forest lands for raising captive plantations. This is being strongly opposed by some NGOs and environmental action groups. The

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<sup>1</sup> Bhattacharya AK, 2003. Sustainable development of degraded forests and wastelands : Issues and policy options. Approach Paper, Workshop on "Sustainable development of degraded forests and wastelands through private sector participation with a view to increasing / improving tree cover :

Issues and Policy options". June 6 – 7 2003. Ministry of Environment and Forests, NAEB, IIFM, Bhopal.

debate has reached a stalemate (Saigal *et al* 2002)<sup>2</sup>.

These developments have significant bearing on the future of forestry in India. There is an imperative need to arrest the process of further degradation on one hand and rehabilitate the already degraded forests on the other. In order to achieve these objectives, it becomes inevitable to explore the possibility of Public, People and Private Partnership (PPPP) for the rehabilitation of degraded forests / wastelands to achieve the ultimate goal of Sustainable forest development.

## **PPPP AND SUSTAINABLE FOREST DEVELOPMENT**

Sustainable forest development symbolizes the management and conservation of forest resources base and the orientation of technological and institutional changes in a manner as to ensure the attainment and continued satisfaction of human needs for the present and future generations. Such sustainable development should be environmentally non-degrading, technologically appropriate, economically viable and socially acceptable.

In the case of degraded forest land, sustainable development necessitates immediate amelioration and augmentation of depleted forest resources after developing the depleted resources, the sustainable use of resources by the people for the present without impairing the potentials of the future generation begins. The process of amelioration and augmentation of the resource base requires people's participation on the one hand and financial, and technological support on the other.

## **CONSTRAINTS OF FUNDING IN FORESTRY**

Involving communities through Joint Forest Management has helped to mitigate the process of degradation to some extent. Similarly some degraded areas have been rehabilitated through agro-forestry practices.

However, the constraint of funding has been a paramount problem in forestry sector right from the first 5 -Year Plan. The National Forest Policy of 1988 has, therefore, emphasised the necessity of financial support mentioning that "*The objectives of this revised policy can not be achieved without the investment of financial and other resources on a substantial scale.*" Along with participation of people, the participation of corporate, specially the forest based industries, could make a dent in mobilising the financial resources required to restore and increase forest productivity.

## **CORPORATE SOCIAL RESPONSIBILITY (CSR)**

The role of CSR and active involvement of the private sector in the response to many problems has been gaining momentum in India during the last few years. The realisation that the participation of the private sector and fostering public private partnerships is vital, in terms of sharing the resources, bringing in expertise and appropriate technology, providing enhanced visibility to the campaign against the epidemic, mobilising advocacy in various sectors and above all, bringing about a robust civic society response.

An increasing number of Indian companies are promoting their CSR strategies as a response to a variety of social, environmental and economic pressures. They aim to send a signal to the various stakeholders with whom they interact: employees, shareholders, investors, consumers, public authorities and non-governmental organisations (NGOs). In doing so, companies are investing in their future and they expect that the voluntary commitment they adopt will help to increase their profitability.

<sup>2</sup> Saigal S, Arora H & Rizvi SS, 2002. The new foresters: the role of private enterprise in the Indian forestry sector. Instruments for sustainable private sector forestry series. Ecotech Services, New Delhi and International Institute for Environment and Development, London.

Companies contribute to the local communities by providing jobs, wages and benefits and tax revenues. On the other hand, companies depend on the health, stability and prosperity of the communities in which they operate. The reputation of a company at its location, its image as an employer and producer, but also as an actor in the local scene, certainly influences its competitiveness.

Companies also interact with the local physical environment; some rely on a clean environment for their production of offering of services; some can be responsible for a number of polluting activities, such as noise, light, water pollution, air emissions, contamination of soil, waste disposal. Many companies become involved in community causes and activities, thus developing positive relations and accumulating social capital.

Corporate are venturing into social development issues in many fields like health, environment, agriculture, sustainable development and community development. This is basically with the approach of CSR. Till now not much study has been done as to how exactly the corporate are functioning on the philosophy of CSR in natural resources management sector. The past studies mainly focus on farm forestry, community and corporate partnership, their socio-economic and other benefits and how corporate are showing their responsibility towards the society.

## **CORPORATE AND COMMUNITY PARTNERSHIP IN FORESTRY**

The wood-based industry in India is in a peculiar position because while 90% of wood - based products are manufactured in the private sector, 97% of the forest area is owned and managed by the government (ICFRE 1996<sup>3</sup>; GOI 1999<sup>4</sup>). As a result of the 1988 National Forest Policy, which prohibited forest industries from using state forests to supply their operations, the wood processing sector has been in decline due to a scarcity of raw materials. The corporate private sector has realised that the days of subsidised supplies and protected markets are over, and it has to constantly innovate in order to survive in the new, more competitive environment.

To deal with their loss of access to state forests and as a result of government encouragement, the private sector attempts to develop new arrangements whereby they contract number farmers for supply of timber depending upon their requirement. These farmers normally operate on plots of 2 to 200 hectares per family. Novel methods for ensuring raw material supply are being tried out and better and higher value uses are being innovated for the available raw material. Several companies are engaged in research and development of improved higher-yielding clones.

The pulp and paper industry comprises a few large companies and numerous smaller companies. Paper and other large forest-based industries consume just a fraction of forest products; 90% of forest raw material is processed by 23,000 sawmills and a large number of cottage units (Planning Commission, 1998)<sup>5</sup>. However compared to the informal sector, the numbers of rural poor benefiting from wage employment in formal sector forest industries are small (Annon 1998)<sup>6</sup>.

More than 90% of wood-based products are manufactured in the private sector. Farmers are important producers of wood. More than 50% of wood supply is currently acquired

<sup>3</sup> ICFRE (Indian Council of Forestry Research and Education), 1996. Forestry statistics: India, Dehradun.

<sup>4</sup> Gol (Government of India), 1999. National Forestry Action Programme – Ministry of Environment and Forests, New Delhi, India.

<sup>5</sup> Planning Commission, 1998. Leasing of degraded forestlands. Working Group's report on the prospects of making degraded forests available to private entrepreneurs, Planning Commission, Government of India, New Delhi.

<sup>6</sup> Anon, 1998. State of the World's Forests. FAO, Rome.

from non-forest sources mainly farmlands. As highlighted above, partnership arrangements between corporate and farmers have developed as a potentially major form of private production since the late eighties. Some examples are the Western India.

Match Company (WIMCO) in Uttaranchal and ITC Bhadrachalam Paper Mills in Andhra Pradesh. In general the company supplies the necessary inputs, such as planting material, as well as technical advice and arranges loans. It also guarantees to purchase the farmers' output for a specified price, and in some cases farmers are required to sell a percentage of the harvest to the company.

Company-farmer partnership schemes may be perceived to have failed in terms of the original objectives of the companies, but they have demonstrated the potential for farmers participating in such schemes to produce timber for industry and to sell in the open market. These schemes have clearly contributed to the expansion of farm forestry. Several companies encourage tree planting by farmers by simply supplying free or subsidised seedlings. Many companies have attempted direct partnerships with farmers.

## **CHALLENGES TO PRIVATE SECTOR PARTICIPATION**

A government circular focus on participatory and farm forestry was reaffirmed by both the ministry of Environment and Forests expert committee on 'Review of afforestation policies and rehabilitation of wastelands' (1997) and the Planning Commission's working group on leasing of degraded forest lands (1998). Both committees considered the potential extension of the principle to participation in company ventures to rehabilitate wastelands. The idea is to encourage private investors to invest in afforestation in degraded areas by forming partnerships with local farmers. However the Planning Commission, in particular, did not endorse the involvement of large industrial investors.

While increased private sector participation, either by individual farmers or forestry companies, is recognised as a key component of forestry reform in India, less attention has been given on how to create an environment favourable to private investment and how the forestry administrative structure should be changed to reflect its changing role. The first of these gaps in policy appears to have been tentatively addressed by the expert committee. It proposes three sets of market-based instruments to attract private finance. These include the liberalisation of the timber market, which has been controlled by felling and transport restrictions, the introduction of a new tenure arrangement to permit private leases of large forest areas, and the introduction of financial incentives such as subsidies and tax breaks. The committee's report makes no mention of the need for forestry authority restructuring. However, it appears that none of these proposals have yet been acted upon to any great extent.

Private forest ownership amounts to only 4% of the total forest area, as compared to the State's 85% and communities' 11% (FSI, 1998)<sup>7</sup>. The private sector is not permitted to own natural forests, but its ownership of planted forests is limited by the Private Forests (acquisition) Act of the 1950s and the Land Ceiling Act of the 1960s. The former provided for the nationalisation of private forests and led to much felling, while the latter specifically limits the area private enterprises can own for tree plantations (except in the case of plantation crops such as rubber or tea). Land ceilings vary by state, but are normally set so low that they effectively bar commercial investment in plantation forestry.

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<sup>7</sup> Forest Survey of India, 1998. State of forest report 1997, MoEF, Dehradun.

## **ISSUES PERTAINING TO PPP FOR THE REHABILITATION OF DEGRADED FORESTS/WASTELANDS**

Various issues pertaining to involvement of corporate sector, communities, individuals in rehabilitating the degraded forest areas, specially the stakes of local communities, leasing of forest lands viz-a-viz Forest Conservation Act, sharing of produce and profit,

socio-economic and ecological implications etc. still need to be examined and meticulously analysed, so that a proper strategy can be evolved to involve this sector on sustainable basis for mutual benefit ensuring the long term interests of sustainable forest development. The different categories of issues pertaining to PPP are summarised below.

### ***ECOLOGICAL ISSUES***

- Application of ecological principles
- Synchronizing bio-diversity and wood production
- Prioritisation between mono-culture & mixed cropping.
- Environmental impact of forest degradation
- Impact of private plantation on environmental

### ***SILVICULTURAL ISSUES***

- Objective of management
- Harmonizing multiple objectives of management
- Sustainable harvesting techniques
- Issues pertaining to high - tech plantations.
- Optimization of soil resources.
- Selection of site, appropriate species & rehabilitation techniques
- Use of site specific soil and water conservation techniques.
- Development of sustainable silvicultural system

### ***SOCIO-ECONOMIC ISSUES***

- Impact on the existing rights of the local communities.
- Developing appropriate mechanism for usufruct sharing
- Compensation for successful afforestation efforts.
- Integrating 'Nistar' requirements of local people with investment pattern.
- Issues of social responsibility

## **MANAGEMENT AND ADMINISTRATIVE ISSUES**

- Creation of separate financial Institution
- Developing a practice of 'chartered forester' in the private sector
- Decentralization of process of sanctioning management plan.
- Dispute resolution / Arbitration.
- Direct investments vs. investments through Community Based Organizations.
- Creating data Bank
- Strength and weaknesses of the existing institutions

## **FINANCIAL ISSUES**

- Investment sharing v/s usufruct sharing.
- Constraints in Institutional financing
- Fluctuating rate of Interest
- Direct lending by NABARD
- Long term fiscal policy & Tax concessions
- Creation of separate forestry bank
- Priority for lending in forestry sector
- Creating a separate corpus for forestry sector

## **LEGAL ISSUES**

- Strengths and weaknesses in the existing legal framework
- Changes required in current forest and land laws
- Compatible fiscal changes
- Incentives for investments
- Issues pertaining to CPR and PRR

## **CONCLUSION**

Forestry sector is currently undergoing a major transition. In view of these changes there is a rethink under way, both within and outside the government, on the role of different players such as the government, corporate sector, individual farmers and community groups – in order to sustainably manage forest resources and meet the needs of various users of forest products and services. Therefore, there is an imperative need to address different issues for PPPP in the task of rehabilitating the vast chunk of degraded forests. Without harmonized synchronization among these stakeholders, the task would not be accomplished.

Considered in this backdrop, the PPPP assumes immense significance. It provides scope for evolving correct strategies for the rehabilitation the degrades forests / wasteland to achieve the goal of sustainability through participation.



51.

## **SUSTAINABLE DEVELOPMENT OF DEGRADED FORESTS AND WASTELANDS THROUGH PRIVATE SECTOR PARTICIPATION WITH A VIEW TO INCREASING / IMPROVING TREE COVER: ISSUES AND POLICY OPTIONS**

A K Bhattacharya

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### **Abstract**

*The paper is based on the output and recommendations, which emerged out of the brainstorming sessions of the workshop organised by Indian Institute of Forest Management, Bhopal and sponsored by National Afforestation and Eco-development Board, Ministry of Environment and Forests, Government of India. The workshop was attended by eminent organisations and persons from different concerned sectors, both Government and Non-Government, including Forest Departments of Madhya Pradesh and Chhattisgarh, Indian Institute of Management, Ahmadabad, Confederation of Indian Industry, New Delhi, Indian Paper Manufacturing Association, New Delhi, Centre for studies in rural economy, appropriate technology and environment (CREATE), Darjeeling, BILT, Gurgaon, Department of Rural Development, MP, Look Vaniki Sangh (Private Forestry Federation), MP, CARD, Bhopal, Forestry Adviser to the Government of MP, and others. The workshop followed the participatory approach with few key note lectures followed by open house discussions and then group discussions on the identified themes discussed in the report.*

### **BACKGROUND**

Forests provide goods and services to society and constitute the life support system of the planet. The survival of mankind depends on the continuance of forests systems. Over the time, anthropogenic pressures on our forests increased manifold and it transcended the threshold limit. As a result, depletion of forest resources has begun and more and more forests in India are being increasingly degraded day by day.

The phenomenal increase in forest degradation in the country has assumed an alarming proportion over the last two decades. Approximately 57% forest area of the country is in degraded state. As per NRSA survey report, the estimated wastelands in the country account for about 75.5 million ha area which includes 16.3 million ha of degraded forests. Degraded non-forest lands available for plantations are about 33 million ha.

The pace of degradation is faster than the present human endeavor to rehabilitate. Therefore, there is an imperative need to arrest the process of further degradation on one hand and rehabilitate the already degraded forest on the other. This phenomenon is witnessed all over the country. In order to achieve the two pronged objectives, we need to embark on Sustainable Forest Development.

Sustainable forest development symbolizes the management and conservation of forest resources base and the orientation of technological and institutional changes in such manner so as to ensure the attainment and continued satisfaction of human needs for the present and future generation. Such sustainable development should be environmentally non-degrading, technologically appropriate, economically viable and socially acceptable.



In the case of degraded forestland, sustainable development necessitates immediate amelioration and augmentation of depleted forest resources after developing the depleted resources, the sustainable use of resources by the people for the present without impairing the potentials of the future generation begins. The process of amelioration and augmentation of the resource base requires people's participation on one hand and financial and technological support on the other.

Involving communities through JFM has helped to mitigate the process of degradation to some extent. Similarly some degraded areas have been rehabilitated through agro-forestry practices. But the rehabilitation of degraded forests and the goal of sustainable forest development cannot be achieved without assured sustained financial support. Therefore, for the integrated ecological development of forests and promotion of the multiple forest products for use by the communities, it becomes inevitable to explore all possibilities of *participation of communities, individuals and corporate in forest development program*.

Non-wood forest products (NWFP) originating from diverse sources ranging from large plants to micro-flora consisting of heterogeneous products constitute a critical lifeline for the poor forest dwellers by providing family sustenance and livelihood. Rural income generation for the poor forest dwellers can be augmented through value addition and village level processing of the forest produce. Conservation and propagation of NWFP is equally important to ensure nondestructive harvesting on sustainable basis.

The constraint of funding has been a paramount problem in forestry sector right from the first 5-Year Plan. The National Forest Policy of 1988 has, therefore, emphasised the necessity of financial support mentioning that "*The objectives of this revised policy can not be achieved without the investment of financial and other resources on a substantial scale.*" Along with participation of people, the participation of corporate, especially the forest based industries, could make a dent in mobilising the financial resources required to restore and increase forest productivity.

However, various issues pertaining to involvement of corporate sector, *communities, individuals* in rehabilitating the degraded forest areas, specially the stakes of local communities, leasing of forest lands viz-a-viz Forest Conservation Act, sharing of produce and profit, socio-economic and ecological implications etc. still need to be examined and meticulously analysed, so that a proper strategy can be evolved to involve this sector on sustainable basis for mutual benefit ensuring the long term interests of SUSTAINABLE FOREST DEVELOPMENT (SFD) through Public People Private Partnership (PPPP).

## **ISSUES**

Following major issues were identified and addressed to evolve an effective strategy for private sector participation for SFD -

- Ecological and Silvicultural issues pertaining to the development of forests and forest produce including NWFP.
- Legal issues, Government rules and relevant Acts with respect to private investment in forestry sector.
- Socio-economic issues and JFM perspectives of private sector investment.
- Financial issues including pattern of sharing and investment.
- Management and administrative issues with respect to institutional framework.

## **ECOLOGICAL AND SILVICULTURAL ISSUES**

### **Observations**

- Priority between ecological and productivity objectives.
- Such a process involves considerable technological and social ingenuity.
- Initiation of the process of private sector participation by forest departments to achieve the goal of 33 % forest cover by 2012.
- Field level experiences have forced Forest Department officials to go on the defensive approach – more emphasis has been placed on protection of the resources at the cost of concern for productivity.
- Confusions prevail on what to balance among different objectives? No benchmark data sets in the country, which can give complete and reliable information on these issues.

### **Recommendations**

- It is necessary to strike a balance between productive, silvicultural and ecological objectives.
- Lists of inventories and impact assessment on ecology are to be made involving the communities, foresters and other stakeholders.
- Joint Forest Management programme may be considered the beginning of this process and can prove to be a good platform for this concept.
- Silviculture of different commercial and non-commercial species of all strata should be studied and well documented for the future reference.
- Methodology to value forest products (including NTFPs) at all strata should be developed.
- Very difficult to suggest a road map instantly for the afforestation of degraded forests/wasteland through PPPP.

## **LEGAL ISSUES, GOVERNMENT RULES AND RELEVANT ACTS**

### **Observations**

- What are the present Government rules and relevant Acts for private investment in forestry sector?
- Do we require amendments / interventions in the existing policy, acts, rules and regulations, if yes, what and who is the competent authority for it and at what levels?
- What is the present legal regime for land, usufruct, and resource sharing for the purpose and finance sharing?
- What are the main problems faced by plantation industries and available solutions within the legal framework?
- Proposed financial mechanism to promote investment in forestry sector for the rehabilitation of degraded forests/wastelands via PPPP.

### **Recommendations**

- Changes in the current National Forest Policy not necessary to facilitate PPPP in re-greening of degraded forestland as provisions enshrined in clause 2.2 and 4.9 of above policy are adequate and amendments not required.
- Private investment in Protected Areas should not be allowed because of the prohibitory nature of Wildlife Protection Act 1972.
- Even though Indian Forest Act does not have any provision for allowing private participation, provisions in the Forest Conservation Act 1980 are adequate to take care of this requirement
- MoEF should frame guidelines for issuing approvals for private investment in forestry sector based on following suggested parameters
  - Forest area situated in V and VI schedules or otherwise

- Level of participation of local communities
  - Density of forest crop, site quality and range of growing stock
  - Parameter for usufruct (*Nistar*)
  - Period for lease permitted for this purpose
  - Identification of sensitive areas
- Government may levy a portion of final felling in the form of lease rent.
  - State Land ceiling act, Panchayat act and Tribal act should be amended to encourage private investment for the rehabilitation of degraded forests/wastelands.
  - Crop of plantation origin should not require permission of collector under land revenue code.
  - Forest produce (including NTFP's) from the rehabilitated forest land/wasteland should be exempted from transit regulations.
  - It is proposed to constitute a separate forest financial corporation to facilitate private investment for the rehabilitation of degraded forests/wastelands.
  - Forest Development Corporations may be allowed to raise the cheap capital for the afforestation of degraded forest/wasteland.
  - Long gestation period, low Internal Rate of Return (IRR), uncertain market condition, lack of consultants, trained manpower and scarcity of reliable data are the main constraints for the rehabilitation of degraded forests/wastelands. Separate Cells may be created in different institutes of ICFRE and SFRI for this purpose.

## **SOCIO-ECONOMIC ISSUES AND JFM PERSPECTIVES**

### **Observations**

- Threats and opportunities to the JFM fund as a result of private investment.
- Fund for community forestry by corporate sector under Social Corporate Responsibility (SCR).
- Scaling of the success of PPPP from social point of view.
- Resource and employment generation through private investment.
- Status of Schedule 5th Area-right to access agreement is not possible.

### **Recommendations**

- In Schedule 5th Area, Corporate involvement can be encouraged with the association of Local People, Government and NGO
- Transparent market mechanism for the forest products including NTFPs should be developed to encourage farmers to grow and protect forest crops and to eliminate middle men.
- Need to re-structure corporate intervention strategy of raw material procurement within and outside the organisation.
- Involve Panchayat and activate Van-Sub Committee for the protection of afforested area and usufruct sharing.
- For the ultimate success make and implement this PPPP into sustainable rather project type mode.

## **FINANCIAL ISSUES, PATTERN OF SHARING AND INVESTMENT**

### **Observations**

- Pattern of investment sharing v/s usufruct sharing
- Main constraints in Institutional financing
- Fluctuating rate of Interest
- Direct lending by NABARD to the corporate/FD for afforestation of Degraded Forests / Wastelands (DF / W)
- Long term fiscal policy for the private investment in forestry sector
- Priority for lending in forestry sector

- Tax concessions for promoting tree cultivation in DF/W

### **Recommendations**

- Creating a separate corpus for forestry sector by raising the public money from green thinkers and environment friendly corporate.
- Proposal for variable interest rate suiting to economic scenario and rate of interest to be fixed as per the degree of land degradation
- Development of demonstration plots to ensure future strategies for the rehabilitation of DF/W.
- Generating awareness and interest for this scheme, among financiers and Banks through audio-visual means.
- Creation of separate forestry bank exclusively for afforestation scheme.
- Incentives for the investors as being offered in agricultural sector such as removal of license fee, exemption from taxes, tax rebate scheme, facility of non disclosure of source etc.
- Investor should have usufructory right reserving a certain proportion for the local people. Usufruct sharing should be directly proportionate to investment and other stakeholders should be given proper weightage.
- Direct lending by NABARD for the investment in afforestation schemes and should be available after the approval of their Board, e.g. RIDF.

### **MANAGEMENT AND ADMINISTRATIVE ISSUES**

#### **Observations**

- Financial institution to promote funding in the forestry sector
- Reducing the burden of forest department
- Decentralization of the process of sanctioning of management plans
- Dispute resolution and arbitration among the different stakeholders
- Direct and indirect investments and concessional credits for wasteland development
- Creating data bank on the various attributes of available degraded forests/wastelands

#### **Recommendations**

- As creation of a new and exclusive financial institution to promote funding of projects for the forestry sector may not be feasible in the near future, the group feels that the existing financial institution should appreciate due importance of the forestry sector. They must according earmark and allocate larger resources (both human and non-human) for investment in this sector.
- The financial institution should not only operate from the supply side (by providing cheap and easy resources), but also take pro-active steps to promote demand for credit-worthy projects. As a part of this demand-creation exercise, governmental, non-governmental, as well as financial bodies should encourage undertaking of credit-worthy projects by self-help groups of stakeholders (inclusive of owners of non-forest lands).
- To facilitate and strengthen both the demand and supply sides of investible resources for wasteland development, institutions like IIFM should arrange regular discussions of all important stakeholders.
- As professional foresters working with government are already over-burdened with departmental works, there is a strong need to promote chartered foresters among qualified personnel to guide private wasteland development activities. IIFM and other competent management organizations should take a lead in training and promoting such chartered foresters. There is a strong to specially promote agro-forestry clinics.
- Territorial DFOs should be entrusted with the job of according sanctions to management plans for non-forest lands.

- The group favours evolution of institutional framework for dispute resolution and arbitration in course of a continuous process of dialogue, discussion and negotiation among the relevant stakeholders. They should start the process of evolving contractual arrangements and safeguards for farmer-industry partnership for wasteland development.
- The group recommends credit at concessional rates for community based organizations engaged in development of wasteland under government ownership.
- For private wasteland development the same concessional credit should be provided even to individuals and their associations.
- Existing JFM organizations like Forest Protection Committees (and similar bodies that may be created on non-forest lands) and their higher-tier bodies may be encouraged to receive funds from non-government sources (including individuals) as a reward / incentive for their ecological services of local as well as global importance.
- Governmental bodies must initiate the task of creating strong database on the various attributes of available wasteland both inside and outside of forest. Private bodies (including farmers and industry associations) must at the same time be encouraged to create such database in the interest of increasing their returns from use of such lands on project basis.

52.

## “LOK VANIKI” : PEOPLE’S FORESTRY IN INDIA - AN INNOVATIVE AND DECENTRALIZED APPROACH IN MANAGING PRIVATE FORESTRY

A K Bhattacharya and Bijendra Basnyat

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### **Abstract**

*LOK VANIKI is an innovative programme launched in Madhya Pradesh in April 1999. The concept contemplates capturing the inter-relationship between economic growth, environmental preservation and poverty alleviation through development of forestry in the private sector. The major focus of the scheme is on promoting multi-tier scientific management of neglected and degrading forests on private holdings and also inculcating a culture of tree cultivation by considerably spreading green cover on areas unsuitable for good and profitable agriculture. The article discusses the evolution of the concept, salient features of the programme, the legal and insitutional back up and the benefits being accrued to the villagers.*

### **BACKGROUND**

Rapid population growth has created a demand and supply gap for the forestry products and is increasing day by day. The demand and supply gap of fuelwood was 9.75 Million cubic meters in 1999 (MPFD, 1999)<sup>1</sup>. Apart from this, the productivity of the forest resources is decreasing day by day due to over dependency on forest products. This has created the tremendous pressure in government forest, which leads to their degradation, and number of forest-based industries has closed started to close down. Singh (1998)<sup>2</sup>, estimated that 14 forest-based industries in the state have been closed due to shortage of raw materials and may others are operating below their installed capacity. In addition to above, Verdict of Honorable Supreme Court on 12-12-96 states that felling of trees in all forests (including private forests) is banned except in accordance with approved working (management) plans. Hence, it has been felt that there is an imperative need to shift the wood production functions from natural forests under forest development to private forest and wasteland in order to make the Govt. forest to play the ecological role exclusively. As a result, the Govt. of Madhya Pradesh (M.P.). conducted a thorough study and discussion with farmers and officials in order to hammer out a programme to promote tree growing in the revenue area and private holdings, which generally fall in the category of wasteland. The Govt. of M.P. lunched "Lok Vaniki Mission" a programme to promote tree growing in private holding and revenue area with people's participation in April 1999. Initially, the programme was lunched in four districts on a pilot basis, but now it has been extended to ten districts. The chronological event of evolution of Lok Vaniki is summarized in Table 1 below.

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<sup>1</sup> MPFD, 1999. Madhya Pradesh Forestry Action Plan. Madhya Pradesh Forest Department, Bhopal India

<sup>2</sup> Singh DP, 1998. Socio-economic Development of Madhya Pradesh through Forestry by *the people, for the people*. Government of Madhya Pradesh, Bhopal, India.

**Table 1: Evolution of Lok Vaniki in MP**

Years	Chronological events
1996	Supreme court decision on banning of green felling of trees
1999	Launched the private forestry concept in Madhya Pradesh and opening of <i>Lok Vaniki</i> Cell under <i>Lok Vaniki</i> with Additional PCCF (Production) as the mission leader.
	Decided to implement in four districts of MP
	a high-powered committee composed of senior officials from the <i>Panchayat</i> , Tribal, Forest and Revenue departments was set up to look into legal requirements of the <i>Lok Vaniki</i> scheme.
2000	Scheme was added to three more districts
2001	Formulation of <i>Lok Vaniki</i> Act
2002	Formulation of <i>Lok Vaniki</i> Rule and being implemented in 10 districts of MP

LOK VANIKI is an innovative programme launched in Madhya Pradesh in April 1999. The concept contemplates capturing the inter-relationship between economic growth, environmental preservation and poverty alleviation through development of forestry in the private sector. The major focus of the scheme is on promoting multi-tier scientific management of neglected and degrading forests on private holdings and also inculcating a culture of tree cultivation by considerably spreading green cover on areas unsuitable for good and profitable agriculture. Most of these areas are lying barren and degraded and are creating environment problems. The vision statement, envisaged as "Lok Vaniki : Vision 2020", states - *'To transform the forestry Sector in M P, so as to enable it to fulfill its dual role of maintaining ecological balance and environmental stability while simultaneously meeting not only the domestic demand but also a share of the international market of forest products through people's participation thereby contributing to the socio-economic development of the State'*.

#### **Lok Vaniki aims at**

- Increased production of wood and Non wood forest products in the private sector by Managing and harvesting standing forests on private holdings; Rehabilitating degraded forests on private holdings and on lands under the control of Government departments (other than Forest Department) mainly Revenue Department; Plantations on private and Revenue Department waste lands.
- Empowering and strengthening of Panchayats and creation of other necessary institutions like 'Kisan Sangh' and 'Chartered Foresters' to manage, supervise and monitor forestry and forest based activities as also tax collection in Non-Government sector.

Hence, *Lok Vaniki* is initiated for the scientific management of private forests and promotion of tree cultivation on marginal lands. This would be achieved by providing suitable legal, institutional and market environment. The *Lok Vaniki* management process can be summarised as below in box 1.

**Box 1: Procedural steps for managing private forestry under “Lok Vaniki “**

- *Making the farmers aware of the concept, benefits to them through implementation of the scheme and their responsibilities.*
- *They are clearly told that the land cannot be diverted for any other use.*
- *Land has to be clearly demarcated and certificates obtained from Forest and Revenue departments that no forest or government land has been included in their holding.*
- *A management plan has got to be prepared and got approved by a competent authority.*
- *Trees to be felled are marked strictly in accordance with the approved management plan.*
- *Regeneration of forest has to be ensured.*
- *Regular monitoring will take place and implementation of the management plan will be suspended if working is not found to be in accordance with management plan. All illicitly felled trees will be confiscated.*

The State Government has taken adequate measures to provide sufficient legal support to the whole initiative. *Lok Vaniki Act, 1999* and *Lok Vaniki Rule 2001* has been formulated which provided an enabling legal framework to people willing to manage forests and tree clad area on scientific lines. The objectives of the Act are to regulate and facilitate management of tree clad private and revenue areas in the state of Madhya Pradesh. *Lok Vaniki*, which emerged after the historic decision of the Hon'ble Supreme Court has now assumed a shape that is based on sound legal grounds. Key features of *Lok Vaniki* legislation are summarized in box 2 below.

**Box 2: Key Features of Lok Vaniki Legislation**

- **Fairly free from Colonial Shadows:**
- **An Enabling Law -voluntary in application:** *Private forest owners voluntarily prepared plan for managing their wood lots.*
- **Preparation of management plan:** *Management plan is prepared to ensure continuity and improvement of the forest so that it fulfills its environmental and economic roles optimally. In preparing the management plan of private forests, the same silvicultural principles are applied as in the case of government forests*
- **Chartered Foresters:** *Availability of Technical Forestry Services to People on commercial basis. These are the private independent parties who will prepare the management plan for the farmer for sustainable management of private forest*
- **Putting People First:** *Self Assessment by the Owner of Private Forests the Act itself is very rogressive, the process for framing rules under the Act was also participatory.*
- **Single Window** *deal with the issue of management of such private holdings for which a management plan is prepared under the provisions of the Act. Such lands shall remain outside the purview of the Madhya Pradesh Land*
- **Recognition of role of local government in Sustainable Private Forestry:** *The Gram Panchayat after having received the approved management plan from the competent authority should implement the management plan according to prescribed time schedule.*
- **Institutional framework:** *State level coordination Committee, Forestry Boards at district and block level, Lok Vaniki Kisa Samiti and Sangh and Chartered foresters, Kisan Sangh' and chartered foresters to manage, supervise and monitor forestry and forest based activities.*



## MANAGEMENT PLAN

Management plan is prepared to ensure continuity and improvement of the forest so that it fulfills its environmental and economic roles optimally.

In preparing the management plan of private forests, the same silvicultural principles are applied as in the case of government forests. The major difference is in the size of the private forests, which are very small in comparison to Government forests. The small size however has an advantage in that it permits intensive management.

Trees above a particular girth (differs with species) are prescribed for felling with an objective of harvesting only the increment put on by the trees. This also ensures gradual removal of over wood to open up the canopy so that natural regeneration can come up and grow under proper light conditions.

A management plan is generally prepared for a period of ten to fifteen years although appraisal is continuous.

The intention of the court was to strictly prohibit illicit felling and movement of illicit timber. This clearly indicates that if a farmer scrupulously observes all the laws and the directions of the Hon'ble Supreme Court, as clearly brought out below, the farmer should not be prohibited from carrying out felling in accordance with duly approved management plans:- There is no dispute regarding ownership or boundaries in case of management plans prepared by these farmers.

The scientific management plans as desired and directed by this Hon'ble Court have been prepared under professionally competent foresters. The standard format of management plan has been prepared by a high level committee constituted by the PCCF, M.P. and the plans in Dewas Districts have been prepared by Shri M.Dixit, a retired Principal Chief Conservator of Forests.

The state Government in their submission in Writ Petition 202 have defined forest in accordance with the direction of their Hon'ble Court - as "vast areas of land which are covered with trees shrubs and no cultivation's being done. Thus looking to the practical aspects of dictionary meaning of forests areas 10 hectares or more in extent and having more than 200 trees per hectare will be considered as forest"

No management plan prescribe anything that is violative of the Forest conservation Act 1980 or any other relevant laws. Abiding by this definition, there should be no need to prepare a management plan for holdings smaller than 10 ha not recorded in Government records as forest. But the owners of private forests even less than 10 ha have got management plans prepared basically because they wish to maintain their forest in perpetuity without compromising with environmental needs. It may also be pointed out that even though in the revenue records of the lands under question show no trees or few trees (as shown in B-II-Khasra) the farmers taking no undue advantage of this, fully recorded the number species & dimensions of all trees to be included in the management plants. As long as these conditions are fulfilled, the State Govt. has no objection to execution of these plans because it is a progressive step for well being of private tree clad areas.

The scattered trees of uneconomic species like Babool (*Acacia nilotica*), Rinjha (*Acacia leucophloea*), Bel (*Aegle marmelos*), Neem (*Azadirachta indica*), Ber (*Zizyphus jujuba*) etc not covered with the restrictions of the M.P. Land Revenue Code article 240 & 241 have a vital role in the economy of rural population. The villages use the timber of these species for construction and repair of their houses and agricultural implements and as fuelwood also. The trees of these species mostly standing on the boundaries of the fields are cut systematically at regular interval in such a way that the old trees should not damage the agriculture crop by their shade & at the same time, the requirement of the timber and fuel is met as per their need. This type of arrangement is meeting the large scale demand of villagers in whole of the M.P. Particularly in Vindhya, Chhathisgarh & Madhya Bharat region. This also reduces the gap of demand and supply of forest

produce thereby substantially reducing the pressure on valuable government forests. This whole arrangement supports the economy and livelihood of a large number of poor people. If this ban on felling continues, the economy and livelihood system of rural population will collapse and the pressure on government forests will increase many fold.

## **STRENGTHENING OF THE INSTITUTIONAL FRAMEWORK**

In order to facilitate tree cultivation and harvesting in a decentralized yet systematic and sustainable manner, peoples' institutions are being entrusted with implementation responsibilities. Institutions like "*Lok Vaniki Kisan Uddyami Sangh*" are being registered under the Societies Act. The objective of the *Kisan Sangh* is to bring all small farmers together to organize for collective action in the field of private forestry and provide forward and backward linkages to its members, which are inevitable for multi-tier forestry. One of the other major objectives of the *Kisan Sangh* is to generate funds to make available the advance technology to the farmers and also facilitate proper marketing of timber and non-wood forest produce. Forestry Boards at State and District level are also being constituted to supervise various aspects of private forestry. The State Govt. has recently created a new institution of Chartered Foresters to ensure availability of technical assistance in the field of forestry on commercial basis. Till to date, seven-chartered forester has already registered with *Lok Vaniki Cell*. Panchayat Raj Institutions, especially Gram Sabhas are supposed to play a major role in implementation and monitoring of private management plans.

### **LOK VANIKI KISAN SANGH**

As a consequence of an inter-state study tour organised under supervision of eminent Professor P.M.Singhi of Indian Institute of Ahmedabad, the farmers were motivated to give shape to their gathering into a formal, voluntary, Non-Government Organisation called the "*Lok Vaniki Kisan Sangh*". The objective of the *Kisan Sangh* is to bring all small farmers together to organize for collective action in the field of private forestry and provide forward and backward linkages to its members, which are inevitable for multi-tier forestry. One of the other major objectives of the *Kisan Sangh* is to generate funds to make available the advance technology to the farmers and also facilitate proper marketing of timber and non-wood forest produce.

In anticipation of the income that would be generated, many farmers invested in raising of plantations to further increase their assets. As per available information, approximately 3,79,000 seedlings were planted in 1999 planting season in Dewas, Sidhi and Raigarh districts only.

The members of *Lok Vaniki Kisan Sangh* have got the management plans prepared of such private holdings, which are undisputable, the fields of the farmers are well demarcated and properly marked in the revenue records. Before the preparation of the plan, the ownership is determined after checking the records of both the Revenue and Forest Departments and a certificate is given by Revenue & Forest officials before order of felling from the Collector. Under such circumstances, the State Govt. sees no reason for continuing ban in cases where a dully-approved working plan is waiting execution.

### **Backward and forward linkages**

"Backward" and "Forward" linkages hold key to the success of all efforts relating to planting in wasteland. In order to strengthen "backward" linkages, development of infrastructure for developing clonal variety of seedlings in research resources extension packages is imperative. Forest Department has already established 14 research nurseries in different agro-climatic zones of M.P. to produce such clonal seedlings and provide necessary services to the farmers. The Forest Department has also established industrial liaison unit to create necessary conditions for promoting forward linkages to such planting initiatives. In Dewas district, farmers have already initiated the linkages into the processing of Rosa grass by establishing distillation plant for essential oil. Such initiatives have also been taken in Raigarh district with respect to Lac and other forest

products. Therefore the process of providing "backward" and "forward" linkages to the task of reclamation of wasteland has already begun.

### **Rationalising the legal framework**

The State Government has taken adequate measures to provide sufficient legal support to the whole initiative. A committee of Additional Secretaries was set up by the State Government to look into various legal aspects of Lok Vaniki. Following recommendations of this committee, a "Lok Vaniki" Act is under consideration. This Act provides the overall framework for private forestry in the state. rules relating to various operational parts of Lok Vaniki Act are also being framed. Thus the concept of Lok Vaniki, which emerged after the historic decision of the Hon'ble Supreme Court on 12/12/96, has now assumed a shape that is based on sound legal grounds.

Though Ministry of Environment & Forests, Government of India in their affidavit dated 24/01/2000 in I.A. No.513 of 1999 have refrained from recommending lifting of ban on felling of trees in non-government areas under the pretext that the dispute between the forest & the revenue land is not solved. Demarcation of boundaries is not clear & reconciliation of records is not complete. In the same affidavit the MoEF have expressed the opinion that all Government forests should be allowed to be worked in accordance with approved working plans under supervision and monitoring of a committee to be headed by Regional Chief Conservator of Forests of MoEF.

The Hon'ble Supreme Court in their order dated 12/12/96 in Writ Petition 202 of 1995 has directed that ban will not be imposed on the felling of any private plantation comprising of trees planted in any area which is not a forest. The state of Madhya Pradesh has also amended Land Revenue Code 1959 vide notification No.F-2-8VII-S-8-94 dated 29th July 1997 published in State Gazattee dated 8th August 1997 under which no permission for felling and transit of timber trees in the holding of any Bhumiswami shall be required when he has planted this trees. The farmers of the state have started plantations on private waste land with the hope that no restriction will be imposed on felling in such plantations. Even old plantations on private lands are standing. The interest of the members will be jeopardized with the order dated 17-12-99 which has imposed ban on felling of any tree and it will also act as a disincentive for future plantations.

### **MONITORING MECHANISM**

An elaborate monitoring mechanism has been developed to ensure proper implementation of management plans. To ensure that the scheme is properly implemented an effective monitoring system is proposed.

Under this system following things will be monitored -

- i. Demarcation status, as described in the plan, is not altered.
- ii. Marking and harvesting is strictly in accordance with the silvicultural principles on which the management plan is based.
- iii. Post harvest operations are (like establishing regeneration) carried out and in time.
- iv. Desired regeneration to assure future crop is coming up and getting established.

#### ***Monitoring team and its functioning***

The monitoring team shall ensure the representation of the following -

- i. The farmers or representatives of farmers' body.
- ii. Concerned Panchayat member (One member of the District and Block level Forest Standing Committees).
- iii. NGO/NGI who has experience in the field of forestry management.
- iv. Representative of the forest and Revenue Departments of the concerned area.

**Level of monitoring**

Two tier monitoring is proposed

- Block level
- District level

They will function under the overall supervision of the State level team comprising of a senior Forest Officer of the State and the Government of India. The State Level Committee shall nominate the members of the district level monitoring committee. This district level committee will in turn, nominate the members of the block level monitoring committee. Keeping in view the very large number of small holdings spread all over the state, the monitoring system proposed appears to be the manageable and effective.

In order to ensure that felling takes place strictly in accordance with the prescriptions laid down in the management plan an effective monitoring system is vital. Keeping this in mind, a 'four-tier monitoring system' starting with a 'self-assessment form', to be filled by the farmer himself has been proposed. The other three tiers are the farmers body NGOs and Government of India.

**IMPLEMENTATION**

The *Lok Vaniki* was initiated in four districts but now it cover ten districts namely, Devas, Hoshangaad, Damoh, Seoni, Narsinghpur, Jabalpur, Kanti, Mandala, Dindori, Sidhi. Until now 1196 farmers owning 4211 hectares of land from five districts have got involved in the scheme (Saigel et al, 2002)<sup>3</sup>. The State Govt. has made elaborate arrangements for training and capacity building of these peoples institutions to evolve a transparent and convenient mechanism for private peoples active participation in management of their own tree clad areas. More than 150 training programs are organized in ten districts and 20,000 farmers are trained on various aspects of forest management with the introductory module of *Lok Vaniki* legislation. 50 management plans of *Lok Vaniki* is has already been prepared of which four are being sanctioned and three has been forwarded to Govt of India for approval as the plans cover more than 10 ha of land. In anticipation of the income that would be generated, many farmers invested in raising of plantations to further increase their assets. As per available information, approximately 3,79,000 seedlings were planted in 1999 planting season in Dewas, Sidhi and Raigarh districts only. Three farmers have started harvesting and their name and annual income is summarized in table 2 below.

**Table 2 - Income from *Lok Vaniki***

District	Name of farmer	Annual income	Total Trees
Hosangabad	Kamta Prasad Mahoto	Rs 97,705	12
Devas	Shohadra Bai	Rs 21,905	219
Damoh	Kodulal Dubey	Rs 18,758	-

<sup>3</sup> Saigal S, Arora H and Rizvi SS, 2002. *The new foresters: the role of private enterprise in the Indian forestry Sector. Instruments for sustainable private sector forestry series*. Ecotech Services, New Delhi and International Institute for Environment and Development, London.

*Lok Vaniki* is a decentralized approach adopted by Madhya Pradesh Forest Department where the role of Panchayat has been duly acknowledged. The concept of charter forester is not only innovative but could also contribute a lot in reducing the unemployment rate of the country. There are immense potentialities of managing the private forestry in Madhya Pradesh. There are about 200,000 private forest owners in the state owning forest patches of above 0.4-hectare (Singh 1998)<sup>2</sup>. It is estimated that out of a total of 8.4 million farmers in the state, 200,000 farmers have a total of about 400,000 hectares of standing forests, which can be 'unlocked' immediately. Further, about 600,000 farmers each have about one hectare of degraded forest. The farmers can make this productive without much investment (Saigal et al, 2002)<sup>3</sup>. This would not only help for conservation and development of private forestry but also help in socio economic upliftment of people. In spite of greater political commitments and adequate legal and policy framework, implementation of the *Lok Vaniki* scheme is not encouraging as it is being implemented in 10 districts out of 45 districts of State. The process of handing over is very slow due to long administrative procedures, as it requires approval from Central government if the area is more than 10 ha of land. Hence, *Lok Vaniki* is not a panacea but it can contribute a lot towards sustainable management of private forests if properly implemented.

53.

**PRIVATE SECTOR PARTICIPATION IN AFFORESTATION - THE ITC EXPERIENCE**

S N Rao and A K Bhattacharya

**Abstract**

*Need of the hour is to prevent India's bio-diversity rich natural forest resources from depletion beyond its regenerative capacity. In the recent global scenario, a meaningful conservation can be expected only when corporate sector is involved in afforestation programme of the degraded forest lands in linkage with local communities through scientific management of land use. The gap between demand and supply of forest based fibers will be 10 to 20 million tons in the next 10 years. The best solution could be leasing out degraded forest lands which are beyond the capacity of regenerative level. Forest Department is trying its level best to rehabilitate the degraded areas. Forest Development Corporation in respective states trying hard to increase the productivity per unit area. Private sector has overcome the problem of low survivals and poor yields per unit area. ITC Limited, Paperboards & Specialty Papers Division had developed clonal technology and practicing for developing eucalyptus site specific clones. It is successfully implementing the farm forestry programme with the clonal eucalyptus plantations on the farmers field. The farmers of Andhra Pradesh are very happy with the higher yields i.e. around 100 tonnes of pulpwood per ha. of clonal plantation. The private sector is waiting for the opportunity of replicating such model on leased out degraded forest areas.*

**INTRODUCTION**

India has 25 million hectares of degraded forests with crown density of 10 – 40 percent and another 10 million hectares with crown density of less than 10 percent. The massive afforestation programme taken up by the Forest Department under various forestry projects in the country are not keeping pace with the forest degradation. (Source: The Role of Forest Department in the 21st Century – A report of the workshop in Hyderabad, India – Mr. Emmanuel D'Silva)

Need of the hour is to prevent India's bio-diversity rich natural forest resource from Depletion beyond its regenerative capacity. Forests being a renewable natural resource, economics of forest must be characterized by a twin objective i.e. the allocation of resources for consumption and production over a period of time.

In the present global scenario, a meaningful conservation can be expected only when Corporate Sector is involved in afforestation programme of the degraded forest lands in linkage with the local communities, through scientific management of land use.

Estimated requirement of biomass by 2020 as per FAO

Fuel wood & Charcoal	344 million tonnes
Industrial round wood	37 million cum
Sawn timber	33 million cum
Paper / Paperboards	5.7 million tonnes
Wood based panel	1.3 million tonnes.

The wood based industries - pulp & paper, veneering, ply wood & safety match industries facing large deficits in between raw material requirements & supplies.

Considering only raw pulp out of the above to meet the requirement of pulp and paper industry the imports are at a tune of Rs.28,900 million (Source: Dr.J.V.N.S.Prasad, CRIDA).

## **GOVERNMENT – INDUSTRY PARTNERSHIP IN AFFORESTATION: A SOLUTION.**

**Revenue / Private / Forestlands**” to derive social and economic model for the country through sustainable development of wasteland. Considering raw material scenario vis-à-vis Paper Industry, the study reveals that the gap between demand and supply of forest based fibers will be 18 – 20 million tons in the next 10 years; thus, recommends leasing out approx. 1.2 million hectares of degraded forestlands to the private entrepreneurs to tide over the crisis. India’s resources are ideally suited for increasing domestic wood production but the irony is that despite being bestowed with a fine tropical climate and availability of vast tracts of degraded forestland, India as a nation is losing out to other developing countries like Indonesia, Malaysia, Brazil and Chile. Leasing out of degraded forestland to private entrepreneurs would considerably increase the scope of employment generation – it is estimated that one hectare of plantation of pulp wood species creates an employment potential of around 450 mandays over its entire rotation period. In addition, the villagers stand to get around 1.2 MT of fuel wood every year per hectare, free of cost.

### **Private sector success story: ITC Limited – PSPD, A.P., India - A model for 20,000 of Clonal Eucalyptus & Subabul Plantations on farm lands**

#### **Clonal Technology**

Clonal technology primarily envisages taking advantage of the natural variation in tree species for immediate gains in productivity and quality of produce of new plantations. Important steps for tree improvement through vegetative propagation and clonal technology involve: selection of Candidate Plus Trees (CPTs) from existing seed-route plantations with the desirable phenotypic features; cloning of CPTs through rooting of the juvenile cuttings under controlled environment and field testing of the clones for selection of genetically superior, fast growing and disease resistant clones.

By importing seeds from CSIRO, Australia in the years 1986, 1990, 1994 and 1995 provenance trials were raised by the Research Team of ITC-BPL. CPTs of *Eucalyptus tereticornis* Smith. and *E. camaldulensis* Dehnh. were mainly selected from the Government and private farm-forestry plantations. Selected plus trees were propagated vegetatively from coppice cuttings in mist chamber. Root trainer technology was adopted for production of plants. The successful ramets were planted in Gene Banks known as Clonal Multiplication Areas (CMA) at an espacement of 1 x 1 m. The clonal testing trail areas (CTA) were planted at 3 x 2 m spacing in RBD with 3 replications. Promising clones were short listed from CTA’s for growth, disease resistance and pulp and paper qualities. Clonal seed Orchards (CSO) adopting the permuted neighborhood design were established. Clonal demonstration plots were raised under extension scheme. Inter and Intra-specific hybridization was carried out between selected best clones and other species of *Eucalyptus*. Half and full-sib progeny trials were laid out. Promising hybrids were cloned and planted in multi locational trials. Genotype x Site interaction studies for various clones were carried out on normal and refractory sites. A gene repository is also established for conserving various types of clones.

#### **Selection of Promising Clones**

At the beginning of the programme, the main handicap faced was non-availability of wide genetic base for improvement of *Eucalyptus*. Therefore, “breed the best with the available best” strategy was followed.

The selection of the most desirable tree with characters such as straightness of stem, annual growth rate, disease resistance, crown structure, wood density, fiber morphology, cellulose/lignin balance, bark to solid wood under bark relationships etc were considered. Trees were selected from APFDC plantations and farmers plantations. Starting with cloning of 65 numbers of CPTs during 1989, more than 650 CPTs and 300 full sib CPTs have been selected from a base population of eight different *Eucalyptus* species and 11 different provenances and cloned, by now.

Nearly, 150 trial plots were established in area of 30 ha since 1989 in various soil types for multilocal trials. Clones were evaluated from CTAs for comparative genetic superiority and G x E interactions. Based on the performance of individual clones in field trials, 97 promising fast growing and disease resistant clones of *Eucalyptus tereticornis* and *E. Camaldulensis* (45 commercial clones and 52 reserve clones) were identified, including 29 site specific clones adapted to problematic saline and alkaline soils; 37 of them are categorized as most important commercial clones based on their productivity and disease resistance capability. Out of 86 promising clones qualified so far, 54 (63%) have come from provenance seeds source obtained from CSIRO, Australia and 32 (37%) from local Mysore gum. In the beginning of the programme, clones were planted without due regard to site. After a gap of 3 to 4 years, it was discovered that some clones are doing well (and some are not) in a given site. This was the biggest challenge faced by the research team i.e. matching of clones to specific sites.

**Table 1 - Suitability of Commercial Clones of Different Types of Soil**

Sl. No.	Type of Soil	Adaptable Clones
1	Alluvial	1,3,6,7,10,27,105,115,122,130,266,274,284,286,288,292,316
2	Black Alkaline	1,10,27,71,83,99,105,130,271,285,316,405,411,412,413,470,526
3	Black	1,3,7,10,27,71,72,83,99,105,122,266,271,272,285,290,316,405,411,412,413,417,439,526
4	Red	1,3,6,7,10,27,71,72,99,105,122,130,158,159,223,266,272,274,284,285,286,288,290,292,315,316,319,405,411,412,413,417,469,470,499,526
5	Red Sandy	3,6,7,71,105,122,266,288,316
6	Sandy	3,6,7,10,288

For large-scale commercial production of plants, the gene bank of promising clones has been established in 26 ha with nearly 0.2 million ramets. The clones were planted in blocks at closer spacing of 1 x 1 m. Gene banks are coppiced at 2 years age for obtaining the propagule for multiplication.

Clonal seed orchards (CSO) with best "Bhadrachalam" clones covering an area of 0.71 ha have been planted in two plots for production of genetically improved seed. Yearly, 5 to 10 kgs of improved seed is being collected and distributed to growers. Fresh CPTs are now being selected from the CSO seed-source plantations.

### Hybridization

For developing *Eucalyptus* for future, hybridization programme was initiated by ITC-BPL in 1994. A breeding orchard was set-up with cleft grafted plants of *E.tereticornis*, *E.camaldulensis*, *E.alba*, *E.urophylla* and *E.grandis*. Intra and inter-specific hybrids have



been developed through controlled pollination between selected best 'Bhadrachalam' clones and have been cloned for field trials.

Inter-specific hybridization was attempted to combine desirable complementary attributes of promising clones and eliminate defects, keeping in view the customers view point viz. high yields (volumetric productivity), felling cycle of 3 to 5 years (economic rotation), adaptability to sites, superior wood quality and uniformity of raw material. The clones with well-defined traits i.e. clear bole, high productivity, adaptability to refractory sites, disease resistance, pulp/paper quality are included in the breeding programme.

### Improvement for Pulp and Paper Quality

As soon as the CPT is selected, it was first tested for proximate chemical analysis and strength properties. A few clones have given 49% screened yield compared to 45% from seed-route plantations. From the last two years, much emphasis is laid on improving the fiber quality by hybridizing clones with best fiber properties. The best fiber for papermaking is derived from species like *Eucalyptus globulus*, *E.grandis*, *E.deglupta*, *E.urophylla* etc., apart from their high growth potential. Therefore, a few high yielding "Bhadrachalam" clones are now being hybridized with the above species to achieve twin objectives of improving fiber properties and induce drought resistance so that new hybrids developed are adaptable to sub-tropical agro-climatic conditions.

### FARM FORESTRY

**Table 2 - Adoption of Farm Forestry on the Farmers' field – Plantation progress: 20,000 ha on farmlands.**

Year	Eucalyptus		Subabul		Total	
	No. of Plants Planted	Area (ha)	No. of Plants Planted	Area (ha)	No. of Plants Planted	Area (ha)
1992	69767	24.41			69767	24.41
1993	127159	64.09			127159	64.09
1994	264435	182.15			264435	182.15
1995	470123	312.84			470123	312.84
1996	1015513	716.40			1015513	716.40
1997	1335057	725.30			1335057	725.30
1998	2069009	1096.41			2069009	1096.41
1999	2269089	1271.38			2269089	1271.38
2000	2617189	1456.42			2617189	1456.42
2001	3678687	2718.21			3678687	2718.21
2002	5230137	2423.74	15405831	1911.62	20635968	4335.36
2003	5438164	2619.68	21894690	4154.92	27332854	6774.60
<b>Total</b>	<b>24584329</b>	<b>13611.05</b>	<b>37300521</b>	<b>6066.54</b>	<b>61884850</b>	<b>19678</b>

## Package of Practices

Genetically improved planting stock: Availability of planting stock from genetically superior Candidate Plus Trees tested on different soils and multiplied through vegetative propagation - clonal technology.

**Selection of Sites / Soils:** Sites having deep soils preferably with normal pH & EC suitable for supporting fast growing species leading to higher productivity (soil analysis for pH and EC is mandatory).

**Preparation of Site: Deep ploughing & criss cross harrowing.**

## Planting

- Espacement: Ex: Bhadrachalam clones at 3 x 2 Mts. And 3 x 1.5 Mts.
- Pitting: Pit standard size is 30 x 30 x 30 cms. We are suggesting for 45 cms depth.
- Deep Planting.

**Weed Management:** Weed free condition of the field is the pre-requisite for the better establishment and growth of the plants.

**Application of Fertilizer:** As per the requirement of the site / soil will enhance the productivity (soil nutrient status analysis is essential).

**Ploughing:** Twice a year - Once after receiving good monsoon rains and second time before the end of rains.

## Protection of Plantations

- against cattle
- from wrong ploughing
- from fire
- avoid shallow planting
- from white ants.

**Monitoring of Plantations:** Yearly once measuring the standing population in sample plots for the survivals and growth.

**Buy Back arrangement** - Buy back assurance at market price.

54.

## PARTNERSHIP WITH MEDIA FOR PROMOTION OF FOREST COVER

A K Bhattacharya and M K Dubey

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### **Abstract**

*Media is a powerful tool for informing people about the positive or negative outcomes of the Government programmes and policies. The partnership of Forest Department and media can help in exchange experiences, find common ground for decisions and actively participate in and guide protection as well as development activities related to forestry. The challenge is to use them effectively and develop a Media Plan for promotion of forest cover in the country to achieve the ultimate goal of sustainable forest development.*

### **INTRODUCTION**

Forests in India, from the ancient time, have played important role in social, economic and religious activities. Ensuring sustainable forest development is one of the greatest challenges facing the world community. The importance of sustainable forest development holds great relevance to the developing countries like India, where forests are under great stress and biotic pressure to meet the sustenance needs of over one billion population.

A critical factor in meeting the challenge of sustainable forest development is knowledge building and information sharing. Communication technologies, ranging from traditional media to Internet, are central to this process.

India's forest estate of over 67 million hectares represents about 20 % of the country's land area. The National Forest Policy of 1988 sets a target of 33 % of land area under forests, but plans to regenerate the degraded forests, reclaim wastelands and raise plantations have so far had limited impact. There is a growing gap between increasing demand for and an almost static supply of forest produces. The supply is constrained by low per capita forest area, forest degradation, massive fuel wood and other rural requirements.

Expressing the concern about the decreasing forest cover in the country and slow pace in the efforts being made in this direction, the Ministry of Environment and Forests, Government of India has expressed that generating awareness among the people and sensitising the communities can catalyse the process of greening, and the media can play a very important role in enhancing the green cover. The Ministry has also advised to prepare a Media Plan for the promotion of green cover in the country. Following this mandate of the Ministry, a Workshop on "Media Plan for Promotion of Forest Cover in the Country" was organized at Indian Institute of Forest Management, Bhopal on June 22<sup>nd</sup> 2004. The eminent Government officials, Media persons, NGOs and Academicians attended the workshop and share their views on a common platform.

In the backdrop of aforesaid Workshop this article is focused on the role of media in forestry and media plan for the promotion of forest cover in the country.

## **ROLE OF MEDIA IN CONSERVATION AND PROMOTION OF FOREST COVER**

Media can play a significant role in encouraging and enhancing people's participation in activities aimed at conservation, protection and management of the forests, essential for achieving sustainable development. The MoEF, GOI, under National Environment Awareness Campaign (NEAC), accords priority for the promotion of non-formal environment education and creation of awareness among all sections of the society through diverse activities using traditional and modern media of communication.

Media can also use to give wide publicity to the constructive/appreciable works carried out by the forest departments, JFM committees, NGOs etc. Such kind of publicity gives the forest officials and local people immense pride and sense of achievement and thus acts as a motivating force for further action. It is also seen to be inducing a competitive spirit among them. It serves to create further interest among the villagers and immense desire among the community to participate in the task and ultimately leads them to conviction and action.

### **Media can play following roles towards protection and promotion of forest cover**

- Serve as a link between the Forest Department and locals.
- Mobilize people's awareness for the preservation and conservation of environment
- Promotion of Agro-forestry programmes and marketing of forest produces including NTFPs. Extension of afforestation and rehabilitation schemes for the degraded forests/ wastelands
- Rapid diffusion of development information related to forestry in diversity of languages and to widespread, often remote geographical areas.
- Helping overcome barriers of literacy, language, cultural differences and physical isolation.
- Dissemination of information about forest rules, acts and regulation in simple and local language.
- As a platform for democratic and pluralistic expression of the opinions, needs and aspirations of local communities.
- As an important mechanism for a channel for interactive communication for dialogue and debate on the major issues of forest development and public welfare.
- A medium to collect local information on social and environmental issues, which is essential for defining, planning and implementing forest development efforts.
- Investigative journalism about any offence either by foresters, locals or corporate.
- As a watchdog for private sector participation in forest development programmes.

## **MEDIA PLAN**

An effective Media Plan for the coming years is very essential to decrease the gap between media people and forest officials and utilize their combined efforts for conservation and promotion of forest cover. The tentative media plan at National, State and District levels is given below:

### **National Level Plan**

- Defining protocol and stakeholders for the media and forest department interaction e.g. Authorizing Forest Officers of different levels to organize press conferences and workshops for media persons at their levels
- It should contain information for dissemination of National level Programmes e.g. Bio-fuel, medicinal plants, fuel and fodder schemes, afforestation schemes etc

- There should be separate sections and strategies for print media, electronic media (Doordarshan and Satellite channels) and interpersonal communication (Refer to Table 1)

**Table 1 - Strategies for different types of Media**

<p style="text-align: center;"><b>A. PRINT MEDIA</b></p> <ul style="list-style-type: none"> <li>▪ Reporting of the events</li> <li>▪ Writing on success stories</li> <li>▪ Press visits to the places</li> <li>▪ Publications of articles etc</li> <li>▪ Pictorial displays</li> </ul>	<p style="text-align: center;"><b>B. ELECTRONIC MEDIA</b></p> <ul style="list-style-type: none"> <li>▪ Spots</li> <li>▪ Serials</li> <li>▪ Feature films</li> </ul>
<p style="text-align: center;"><b>C. RADIO</b></p> <ul style="list-style-type: none"> <li>▪ Drama</li> <li>▪ Talks and Discussions</li> <li>▪ Quizzes</li> <li>▪ Krishi darshan</li> </ul>	<p style="text-align: center;"><b>D. INTER-PERSONAL</b></p> <ul style="list-style-type: none"> <li>▪ Forest Guards</li> <li>▪ Teachers</li> <li>▪ NGOs</li> <li>▪ Street plays</li> </ul>

#### **State Level Plan**

- It should contain information about State level policies and programmes e.g. Lok Vaniki, People's Protected Area (PPA) etc
- It should be more detailed than National Plan and contain district wise details of different programmes
- It should mention the modalities of the workshops for the media
- It should identify of NGOs and other institutions which can coordinate with FD for the implementation of the media plan
- Provision for the funds and its utilization for the media management activities
- Awards and scholarships for the journalist to attend the training programmes

#### **District level Plan**

- It should be prepared by DFO of the area in consultation with the Media people
- Identification of key media houses and eminent media persons/journalist to address forests issues, programmes etc
- Provision of the funds for workshops and other modalities
- Formation of District Committee comprising FD, NGOs, Media persons, School teachers' etc to implement the Media Plan
- Inclusion of Road Map in the activities to be undertaken in the District

For the implementation of media plan at different levels Indian Institute of Forest Management can act as a nodal agency through following ways:

- Basic background research for the role of media and media plan for the promotion of forest cover
- Literature dissemination for print and electronic media
- Organizing sensitizing workshops and media management training for media and forest officials respectively
- Documenting success stories and weekly write-ups on forests and environment issues
- Creation of a Media cell in IIFM to prepare, facilitate and implement Media Plan at Central and State level.

### **PROCESS AND STRATEGY**

Despite great efforts to spread awareness towards the importance of forests by the MOEF through several schemes, it is felt that a large population especially in rural areas is still left out. The best way to reach out to them and make them aware of the environmental problems is through media by establishing congenial relation with them. The following strategies should be adopted to meet the above goal:

- Establishing direct and lively interactions with press through regular briefings, press conferences etc
- Providing information in vernacular language, to the media about planting techniques, nursery raising details of nurseries (e.g. location, price of plants, species availability etc), collection and processing of NTFPs, plantation models and economies
- Regular Press releases and managing timing of events and releases
- Forest Departments should hire professionals or take the help of NGOs for the preparation of extension material for media personnel
- Organization of sensitizing workshops for media persons at regular intervals
- Arranging field visits of the media persons to the research areas
- Media management training for the forest professionals and researchers
- Utilizing media for garnering support from social groups such as tribal communities, gram-panchayats, school children etc
- Motivating Media personnel; by instituting awards for excellence in reporting; awarding fellowship and scholarship; inviting them for seminar, workshop and policy discussion
- Highlighting success stories of the Forest Departments as well as the failures with reasons for the same
- Issuance of clarification to media for any offence or dispute with locals or any other party

- Development of separate website by FD for media news
- For the implementation of Forest Policy the target groups are planners, academia, common men, implementers and people's representatives. The forums identified for these groups are conferences, seminars, multimedia, feed back system and traditional folk media
- Planner, academia, common man, implementers, people's representatives, spiritual leaders, students, individuals, municipal, colony residents, builders and institution are recognized as target groups for the implementation of different Schemes for the promotion of forest cover. The forums identified for these target groups are conferences, seminars, multimedia, feed back system, traditional folk media, live show, opinion leaders, campaign, social festivals and religious festivals such as Kumbh.

The best way to reach out larger proportion of population especially in rural areas is Mass Awareness through electronic media viz. Doordarshan, Satellite Channels and Radio. The Doordarshan and few other television channels are proposed to be extensively used for telecasting environment and forest-based program. For example, to encourage individual efforts in producing films/documentaries on environment/wildlife related themes in the country, the MOEF has sponsored organisation of a film festival "Vatavaran - 2001" by Centre for Media Studies, Delhi in April 2002.

Similarly, following components are proposed for the annual media plan for National Agro-forestation and Eco-development Board for the year 2004-2005:

- Release of advertisement on the eves of World Day to Combat Desertification and Drought, Van Mahotsava etc.
- Awareness campaign on television advertorials and clippings in the print media in relation to the achievement of the goal of 33% forest cover.
- Participation in fairs, exhibitions and Vigyan Rail.
- Sponsored programme on Televisions.
- Campaign among farmers/rural youth on greening India.

## **CONCLUSIONS**

It is now conventional wisdom that "we live in the information age" - in a communication era characterized by a global expansion in the reach of mass media, by electronic information "super-highways" that span the globe. At the same time, there is concern that the gap between the information rich and the information poor is getting wider. In rural areas the challenge is not only to increase the quantity and accessibility of communication technologies but also to improve the relevance of the information to local development.

Partnership with media can facilitate forests development activities by giving a voice to those involved (forest department, local people, development workers, researchers, input suppliers, local authorities and national decision makers); fostering acceptance of national forest policies and programmes; mobilizing people for participation and action; conveying information for education and training; and helping to disseminate new technologies.

55.

**PUBLIC HEARING AND JFM**  
SOME REFLECTIONS OF PUBLIC HEARING AT HARDA, MADHYA PRADESH

A K Bhattacharya

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**Abstract**

*May some people claim that Joint Forest Management has facilitated an environment of decentralization and empowerment so much so that the village level forest committees can organize public hearings for themselves? The paper analyses the reactions of various agencies - GO and NGOs, on the public hearing on the activities and performance of the JFM committees of Harda Forest Division. Unique of its own kind, the public hearing has triggered the debate on many critical issues which need to be addressed and will go a long way.*

**IS JFM A PANACEA?**

It may be a good sign for the evolution and development of JFM that of late JFM has become an issue of public debate? Mehdikheda village of Dewas District and Harda Forest Division have been in news for state of functioning of JFM committees. Although JFM has been popular in many parts of MP but these two Divisions received a lot of publicity nationally as well as internationally. NGOs, Funding agencies, Media persons and academicians and many others made frequent visits to these Divisions in the past several years to study the impact of JFM. A number of Publications also came out of these studies. A number of international publications report first hand information on the working of JFM in these areas based on first hand field research. By and large these publications appreciate the collaborative forest management model in these areas. However, very recently, first in Mehdikheda in Dewas and now in Harda a team of NGIs (Non Government Individuals) have raised voice against the success of JFM. Many of these persons have much less exposure to JFM than institutions like IIFM, TERI, SPWD, AKRSP, SEWA Mandir etc who have appreciated the JFM experiments in these areas. However, these people have reportedly relied upon very insignificant issues like, employment of local tribal as a domestic help to forest guards. It is true that most of us have been using poor villagers as domestic help. These are unemployed people and therefore in search of jobs. The high profile NGIs, must also be using some domestic help. Can it be an issue to criticize JFM in Harda, Dewas or any other area?

It was a forester in Arabari in West Bengal who recognized the potential of collaboration between communities and Forest Department and this resulted into Government of India issuing resolution on JFM on 1 June 1990. This tried to replace about 200 years of mindset of foresters. It took some years for foresters to understand and evolve innovations to make JFM successful. Operationally JFM has been tested about 5-6 years back. Everybody is learning to improve. Instead of helping the community and foresters shed their past prejudices against one another and consolidate, the so called public hearing is trying to widen the gap between the two. They, instead of facilitating the process are trying to sabotage by pitting the communities against the foresters. Who is going to benefit from this?

The village fund definitely belongs to Village Forest Committees. However, even today most committees want foresters to be a referee because due to heterogeneous socio-economic profile of the villagers, committees avoid taking independent decisions. Presence of Forest Department helps them to take shelter for even unpleasant decisions, which at times may annoy the mighty ones. Ordinary villager can work more effectively



with support from Forest Department. Are we trying to ignore these stark realities? It will take time before the VFCs can take and manage the funds without facilitation. Today, they are not well trained in book keeping. In that case what should they do? Do we want to say that they fall prey to the evil design of some powerful elements in villages who may ultimately succeed in getting these innocent VFC functionaries trapped in police case for misappropriation of village fund? There have been constant efforts for their capacity building in accounts procedure and other support activities of the process.

The report on public hearing in Harda raises several questions. It appears from the report that the studies / papers / articles that praised the success in Harda were either results of the incomplete investigations or such documents focused their attention on only the positive sides. In either case, it calls for more professional rigour in further exercises of investigations / evaluating such efforts, as well as in their wider acceptance. This apart, there are some similarities between the issues raised in Harda and state of JFM elsewhere. Few things are apparent from the report that connects to general.

The efforts of JFM, generally speaking, have resulted in creation of a faction in the village that is keen on protection. This is generally driven by their livelihood pattern, i.e. they may not have a very high degree of dependence on forests for their daily survival. However, this may also result in their assuming the role of police against even the genuine needs of the rest of the villagers, which people in Harda have resented. At the same time, creating an institution over the already interest lines in the village (again a general case), is not at all a simple task. It may not be practicable also. This creates the need of some external intervention to ensure that interests of protection as well as equity are simultaneously met. However, in the present set up, of which Harda may be taken as an example, such external sources are also not that effective. This point needs to be debated in order to have more clarity on the process of forming the institutions and the structures that they assume of have already assumed.

If we take the example of Madhya Pradesh, the JFM mandate of Madhya Pradesh has been translated into successful involvement of the forest dwellers for the mutual betterment of both forests and forest communities. The journey of JFM from 1991 to 2001 has led to the constitution of 6290 VFCs, 3741 FPCs and 412 EDCs in the State these committees are successfully managing around 47700 Sq Km forest area of the biggest forest area. The efforts of these committees is reflected in the FSI report of 1999, which records an increase of 635 Sq Km forest area in the State.

The success of JFM in MP has been well acclaimed both nationally and globally. It is uncharitable to judge such a programme on the basis of individual aberrations in isolated cases, because the JFM is continuous process and such a massive movement necessitates transformation in mind set of a large hierarchy of government machinery and the community, as the process is spread over in both time and space. Nevertheless, from the various Government Resolutions on JFM, published in 1991, 1995 and 2000 with more and more empowerment of the people, it appears that the State is firm in vision and intentions to resolve such aberrations and take corrective measures to make the JFM purposeful and sustainable. All the States need to have clear vision about JFM as a cardinal point of sustainable forest management and should not leave any stone unturned to ensure successful implementation of JFM. The Department should take all remedial and corrective measures to resolve such issues which may emerge from any source.

JFM / people's participation / community participation has been globally accepted as an effective tool for the management of natural resources. So far no one related to management of the natural resource can claim about the cent percent success or failure of this tool, because it is hardly a decade that JFM has been implemented and it is too little a period for changing over to a new system, and we have still to go a long way to achieve the goals of SFM through JFM. The aberrations which have reportedly emerged

from the Harda Public hearing – viz - Exploitative Relations, Begari, Molestation, Bribes (unpaid labour), exploitative situations in Forest Villages - - are the natural aberrations of any civil society. They can not claimed to have originated from JFM, on the contrary JFM can be used as a tool to address and resolve these issues. The weaknesses / drawbacks in the implementation of the tool can not be attributed to the failure of the system or concept. There is a need to examine and review the methodology and take corrective measures to improve effectiveness of the tool. It is also the moral duty of the NGOs and other stakeholders to suggest necessary changes / modifications and provide actual working models to make this tool more effective for the empowerment of the people and achieve the goal of sustainable forest management.

The suggestions made through the public hearing should certainly be discussed critically and actions be taken accordingly with an open mind and intention to strengthen the mandate of empowerment of the people through JFM. The following issues raised through the Public Hearing Process are the key issues of JFM mandate and will certainly be resolved in due course of time.

The villagers' *Nistar* and forest based livelihood needs must be at the centre of any meaningful JFM capable of generating a genuine sense of ownership towards forests among them.

Forest villages must be converted into revenue villages at the earliest to enable their residents to gain access to regular development schemes and to reduce the forest department's total control over every aspect of their lives.

The villagers must be provided complete accounts of their Van Samiti funds and the expenditure made by the forest department from these in their name. Control over their own funds must rest with the villagers. Punitive action must be taken against all those who have taken bribes, not paid the villagers their due wages and otherwise harassed them and molested women.

The villagers must have a decisive say in how to save the forests and their indigenous knowledge about them must be respected (for instance about the use of axes instead of saws for ensuring good regeneration).

Efforts are already being made by the State and the Central Governments with the help of various stakeholders including the well meaning NGOs to address all the above mentioned issues.

It is also necessary to analyse the other side of the coin of the Public Hearing. It is interesting to know the experience of group of people who have been associated with Harda JFM in some form or the other and their reactions to Harda Public Hearing.

Ranu & Teji Bhogal ( July - Aug 2000) who researched it under CIFOR research grant ; the paper titled Joint Forest Management in Harda.

*"...the work at Badwani ( forest village) is something which any good, sincere NGO would have done. The work is so reminiscent of NGO work that both the successes and the failures are those that such an NGO would have. Thus like any good NGO worker, the beat guard has built great personal rapport with the villagers. He has had the backing from the department to meet the demand of the villagers..."*

*" ... Before the forest department started investing heavily in the " Harda Model", the major source of income for people in Badwani was head loading . For some other villages it was allowing the grazing of the non resident cattle....". It further says, ".....with investment in wells , electricity and pumps, the productivity of land*

*has gone up in the village valley, in particular for the village of Badwani and Keljhiri. People in Badwani and Keljhiri have given up , or reduced substantially their investment in the agriculture previously conducted on the "shelves" above the valley. She concludes by stating, ".....the success in agriculture seems to be one of the major reason for the villagers' movement away head loading, as well as the respect they give to the JFM programme."*

B M S Rathore – the anchor of the JFM movement in Harda and presently the then Conservator of Forests, Seoni.

*"Any meaningful assessment of JMF should have coverage villages that adequately capture this diversity i.e. the diversity of forest (both in terms of composition as well as in terms stages of degradation), as well as the community diversity. The limitation with Jan Sunwai has been that 1/. in terms of coverage it does not seem to have captured the cross section of this diversity and 2/. the inferences are hurriedly drawn with out probably having the time to triangulate."*

*"Neither by Govt alone, nor by NGOs / MTOs by themselves. Therefore, the phrase like these villages with the FD, these villages with Sangathan, will hardly serve any purpose. Let the new decade open a new chapter in the relationship of FD and the NGOs / MTOs where the focus is not on the fortification of territories or building of one empire or another, but of genuine desire to facilitate people's empowerment. This will be one of the greatest challenge for the department."*

Cor Veer The Regional Community Forestry Training Center Kasetsart University, Bangkok

*"For the aspiring, participatory, long distance, 'hot' shots such as myself, the debate raises another type of question regarding roles and responsibilities. Given the historical role of outsiders in establishing Forest Departments (and their outlandish mandates) one could argue that there must then also be a role and responsibility for outsiders in the necessary changes. Current debates on globalization indicate that such conclusions are not generally shared."*

*"But we have often looked at JFM as a very interesting approach with much promise for learning and adaptation in other countries. We continue to believe that there is much to be learned from the various innovations in forest management and governance in India. The challenge for us remains how to avoid contributing to the creation of 'models', and find better ways to support more effective learning and sharing of approaches that work for villagers, foresters and other stakeholders. But that is a different chapter that we may start writing (together?) on a different occasion."*

Dr. Mark Poffenberger, Asia Forest Network

*"It is important that these problems be raised and discussed, so appropriate actions can be taken to address them. These types of mechanisms are very valuable and badly needed."*

Dr. Ram Prasad, Former Director, IIFM and VC, Barkatullah University, Bhopal

*"We should not jump to conclusions based on one or two days' visit to a District. There are some people who earn their bread and butter by criticising the establishments. Unfortunately, some of the foreign agencies also like these sensational "discoveries". Many of our people are obliging them in return of good funding support."*

## REJOINER

In response to the reactions emerging from some corners regarding the question of success of JFM in MP, a rejoinder was issued about the present status of JFM in the State:

*The issues raised in the Public Hearing at Harda have been taken very seriously and sensitively by the Forest Department. Most of the issues have been enquired into by the Conservator of Forests, Hoshangabad and actions pertaining to the suspension of the Forest Guard found guilty and transfer of the Range Officer found negligent have been taken. At the same time, instructions to ensure preventive measures have been issued by the PCCF to avoid such incidence in Harda or elsewhere. These aberrations cannot be considered as a fall out of the JFM but should be accepted as the manifestation of the overall deterioration of the value system in the society.*

*The State has clear vision about JFM as a cardinal point of sustainable forest management and will not leave any stone unturned to ensure successful implementation of JFM. The Department will take all remedial and corrective measures to resolve such issues which may emerge from any source.*

## CONCLUSION

This cross section of the opinion indicates that conclusions and interpretations derived from the Public Hearing by a group of people, *considering that JFM has failed in its objectives*, appear to be biased. JFM can not be blamed for the mind set and follies of some people. Also we should not jump to conclusions based on one or two days' visit to a district.

It is required to have a far more systematic review of JFM across the state and the country. This is critical for the sustainability of JFM. There must be continuous introspection and corrections based on an objective review of the experience that we have had so far. This would only help us to improve, in our march towards sustainable forest management and secured livelihoods for our forest based communities. Role of public hearings could be useful in this process of soul searching, provided that the panel also becomes far more representative and balanced. Substantial researches would be necessary in such learning endeavors. JFM may not prove to be a panacea for all the socio-economic issues of the natural resource management but it can certainly help us to understand and address these issues more scientifically and sensitively.

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**II            ECOTOURISM**

**III           JOINT FOREST MANAGEMENT**

**IV           NTFP MANAGEMENT**

**V            PUBLIC-PEOPLE-PRIVATE PARTNERSHIP**

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