Lessons Learned from Eco-Development Experiences in India: A Study

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Forging synergetic alliances to a greener world

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The Team

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Abbreviations

CBO	Community Based Organisation
CWLW	Chief Wildlife Warden
CF	Conservator of Forest
DCF	Deputy Conservator of Forest
DFO	Divisional Forest Officer
DG	Director General
ED	Ecodevelopment
EDO	Ecodevelopment Officer
EDC	Ecodevelopment Committee
FD	Forest department
FDA	Forest Development Agency
FPC	Forest Protection Committee
FREEP	Forestry Research, Extension and Education Project
GEF	Global Environment Facility
GHNP	The Great Himalayan National Park
GO / GR	Government Order / Resolution
GOI	Government of India
IEDP	India Ecodevelopment Project
IDA	International Development Agency
IGA	Income Generating Activity
IPPR	Integrated Project Performance Review
JFM	Joint Forest Management
KMTR	Kalakkad Mundanthurai National Park
LPG	Liquefied Petroleum Gas
MOEF	Ministry of Environment and Forests
MP	Madhya Pradesh
MTR	Mid-term Review
NGO / NGI	Non-government organization / individual
NIRD	National Institute of Rural Development
NNP	Nagarhole National Park
NTFP	Non Timber Forest Product
PA	Protected Area
PAMIA	Protected Area Mutual Impact Assessment
PF	Protected Forest
PRA	Participatory Rural Appraisal
PTO	Project Tiger Office
PTR	Periyar Tiger Reserve
RF	Reserve Forest
RTR	Ranthambhore Tiger Reserve
SAR	Staff Appraisal Report
SC / ST	Scheduled Caste / Tribe
SHG	Self-help group
SNG	Special Needs Group
SPWD	Society for Promotion of Wasteland Development
TOR	Terms Of Reference
TR	Tiger Reserve
VDF	Village Development Fund
VFC	Village Forest Committee
WB	The World Bank
WPA	Wildlife Protection Act
WWF	World Wide Fund for Nature

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PART TWO

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LESSONS LEARNED – IN A NUT SHELL

- Committed and competent ***PA level leadership*** has come out as the single most important ingredient of outstanding results achieved at some sites. Care taken by States in selecting and posting such good leaders made this possible.
- A prior ***baseline survey*** profiling demographic and socio-economic features in the impact area enables focusing ecodevelopment inputs towards those community sections that exert maximum pressures. This results in economic uplift of the underprivileged as well as better conservation of biodiversity.
- Such survey help identification of the right ***'ambit'*** of area adjacent to PA boundary for ecodevelopment ***coverage***, rather than an *ad hoc* adoption of 2-km or 5-km ambit.
- A ***comprehensive GO*** mandating representation of the poor, tribes and women in the EDCs and ECs led to enhanced social status and empowerment of the 'Special Need Groups' (SNGs) and helped better observance of 'gender' and 'equity' concerns.
- ***Robust micro planning*** in full participation with all community sections, specially the SNGs, has emerged as another critical ingredient of all round success. The nature of micro planning process necessitates devotion of substantial time and expert facilitation. Hastening of the micro planning process can rob it of its real value and usefulness.
- Appropriate ***capacity building*** of the different players *e.g.* PA staff, NGOs and members of EDC/EC is a *sin qua non* of success. Similarly, skill enhancement of SHGs in IGAs is essential.
- ***Credible NGO support*** is highly helpful, but not all sites can find good NGOs. Project HQ should enthuse credible national/regional NGOs to extend help at sites or the IPPR-agency be mandated to extend initial 'hand holding'.
- ***EDC as the village level institution*** has proved effective. But initially if 'user or homogeneous groups' *e.g.* firewood head-loaders or women are first organized into SHGs, they could later federate to form the EDC giving it firm base. This would also help meet equity and gender concerns better.
- ***Innovative categorization of EDCs*** by skills, dependence and proximity such as done in Periyar enables correct identification of activities for economic uplift and reduction in pressures. Skills based ***ecotourism*** (trekking, rafting and serving pilgrims) and debt-relief with support to farming through micro credits are examples of marked success.
- Non-voting presence of ***forest officials in EDC and EC*** (non-voting member secretary) has proved helpful to EDC in remaining focused and in contending with the 'more empowered' community sections. Such presence should continue, though EDC should build capacity to run its affairs and do its own accounting.
- ***Federating all EDCs*** at the PA level with representation of EDC presidents and some EDC members as well as key PA personnel at different levels, enables fruitful exchange of experiences, taking

directional decisions as well as allowing decisions at lower levels to be reviewed with transparency.

- ***Awareness promotion*** among community of the benefits of conservation to them with a transparent exhibition of the project thrust and of the sincere good intentions of PA management to sustainably recompense them, can go a long way in favourably orienting the adversarial attitudes on both sides releasing the latent synergy between the park and the people.
- Unless the inputs by way of ***alternatives for resources and livelihoods*** (energy-saving devices, safe drinking water and IGAs) reach the most deprived and disadvantaged, the adverse impacts on the park cannot be fully mitigated.
- ***Micro credits*** from an EDC's ***'revolving fund'*** seeded by the project is a far more efficacious mode of inputs than a 75% 'individual beneficiary' grant against 25 % personal contribution for agreed activities/assets. The former enhances stake of people and hence its sustainability.
- Catering to the ***genuine needs of the frontline staff*** motivates them to work with a higher commitment for both PA management and ecodevelopment and creates the right atmosphere.
- Good prior ***baseline studies*** with RS-GIS map backup of ecological and socio-economic parameters through accomplished institutions can help plan PA management and ecodevelopment better as well as help in their implementation and monitoring of their impacts.
- Important ***problems and issues*** concerning management and human aspects should be correctly identified in advance and then competent institutions/agencies should be assigned these ***for research*** through an open process of inviting proposals.
- The 5-year IEDP ***timeframe*** was unrealistically inadequate. It has been proved that projects such as this, which break new ground and seek a synergic link between seemingly adversarial 'conservation' and 'well being of people', essentially have to be process driven and cannot work on simplistic time bound targets. A realistic pacing would require the first two to three years for selection and posting of key PA personnel, surveys, studies, issue of enabling GOs, PA planning, micro planning for ecodevelopment, and importantly all round capacity building and running some pilot trials for firming up the evolving trust. Then a minimum of a 5-year period of full scale implementation would entail an ***overall term of seven to eight years***.
- Requirement of a system to ensure easy ***fund flow*** with sound checks and balances, to the front line cannot be over emphasized.
- Up front firming up of ***Donor*** (WB - GEF) – ***Project executant*** (PTO) ***relationship*** with good attention to details like reporting, permissions, feed back mechanisms etc is essential to avoid any subsequent decision making delays and road blocks if any.
- Protocols for ***Monitoring*** (processes and impacts) and Evaluation should be established quite early in the life of the project. Similarly ecological baselines need to be in place up front to enable the assessment of the project's impacts in due course of time.
- Well defined and executed ***dissemination strategy*** including awareness building and targeted education for the Project's objectives and outcomes

can go a long way in ensuring a much wider ownership of the processes and the results amongst the peers as well as the civil society.

- ***States*** need to demonstrate their ***commitment to the principles of Ecodevelopment*** and need to see it as more than a short-term project with a fixed life span. It is only then that larger policy tools could be devised at the state level to counter some of the threats that could be beyond the control of the PA management.
- IEDP has provided good basis for the ***expansion*** of the effort on ***to a landscape / seascape level***. This would ensure coverage of crucial corridors and the penumbra habitats for ensuring holistic biodiversity conservation.

EXECUTIVE SUMMARY

Introduction

The mid 70s through to the 80s and 90s of the last century saw the emergence of new thoughts and practices in the realm of forest and wildlife management in the country. Driven primarily by the realisation that the needs and aspirations of forest dependent communities had to go hand in hand with the demands of nature conservation, practices like the Joint Forest Management were adopted. This, in turn, led to innovative experiments by a few resource managers in different parts of the country. In the case of the management of protected areas (PA), a government of India document (1983) titled 'Eliciting public support for wildlife conservation' sowed the seed of a philosophy and practice which finally came to be called 'ecodevelopment'. This had clearly arisen out of a felt need.

Ecodevelopment in India

By the mid 1970s, wildlife conservation in India had become conflict ridden in many places. Conflicts and clashes between PA managers and local communities were on the rise. Also, in many PAs, it was proving to be a struggle for the park managers to safeguard their charge to the levels prescribed by law. In a few places, resource managers began to come up with innovative, ameliorative measures that began to yield results, which went beyond mere protection. These measures also took into account the issue of people's dependencies over these areas. The 1983 National Wildlife Action Plan formally recognised and mandated ecodevelopment as a PA-people supportive programme.

By the time the process of formulating the 8th Five-year plan was initiated in the Planning Commission in the early 1990s, it had become clear that the 'protection – exclusion' system of wildlife management was not working. The protected areas were losing their values in the face of mounting pressures at a very rapid rate. Also, there was widespread resentment against them. The Ministry of Environment and Forests and the Planning Commission were, therefore, confronted on the one hand with pressures to lighten the regulatory regime associated with wildlife and forest conservation and, on the other, with evidence that, even with the current levels of regulation, forests and protected areas were rapidly deteriorating. It was out of such a predicament that ecodevelopment as a strategy gained currency.

So, it was for the first time in the 8th Five-Year Plan (1992 to 1997) that an ecodevelopment scheme was mooted for field application. Ever since, ecodevelopment is a component in the Central plan wildlife schemes.

The World Bank funded two ecodevelopment projects (FREEP and IEDP) in India in the 1990s that covered nine PA sites in nine different states. Besides these, one tiger reserve in Madhya Pradesh, with funding support from the Government of India schemes, has practiced notable ecodevelopment.

The India Ecodevelopment Project (IEDP)

The *India Ecodevelopment Project* began in 1995-96 as a five-year pilot project in seven protected areas, namely Buxa Tiger Reserve, Palamau Tiger Reserve, Ranthambore Tiger Reserve, Gir National Park, Pench Tiger Reserve, Nagarhole Tiger Reserve and Periyar Tiger Reserve. The seven sites where the project was implemented have a wide range of ecological and biological attributes. It is in this spectrum of biological and socio-economic variance that the challenge of integrating conservation with local development has been tested through the project.

The IEDP envisaged ecodevelopment as a strategy that 'aims to conserve biodiversity by addressing both the impact of the local people on the protected areas and the impact of the protected areas on local people'. A perusal of various documents (World Bank aide memoirs, the IPPR and various Park reports) illustrates that with the exception of the Periyar Tiger Reserve, the implementation of the project at the WB Mid Term Review (MTR) stage in 2000 was taking place at a slow to medium pace at most sites. As a result of the review many physical and financial targets were revised and reduced at this stage and several national level consultancies were dropped. Interestingly enough, post-MTR the project picked up considerable speed in almost all its components, and achieved far better results compared to the first half of the project period.

A host of factors have affected the project performance. Commitment, professional capacity and quality of leadership of the senior level PA managers and their NGO associates have played the most significant role. The role of the state governments has been critical too, through the degree of clarity in government orders and government regulations (GOs/GRs) creating enabling procedures and processes, and for the setting up of village-level institutions and their functioning. At the same time, the intransigence of some state governments resulted in fund flow constraints thereby adversely affecting the performance of a number of reserves.. Broadly, the project has shown that with the right inputs in capacity building and with committed leadership, integrating conservation and development may well be the most appropriate way to achieve conservation of biodiversity and eco systems with social justice in countries such as India.

In sum, **the IEDP has been a landmark project in India. Starting as an ambitious exercise, facing civil society criticism, plagued with an agonizingly slow pick up, a serious rethink and downscaling at the MTR stage, it has finally resulted in some exceptional achievements. It has seriously challenged some long-held assumptions and thrown up sound learnings to guide any future project of its kind**. The lessons from the project even go beyond the limited genre of IEDP and are expected to benefit any externally aided project.

The Madhya Pradesh Forestry Project (MPFP)

The MPFP was a World Bank-assisted project addressing the overall forestry management issues in the state of Madhya Pradesh. Initiated in 1995, the project had a substantial biodiversity conservation component under which 12 PAs in the state received support. Kanha National Park was amongst these priority protected areas identified in the state.

With the support of the Government of Madhya Pradesh (GoMP) and the Project Tiger of the Government of India (GOI), for over three decades Kanha has engaged itself in successful PA management. This has resulted in a remarkable recovery in the ecosystem and an abundance in wildlife, while also addressing the concerns of local communities. The lessons from this site add considerable wealth to those where the IEDP was implemented..

Forestry Research Education and Extension Project (FREEP)

The World Bank aided Forestry Research Education and Extension Project (FREEP) was initiated in 1994 for a five-year duration. In order to test participatory biodiversity conservation in India, a sub-project titled Conservation of Biodiversity (CoB) was formulated as a part of the larger FREE project. Under the CoB, two PAs, the Great Himalayan National Park (GHNP) in north India and the Kalakkad Mundanthurai Tiger Reserve (KMTR) in south India were selected for experimenting with the community-centered biodiversity conservation approach.

At KMTR, the Government of Tamilnadu (GoTN) set an example by laying down firm processes for genuine participation of primary stakeholders in collective and transparent decision-making. Attempts were made to institutionalise the empowerment of women in these processes, and to focus the whole programme on poorer households. A committed and capable leadership with meaningful support from genuine NGOs has used this mandate innovatively to bring about greater synergy between stakeholders with seemingly conflicting concerns.

At GHNP, the FREEP enabled settlement of rights process by paying compensation (over Rs 150 lakh) to a relatively small number of families privileged since the British regime to have recorded rights in the forests. The ED programme under the CoB was meant to address the PA dependence concerns, but poor organisation and leadership, along with problems in fund flow, resulted in very limited progress. Finally, the World Bank withdrew from the project prematurely. This coincided with a change in the park director. The new incumbent has demonstrated competence and commitment, is formally trained in ecodevelopment, and has proved to be instrumental in bringing an impressive turn around on the ground. GHNP is now engaged in women-centric mobilization around micro-credit and income generating activities, with a focus on the poorest

and most PA dependent households. The attempt is to reduce their pressures on the PA and forge a healthy relationship between the park and the people.

The Assignment

The mandate of this study was to understand and document ecodevelopment lessons learned from 10 sites across the country. These include the seven IEDP sites (Buxa TR, Palamau TR, Ranthambore TR, Pench TR, Gir National Park, Nagarhole TR, and Periyar TR). In addition, three non-IEDP sites (Kanha, GHNP and KMTR) where the inputs and achievements in ecodevelopment have been noteworthy were also covered by the assignment**.**

Methodology and Schedule

The assignment on documenting 'Lessons Learned' was awarded to the consulting team in October 2003. An Inception workshop was held on 21 and 22 November 2003 at Delhi. An important decision at the Inception Workshop was that only the teams from the respective PAs, comprising officers and staff from the concerned PA, would write the case studies for individual PA sites. The role of the consulting team would be to help each PA team in identifying different parameters for report preparation and facilitating the writing of these reports.

The team members visited all the 10 sites. The aim of these visits was primarily to facilitate the PA team in conceptualising the PA specific case studies, and for the visiting team members to see and understand the processes, plans, implementation and results of the IEDP and other projects in order to glean lessons. In the course of the field visits, the consulting team and the identified PA teams paid joint visits to numerous PA management and ecodevelopment sites. The consulting team saw the various field activities and held discussions with different stakeholders such as EDC/VFC members and office bearers and SHGs. These discussions enabled the identification of possible themes, unique cases, strengths and weaknesses and best practices at these PA sites. The consulting team members gave regular feedback to the respective PA team, and elicited their views on various aspects of the project and the lessons learned. Once the PA team reports were drafted, editorial support was provided and the reports finalised.

The report of the consulting team seeks to capture the highlights, pluses and minuses of the project implementation at all the 10 PA sites and tries to distill the experiences in the form of lessons for the future. This report also highlights specific activities at various parks, which we consider as **best practices** worthy of emulation.

The report from the assignment is in two parts. While Part I covers the overall lessons learned from the 10 sites, Part II contains the PA specific reports.

Lessons Learned

All the 10 PAs planned and provided for ecodevelopment inputs and activities in four major areas which constitute an appropriate strategy for integrating conservation with development while ensuring social justice:

- Improved PA management for more effective conservation of biodiversity, and capacity building of PA officers and staff in both PA management and ecodevelopment.
- Village ecodevelopment with the local communities to augment their non-forest dependent livelihoods and to reduce biotic pressures on the PA, thus promoting friendly people-PA interface.
- Environment education and awareness for promoting better understanding of PA values and benefits among the local people, to elicit their optimum participation and support in PA management.
- Research and monitoring covering both management and human aspects for on-course feedback to improve PA management and ensure social justice.

The most visible outcome of the project is a remarkable thaw in relations between the people and the park management. From an adversarial relation of the past it is now one of mutual trust and understanding.

The most significant lesson emerging from these sites is that good PA level leadership and prior team capacity acquired through competent training were instrumental in attaining optimum results, while poor attention to leadership and capacity building issues resulted in mediocre outputs.

The issues, lessons and best practices that emerge from this study are summarised as follows:

A. Capacity

In IEDP, the project formulators had identified and provided for key capacity enhancement needs both at the institutional as well as the individual level as under:

- *Improved PA Management*: It was visualised that the Park's management could do with improved management plans, incorporation of PA concerns in regional planning; various habitat and ecosystem protection measures and upgradation of amenities for PA staff. The project accordingly provided for specialist advice, studies, workshops, travel and training support and infrastructure building support.
- *Village Ecodevelopment:* The project acknowledged that village ecodevelopment activities entailed skills for which the park management would need training and the support of specialists, especially with regard to micro planning, and implementation and monitoring of the reciprocal

commitments from the beneficiaries. Care was taken to ensure that the investments made under the component should not turn it into another rural development exercise but the biodiversity of the park should benefit from the associated reciprocal commitments. At the same time it was recognised that PAs had their share of negative impact on the local community too, and hence provision was made for special programmes for asset-creation for villages, support to voluntary relocations from the Park and a discretionary reserve fund for PA managers to meet area-specific needs. The project thus provided for contracting local NGOs, advisors, training (staff, NGOs and local people), workshops, materials, and travel support costs.

- *EE and R&M*: Selected PAs were expected to improve their current levels of EE and R&M by addressing problems and issues through focused research and project impact monitoring. The results and innovative measures were to feed into the improvement of PA management plans and village ecodevelopment. Accordingly, the project provided for local NGOs, expert advisors, trainings, workshops, physical facilities, equipment and materials support.
- *Project Management*: The project designers were well aware that the Project Tiger Office (PTO) as the national manager of the project would require adequate resources and manpower support to efficiently manage the project on behalf of the borrower (MOEF). Appropriately, the project provided for additional staff at the PTO, and also provided for a number of national level studies to aid the project's implementation and monitoring.

The project has seen exceptional results emanating from good capacity as well as mediocre results arising from the lack of capacity. The study has unequivocally found that wherever the state government was careful in selecting and posting proven capable officers, who were also trained in PA management and ecodevelopment, to lead the initiative, , the results were excellent and the park directly headed towards attaining project objectives. Such lead officers (park director and officer in charge of ecodevelopment) in all such cases successfully put together good field teams and built capacity in them for proper planning and implementation of ecodevelopment. They led from the front in initiating dialogue with people, leading to highly focused micro planning in full participation with various stakeholders. In these processes, they were also successful in enlisting and meaningfully involving NGOs as force multipliers.

Any future project would greatly benefit from an intensive capacity building of all players and the institutions they build or work in as a precursor to any major investment flow from the project.

B. Institutions

National level institutions

Creation of two national level bodies, one to steer the project and the other to provide assistance to the PTO was emphasised by the project's Staff Appraisal Report (SAR). The ability of the Project Tiger Office (PTO) to steer the project was severely compromised either due to these arrangements not being put into place entirely, or being put into place only towards the end of the project. The exact implementation status of the institutional arrangements at the national level is presented below:

- A full-fledged ecodevelopment wing at the PTO could not be set up.
- The Ecodevelopment Project Steering Committee was set up.
- The Ecodevelopment Project Implementation Board (EPIB) was set up but did not realise its mandate.
- The Intensive Project Performance Review (IPPR) consultancy was awarded in 2000 and since then the consultants have been submitting periodic reports to the PTO and the respective parks.
- The independent panel of three eminent experts, which was to report directly to the chairperson of the Project Steering Committee, did not get constituted.

PA level institutions

The major steps taken in Kanha, Periyar and KMTR relate to the appointment of an
officer of the rank of a DCF as the Ecodevelopment officer (deputy director in charge of the buffer division, in case of Kanha).

Regional Committees

District collectors were designated chairpersons of such regional committees and it was hoped that such committees would be able to influence and moderate land use activities on the periphery of reserves that may go against the interest of biodiversity conservation. While these committees have been set up at many sites, they have not been able to meet their mandate.

Village level institutions (EDCs / FPCs / SHGs)

Where enabling government orders have preceded micro planning and formation of EDCs/ FPCs and have been implemented by committed project leaders and field staff, equity, social acceptability and sustainability of the concerned institution has been assured.

The Gos establishing the EDC in most states, notably focused on village-level institutions and were silent on state level and PA level bodies. However, as a mid course correction, some states later came up with specific enabling GOs creating

institutional mechanisms at the regional and the state levels for better implementation of the Project.

The present status of project implementation suggests that the role of the 'member secretary' (forest guard or the forester) should continue as a facilitator. Notably in MP, where while the beat guard or the forester in charge is the ex-officio member secretary of the Executive Committee of the EDC, there is a provision for a joint secretary, who is selected from the committee, preferably from the people belonging to SCs / STs. The said assistant shall take over as the member secretary once he/she gains proficiency in his/her work.

The project promoted women based Self-Help Groups (SHGs) - institutions that facilitate women to organise in groups and undertake micro credit activities using money that they have themselves saved. Clear-cut norms need to be worked out in order to dovetail SHG functioning under the umbrella of the EDCs, and with the overall panchayati raj institutions. For example, in GHNP (a non IEDP site), an SHG president is a member, ipso facto, of the executive committee of the EDC, and the EDCs are being formed with the ward panchayat as the basic unit, to ease dovetailing.

A remarkable example from Periyar is the constitution of EDCs and their categorisation on the basis of occupational patterns, geographic settings and dependency levels. The EDCs have been put in three categories, i.e. Neighborhood, User Group and Professional Group EDCs. The functionality of these EDCs has been found to be better than the EDCs that use village as the unit.

Role of professional assistance

The design of the IEDP had provided for NGOs to be involved in the process of micro planning and micro plan implementation. Unfortunately, while such specialist agencies were contracted by PA management at several sites, the experience with these agencies has been by and large disappointing and the PA management in most sites has had to undertake implementation of this component on its own.'

Linkage between EDC and Panchayat

At the project design stage, it was felt that EDCs might not correspond to the Panchayat structure. However post the 73rd Amendment, there now exists a categorical constitutional mandate with the Panchayat Raj institutions even for social forestry and in general the management of natural resources, and it is too late in the day to have a view that their presence could be ignored. The GOs on ecodevelopment seem to reflect this position to an extent. In MP and Jharkhand - and thus for Kanha, Pench and Palamau - the introduction of ecodevelopment (as also the JFM) is to be carried out first in the *Gram sabha* and EDCs are constituted in the *Gram sabha* meeting convened according to the respective panchayat statutes. In Buxa, there are provisions for more active involvement of

panchayats. Here the sub-committee of the Panchayat samiti and Zilla Parishad named "*bon-o-bhumi sanskar sthayee samiti*" is mandated to play an important role. Another example of a visible representation of Panchayat functionaries in ecodevelopment can be seen in GHNP, where VFDS are constituted for a Gram Panchayat ward.

Perhaps one area where the strategic significance of Panchayats for the purpose of ecodevelopment has been repeatedly emphasised relates to the capacity of the Panchayat Raj institutions to mobilise funds for village level development activities. This point was specially noted in Periyar, Gir and Ranthambhore. It was stressed that in cases where support of the entire village is required on some issue – as providing access to safe drinking water- the panchayat can and must be involved to play a central role in conflict resolution and coordination. Also, duplication of activities needs to be avoided, calling for cooperation between panchayats and EDCs.

Sustainability of Village level institutions

Performance on this front varies considerably across sites, but in no site has consolidation reached the levels achieved in Periyar and KMTR. At all sites, barring KMTR, Periyar and GHNP, by and large the power equations prevailing in village society appear to have permeated the EDC/FPC (Forest Protection Committees). The immediate implication of such concentration of power is that the leadership of the EDC gets concentrated with the "creamy layer" and also becomes static. The desired priority to benefiting the poorer and weaker sections through ecodevelopment, in such a situation, may get sidelined. If this compromises the efficacy of provisioning of alternatives to the poor for forest dependent livelihoods, as is likely to be the case, sustainability as well as the very purpose of creation of EDCs will be compromised.

It must be emphasised that as far as people's institutions are concerned, it is not possible to lay out blueprints, especially where sites are geographically separated and are thus prone to the cultural diversity that follows geographical distribution in a country like India. It is therefore important that PA management has the flexibility to engineer the sort of institutions that a particular site requires. Further, it is imperative to make available sound social development and institution-building expertise to PA management in order to facilitate the formation of appropriate institutions.

C. Management planning

In the IEDP, as well as FREEP, the project design envisaged improvement in PA management, which included preparation of a proper scientific management plan, if one had not been prepared already. The plan prepared had to appraise the appropriateness and strength of the ecodevelopment measures proposed under the

main project *vis-a-vis* PA management objectives. It was found that PA management plans have been prepared at all sites except GHNP and KMTR where they are under preparation.

While most revised plans have provided space for village ecodevelopment as a key objective of the Park, it is seen that the delay in preparation of PA management plans has compromised the efficacy of the intended coordination on course. It is felt that in accordance with the main mandate of the project, the management planning agency or individual ought to have been directed to firm up management zoning at the outset. Also alongside such zoning, the scope and the space for the consumptive (*e.g.* material available from weed eradication) and non-consumptive (*e.g.* ecotourism) uses permissible within different zones should have also been defined. As things happened, except in Periyar, Gir and Buxa where the management priorities and the scope for compatible ecodevelopment were well understood in advance, such coordinated spaces remained unutilised or under-utilised.

Any future project aiming to support PA management through ecodevelopment should provide for the production of a robust indicative management plan identifying the management zones and the space for ecodevelopment. Likewise, a robust indicative ED Plan should also be produced alongside, defining the use of such space and the genre of the activities compatible with the indicative management plan. Both these indicative plans should be ready as a preparatory before the actual launch of the project on the field.

During the first couple of years of the project term, such indicative plans should be fleshed out into comprehensive plan documents by collecting authentic planning data, mapping and micro planning for ecodevelopment. Both plans should define their respective activities with spatio-temporal connectivities in respect of issues requiring coordination. Full-scale launch of activities should await the completion of the detailed plans, though trust building and pilot trial activities in both sectors can and should be undertaken during the first couple of years of detailed planning.

D. Enabling Legal and Policy Framework

At the time of conceptualisation of the project, it was felt that even though to begin with ecodevelopment could proceed without a formal legal framework, for large-scale implementation it was necessary that states should issue appropriate orders. It is notable that only in Himachal Pradesh the regulation of ecodevelopment has been traced to a legislation. Specifically speaking, Himachal Participatory Management Rules, 2001 have been made in pursuance of Section 80, read with Section 81, of the Indian Forest Act 1927. Unlike the GOs, such rules have the effect of making the entire programme in the state legally enforceable.

There have been attempts in other states to put ecodevelopment in the larger legal map. For instance, the Periyar Management Plan suggests that a specific provision under the Wildlife Protection Act be made to include ecodevelopment initiatives in and around the PAs as one of the activities that could be allowed by the Chief Wild life Warden under the said law. Apart from this, the MP government has also taken certain initiatives so as to establish linkages with the legislations dealing with land, environment and panchayats.

In certain states, there are provisions for registration of EDCs as societies under the Societies Registration Act, 1860. It is pertinent to mention here that such societies, registered under the said Act are formed for religious, charitable and literary purposes, and this seems to be fundamentally at variance with the objective of a village ecodevelopment activity, which has an incentive-based approach to conservation and sustainable use of the natural resources in a local area. Thus the implications of such registration need to be clearly explored.

Adequacy of GOs

Based on the conceptualisation at the project design stage, the adequacy of various GOs was to be assessed on the fulfillment of the following minimum parameters: (a) composition of ecodevelopment committees in each village comprising all eligible household including women, SCs and STs; (b) the rights and responsibilities of the EDC members and the forest department would be established; (c) provisions for sharing of revenues or produce from specified operations; and (d) provisions for conflict resolution and revocation of agreements.

(a) While some provisions in the GOs on aspects of involvement of women, poor and landless are praiseworthy, in terms of visualising these components as one of the primary requirements of the project, the GOs appear to be inadequate. For instance, barring a few states like Tamil Nadu (KMTR), Kerala (Periyar), Jharkhand (Palamau) and MP (Kanha & Pench), others do not clearly provide for inclusion of poor and landless families in the EDC and also importantly in the Executive Committees (ECs).

On the issue of women's involvement the example of Ranthambore can be considered, where a seven-member women's advisory sub-committee is constituted for every EDC. However at the stakeholders meeting during our field visits, the women members of these advisory committees brought out the fact that they have had almost no impact on decision-making within the EDC. It brings out sharply the phenomena of 'presence of legal spaces rendered ineffective by absence of social spaces'. On the other hand in KMTR, the GO prescribed at least three women to sit on the EC, out of a maximum of seven members. This provision was implemented in letter and spirit leading to outstanding successes in IGAs and gender empowerment.

(b) While all GOs contain fairly detailed provisions regarding duties and functions of EDCs including benefits to them, they do not adequately address the "rights" of village communities. They do not really 'define' or 'establish rights' as was emphasised when the project was conceptualised, but grant certain benefits to the EDCs and provide "concessions" that apart from being not absolute, are revocable and can be withdrawn entailing little legal consequences.

(c). On the question of rights, the traditional rights of access and customary rights of villages in the vicinity of the protected areas has also been of some concern. For instance, in MP certain customary rights in respect of grazing of cattle, obtaining fuel-wood, non-timber forest produce, etc., called "*nistar* rights" in the vernacular language have been made subject to the satisfaction of the Division Forest Officer (DFO). In Nagarhole a perception created by some NGOs that participation in IEDP activities would cause people to lose their customary rights over the forests had an adverse impact on initial trust building between the Forest Department and the local communities. In GHNP, the traditional rights of the local people were settled in 1999 on the basis of an 1886 Anderson Report, which led to only 349 families being entitled to compensation. However, this led to widespread local protests from other households, which had traditionally been entering the park for resource extraction.

(d) While most state GOs/GRs provide for conflict resolution mechanisms of some sort, variations within them are notable. In GHNP, a "Conflict Resolution Group" has been constituted with representatives from Gram Panchayat, local NGOs or local community-based organisations and the concerned Assistant Conservator of Forests. Ranthambhore provides for a separate procedure for filing appeals against disbanding of EDCs/EC, and the concerned DFO resolves the other disputes like the ones among EDC members or between EDCs and Panchayats.

Need for revised GOs to demonstrate state commitment

A specific order in Gir makes it clear that the village EDCs constituted by the GR 'have not been prescribed any time limit and as such would remain functional even after 31.12.2001.' There could be need for issuing such government orders in others states too specially as they reflect the states' willingness and determination to continue the process of ecodevelopment beyond the project timeframe.

The above analysis reiterates the requirement of a clear-cut policy and legal structure as exemplified by initiatives taken at GHNP, Periyar and KMTR for providing an enabling environment for effective and sustained ecodevelopment efforts. This action needs to be taken early in the life of any future project.

E. Micro planning and Coverage

The project design of IEDP identified one of the principles of ecodevelopment as site-specific, micro-level planning including assessing the adverse impact that PAs have on the local people and vice versa and identifying the options available. The SAR lists the desired micro planning process and also elucidates the complexities of social processes and village dynamics that the project staff is likely to encounter during the micro planning (and implementation) process. It also attempts to make provisions for ensuring that considerations of equity, gender, conservation and the like are considered adequately while undertaking micro planning.

Though the SAR stipulated that micro plan be jointly prepared by forest department personnel and NGOs / NGIs, the only PAs that were able to follow this stipulation were Periyar and KMTR. There are a variety of reasons why the others were unable to follow this prescription. Gir for instance did contract a reputed national institution for both micro planning and for implementation assistance. However midway through the micro planning process this arrangement had to be discontinued through mutual agreement because of the department's growing restiveness with the slow pace at which the micro plans were being prepared and the institution's reluctance to expedite a process which in their opinion could not be externally driven in pace. In Palamau, although a capable local NGO was available that had in fact actively participated in the indicative planning process, fund flow constraints led to discontinuation of the services of this NGO. In Buxa, more than one NGO was contracted for assistance with micro planning, but the PA management found the quality of plans prepared by one of the agencies contracted for the purpose extremely poor, and hence the contract with the agency had to be nullified. Other NGOs however continued to assist the forest department staff in micro plan formulation. In Buxa, therefore, one comes across a situation where some micro plans were prepared with NGO assistance, while the rest were drawn up by forest department staff.

Coverage of villages under ecodevelopment has varied from hundred per cent of households having an impact on the PA (as in Periyar, Pench and KMTR) to about fifty per cent (as in Gir and Nagarhole). It appears that while initially, full coverage was envisaged at all IEDP sites, at the MTR stage allocations and targets were scaled down. Also, the process of scaling down did not appear to have followed the imperative of assigning priority to poorer villages and/or those that were more forest-dependent, and / or those that suffered from higher interface conflict. Instead, villages for which micro plans were ready or where implementation had started were asked to complete the process, while no new plans were to be drawn up post-MTR. This has gone against the commonly understood rationale behind selecting all the villages that impact a PA.

For future projects, full coverage of the impacting villages should be ensured, as this is critical for realizing project objectives and consolidating its gains. In situations where full coverage is not possible, mechanisms need to be developed by which preference in selection goes to villages that have greater impact upon the PA and to those villages which have a predominantly poor population. In addition preference in the covered villages should be given to those families who are poor and landless.

F. Gender

The project design of IEDP was sensitive to gender concerns, and serious attempts were made to emphasise this aspect explicitly at the project formulation stage. However, the project design is not equally explicit when it comes to specific strategies by which gender concerns could actually be incorporated in, for instance, micro planning and implementation of ecodevelopment investments. The SAR does emphasise that the forest department at each IEDP site should make attempts to elicit women's participation, and that reputed NGOs should be involved in this process. While it shows evidence of a lot of detailing of many other aspects of the project, it is fairly inadequate in terms of guidelines, tips and examples of best practices and innovative approaches aimed at breaking traditional societal barriers to women's participation.

Compared to the parameters set out in the SAR, the actual impact of the project on women has been largely unimpressive barring three sites, namely Periyar, KMTR and GHNP. It appears that gender concerns are reflected very weakly in IEDP (it is noteworthy that of the three sites mentioned above, only one is an IEDP site, while the other two are FREEP-CoB sites).

It is not just desirable but also possible to mainstream gender concerns effectively and weave these into ecodevelopment strategies, so that the negative impact of people and protected areas on each other can be reduced in a participatory and equitable manner (GHNP, KMTR and Periyar). In order to do so, it may be better to reverse the sequencing of community mobilisation efforts, so that first, sub-village level institutions like women's SHGs are promoted, and only at a later stage, village level institutions like EDCs are formed. The foundations for this assertion flow from the experience of social sector interventions like those of MYRADA in Karnataka, as well as ecodevelopment efforts at PAs like GHNP. In both, it was found that from the perspective of equity and sustainability, it is desirable to begin by mobilising small, affinity-based groups with a common socio-economic and cultural milieu (for instance, women's SHGs). Once these are successful, the participation of marginal and vulnerable groups in the village level institutions is relatively more certain.

Moreover, the personal savings generated by SHGs, as also the credit management skills acquired by SHG members, can play an important role in ensuring financial sustainability of ecodevelopment efforts. This is because EDC funds can be loaned to such groups rather than to individuals with a better chance of loan recovery and continuous enhancement of the common fund of the EDC (Ranthambhore is now experimenting with such a model).

The role of competent facilitators in mobilising women is critical for introducing standard best practices and dealing effectively with crucial regional specificities. Such facilitators can also provide vital long-term capacity building and handholding support for savings, credit and income generation activities of the SHGs, and later for follow-up support in marketing and quality control of products and various credit-plus activities by SHGs or federations of SHGs. The positive experiences at Periyar, KMTR, GHNP, as well as the problems arising due to absence of such inputs at Ranthambhore strengthen this assertion. Institutionalised security for the role of women in decision-making should be facilitated, as in the case of KMTR.

G. Equity

The SAR and various other documents relating to the project repeatedly stressed that vulnerable sections of society – women, tribals and otherwise disadvantaged sections such as the landless should be targeted specifically as part of the project, and that benefits should flow preferentially to these sections (such groups will be referred to as Special Needs Groups - SNGs, in consonance with the terminology used in the Bank Aide Memoirs). In fact, the SAR outlines some provisions to facilitate equity. For instance:

"PRA micro planning exercises will need to make special efforts that less vocal and powerful sub groups fully participate. Course reference material collected by WII documents one of the most effective means of ensuring this participation. This is to hold separate exercises with each identified sub group and then discuss the results in a general assembly meeting. This ensures that discussions with different ethnic and social groups are conducted in ways that are sensitive to their cultural norms."

Barring GHNP, KMTR and Periyar, the general experience emerging from other sites is that the institutions created (or used) as part of this project, i.e., EDCs/FPCs continue to mirror the same power equations that prevail in the village. Often, the dominant voices in the village proved to be the dominant voices in the EDCs as well. In fact, one may even argue that by their very nature, institutions of the sort envisaged in this project will preclude any meaningful participation by the weaker sections in the village community. In its present form, ecodevelopment as a process that assists in the empowerment of the weakest sections of the village community is inadequate, though it attempts to realign the

inequitable access to resources, which in the first place causes unsustainable or otherwise undesirable dependence of SNGs on the PA.

It has emerged from this study that the poor, who haplessly become engines of forest damage in the absence of alternative livelihoods, stand a greater chance to benefit from a 'village ecodevelopment' programme in the 'loan' mode, particularly involving SHGs. This does not require them to make the mandatory 25 per cent financial contributions to avail ecodevelopment benefits. This project provision has resulted in the exclusion of the poor in many sites due to low ability-to-pay.

For instance, at Nagarhole, apart from a modest 'membership fee', the Village Development Fund (VDF) consists of only individual contributions made under the '25 per cent' clause. While this has succeeded in holding the project beneficiaries together, they do not seem inclined to use the VDF to help the poor, who were left out initially from project benefits because of their inability to contribute as per prescribed norms for 'reciprocal commitment'.

H. Park – People Relationship

If a singular success from the experience of the ten studied PA sites were to be named, a remarkable turn around in Park-People relationship would be the one. Although the depth of informed understanding behind this change and hence its quality and sustainability have varied among the ten sites, there is no question that in all cases there has been a drastic and positive improvement from the earlier adversarial relationship. In parks reflecting both depth and portents of sustainability, it is the commitment and perseverance of the PA leaders, in some cases ably complemented by NGOs, that is responsible for the change. The degree of positive change in the PA-people relationship was manifest from several observations made by EDC/SHG members at the stakeholder workshops, " The forest department has outdone any other government department in ensuring genuine well-being of the local communities". Close and repeated interaction between them led to a gradual and informed change in the understanding of mutual concerns and in discovering the scope of potential mutual synergy realizable through the intended project interventions.

The role of the 'non-voting member secretary' (forest guard or the forester) as a facilitator has been important in this development, though with further capacity building the EDCs/VFCs can and should look after their in house accounting chores. But an institutionalized and ongoing membership of the local PA staff in the EDC and its EC is not only essential for sustaining this relationship but importantly also for maintaining a fair balance between the mutual stakes. For the same reason it is necessary that the power vested by respective state governments in the PA director to review major decisions of EDC/EC should also continue in an institutionalized manner, by referral to and ratification by a PA level

confederation of EDCs. This need arises from the basic premise that ecodevelopment is but a sub-strategy of the main strategy for more efficacious PA management with due 'social justice' for the local communities.

I. Time frame and fund flow

The IEDP was planned for a period of five years (1995-96), and this study found across sites that given the range of tasks to be undertaken , combined with regular PA management activities, this time frame was unrealistically short. Moreover, the project envisaged a number of highly process-driven and effort-intensive activities like awareness promotion, micro planning, and capacity building of both people and staff, for all of which a five-year period was inadequate. Even in the early stages of the project, critical start-up activities like setting up of administrative and institutional enabling mechanisms like GOs, and selection and posting of suitable park level project leaders took considerable time.

A clear consequence of this was the need across sites for 2-3 extensions in the project tenure. With the final extension expiring in June 2004, the actually availed project tenure worked out to be seven years and seven months, assuming that the effective date of initiation is taken as December 1996, following the SAR in August 1996. By the MTR stage (early 2000), all three category of players *viz.* PA staff (including contracted specialists), local people (EDCs and SHGs) and the NGO facilitators had gained reasonable levels of capacity and experience. This is reflected in the improved achievement of physical and financial targets from the fiscal 1999-2000.

It has also been observed that the 'village ecodevelopment' component was subject to a greater cut following the MTR as compared to the 'PA management' component. This appears to have gone along the perceived higher absorption capacity of sites in respect of the latter component even though relative priority lay in favour of the former. As the 'village ecodevelopment' component actually needed greater time in micro planning and trust building, the initially earmarked limited tenure may also have contributed to such a decision favouring 'PA management'.

Fund flow mechanisms from the MoEF to any PA (or landscape) site under any such new project must be so envisioned that they reach the site timely and are not constrained for any reason other than quality of performance and the pace of utilisation. An arrangement on the lines of a 'Special Authority' similar to the FDAs set up in some states should be considered at the planning and negotiation stages.

J. Research and Monitoring

Both IEDP and FREEP provided for ecological and management research to be an important activity to feed into improving PA management planning. They also provided for socio-economic studies of the local communities insofar as they depended on natural resources for domestic use and livelihoods as well as for cultural and ethno-biological links. In addition, organised participatory monitoring by the PA staff and EDCs of the direct and indirect impacts of PA management and ecodevelopment interventions were also laid down as a project activity. The findings of such monitoring of impacts on the PA habitats and biodiversity status as well as on the economic well being of the participating families were to feed into improving the interventions on course. Kanha TR, a MP Forestry Project (MPFP) site has had a near 30-year history of largely in-house organised research by having a competent and qualified research officer supported by field staff for profiling and monitoring habitat status and animal abundance. Critical research on highly endangered species and their habitats has also led to notable successes in saving them. For close to 10 years, the PA has undertaken a correlative research on pressures of local communities and its impacts on conservation to yield clues for conservation planning on a statewide basis with concomitant scope of JFM and ecodevelopment.

Though considerable money and effort was expended on the research and monitoring component, it remained unclear to this study the extent to which PA management, barring in Periyar, Kanha, GHNP and KMTR, utilised this knowledge to effect changes in the field and to fill management gaps.

The WB Aide Memoirs emerged as a most consistent and exhaustive tool for monitoring the project. At least one PA manager clearly articulated the utility of WB supervision missions in ensuring that project activities proceeded according to schedule and in ironing out gaps. The consensus emerging from discussions with park staff about the efficacy of the IPPR was that since it was based extensively on secondary documentation made available by the PAs themselves, there was little information emerging out of the exercise that would shed any new light. Though there was a component of primary data collection from villages as well, the park staff felt that unless significantly more primary work is carried out at the village level, the information emerging from the IPPR is of limited utility.

Further, exercises like the IPPR could serve as vehicles for the sort of professional assistance that has been found to be an essential prerequisite for success in projects like this one. Given the fact that the IPPR team is supposed to have both ecological as well as social expertise on board, for the future, it might be of assistance if IPPR teams also double up as professional handholding support providers. It would be of utility to the conservation community and society in general if the vast amount of research knowledge that has been generated as part of the project is put in the public domain. The lack of baseline data has proved to

be a weakness that has precluded optimal use of monitoring data. Barring KMTR, which established at least socio-economic baselines at the start of the project, no other reserve was able to accomplish this. This has severely compromised the ability of the parks to monitor progress on various parameters.

Best Practices

The following best practices emerged from the study at various parks, which are worthy of further evaluation and replication in any ongoing or future project

- Capacity building of the local people: Gir
- Creating a unified buffer division: Kanha
- Transfer of responsibility – Joint Secretary of EDC: Kanha and Pench
- Three types of specialized EDCs: Periyar
- Pilgrim management and conservation: Periyar
- 'Mowgli' as a Park mascot and its impact on tourism: Pench
- Effective management planning: Periyar
- Providing a legal basis to ecodevelopment: GHNP
- Clear GOs for effective institutionalisation: KMTR and Periyar
- Reciprocal commitments from the people: Periyar, Buxa, Kanha and Pench
- Women's saving and credit groups: GHNP
- IGAs for social change: KMTR

Park Reports

The Park teams led by the respective Park directors and assisted by the consulting team members have prepared reports on their respective Parks. These form Part II of the main report.

Looking Ahead: Imperatives for Future Projects

Integrating Conservation with Social Justice

The experience gained in concurrent implementation of PA management and ecodevelopment in the 10 PAs throws up lessons in the conceptual domain for possible future initiatives for effective **conservation of biodiversity with social justice**.

Communities living in close proximity to natural landscapes are by definition located in remote and inaccessible regions, which have largely been bypassed by mainstream processes of development. In this sense, the poorest households in such regions may be viewed as "doubly deprived" – in relation to the national level of basic needs availability per capita, as well as in relation to the more

affluent households within such villages. Also, given their low access to income earning assets, it is such households that tend to exert the maximum pressure on the surrounding resources for survival. Thus, a case may be made for giving priority attention to the poorest households situated in proximity to natural landscapes under projects like ecodevelopment. This can have a beneficial impact on conservation as well as social justice, thus creating a win-win situation.

Also, a case may be made for levying an 'ecodevelopment' surcharge on any 'development' projects that aim to harvest natural resources from such landscapes, and for using the proceeds of such a levy for ecodevelopment-type activities aimed at improving livelihood of natural resource dependent communities that are affected adversely by 'development' projects. This logic must also extend to forestry operations with a commercial objective. A fair percentage (say 20%) of the net timber revenues should also flow into the ecodevelopment fund earmarked for the landscape and secured as a 'trust fund'.

Strategic Framework

The following fundamental principles (with their concomitant strategic roadmap for nature conservation with social justice) emerge from the experience gained from the 10 studied PA sites (these are also in accord with the national law and policy framework):

- There is a need for prior identification of target landscapes and seascapes on the basis of their bio-geographic attributes, biodiversity values and geographic integrity with an eye on the extant demographic profile and land/resource use.
- Important 'penumbra habitats' and 'corridors' for biodiversity / wildlife around and between PAs within the landscape/seascape shall have to be identified for special management assistance aimed at revival and long-term viability ensuring the security of 'ecosystem services' and of the full range of biodiversity with social justice.
- The ground situation today calls for employment of both ecodevelopment (ED) and joint forest management (JFM) as potential and potent tools for integrating 'conservation and development' at grassroots level in large landscapes/ seascapes. A combination of JFM and ED activities needs to be used as enabling tools for enhancing productivity, rationalising uses and creating alternatives for energy, resources and, importantly, livelihoods. This would also help revive penumbra habitats and corridors for biodiversity conservation.
- The experience in IEDP and other PA sites has shown that communities can be successfully weaned from prevailing consumptive dependence on resources by provisioning alternatives for energy, redirected livestock raising practices, development of bio-resources on private farms and village commons and facilitating income-generating activities not dependent on forest resources.

- Ecotourism is potentially a powerful tool if innovatively used for generating non-consumptive livelihoods. Additionally, the levy of an 'ecodevelopment surcharge' on park entry fees as done in some PAs is a valid route for augmenting resources for ecodevelopment. Such 'strategic use' of ecotourism would go a long way in forging community stakes in the PAs of all categories including the national park.
- Not only do operations mandated by ecological propriety have the scope for generating wage employment, the 'forest produce' obtained from essential habitat interventions can legally be given away under ecodevelopment as small timber or as domestic fuel. In fact, the provisions of Section 35(6) of the WPA would allow even timber to be 'used' for a 'non-commercial purpose', e.g. crediting the net value of sale proceeds of such timber to a dedicated trust fund for park management and ecodevelopment.
- In a landscape approach, macro level zoning should follow both the needs of conservation and also those for bio resources of the local communities.
- The project should serve as a means of initiating participatory processes for planning and transparent decision making in order to evolve and implement a package of measures, which, while seeking reduction in forest / bio-resource dependence provides alternatives for such resources and livelihoods dependent thereon. Both local people and PA staff are primary stakeholders all through the processes of planning and implementation when the aim is to integrate conservation and development.
- It is imperative that local communities are made aware of the direct benefits of conservation. They also need to appreciate that the project aim in supporting conservation through JFM and ecodevelopment is to ensure that their share of costs of conservation 'for universal good' is reduced to the maximum extent.
- A future project aiming to integrate conservation and development in the field at landscape level should have an 8-10 year timeframe. This is premised on the fact that the processes of ecodevelopment and JFM are inescapably slow-paced initially but once the 'preparatory ingredients' are in place, they can acquire good pace and momentum as well as achieve resolute and sustainable success.

PART ONE

CHAPTER I

Introduction and Background

1.1 Ecodevelopment in India

The Protected Areas (PAs) selected for biodiversity conservation measures face, among many other problems, increasing biotic pressures from local communities. At the same time, the people living in and around the PAs also suffer on account of denial of access to the bio-resources in the area, as well as damage to crops and livestock from wild animals from the PAs.

There is no denying that community links with natural areas are intrinsic to the local socio-economic and cultural milieu and the dependence of people on bio-resources is age old. However, it must be remembered that the biodiversity conservation tradition had also been intrinsic to the local people until just a couple of centuries ago. This milieu has suffered external impacts in the meantime from political changes (depriving communities of their customary rights) and from the onslaught of industrialisation and commercialisation. Demographic change seems to have added to the adversity by worsening the human to land ratio. The resultant and drastic land-use changes have fuelled denudation and degradation, compromising conservation of forest and other natural areas. These changes have also steadily undermined the productivity of the rural ecosystems in these regions, causing impoverishment of the inhabiting communities. Biodiversity and its habitat too have suffered attrition from these mounting threats. Indeed, the setting up of PAs at an increasing pace and the hardening of the legal framework for conservation in the last three decades have been a strategic response aimed at countering these mounting threats.

The objectives and rationale of wildlife conservation had been a part of the development and social justice debate for the past three decades. However, by the mid 1980s, wildlife conservation in India had become conflict ridden. Conflicts and clashes between PA managers and local communities were on the rise. Also, in many PAs, the ability of managers to regulate use and extraction of bio-resources to the levels prescribed by law was weak. This was primarily because

- There had been a steady increase in human population and a resultant increase in their need for land and natural resources.
- There had been a concurrent and often a resultant decrease in wilderness areas.

- Though there had also been much "development" and a consequent growth in economic opportunities and infrastructure, this was not equitable across categories of population, regions and the urban-rural divide.
- Similarly, the costs and benefits of conservation were not equitably apportioned, the poor losing the most and gaining the least.
- However, one effect of "development" was to raise the economic aspirations of people almost uniformly, thereby creating a greater demand for income and resources.
- The establishment of a democratic process of governance, after India became independent in 1947, made people increasingly aware of their political and economic rights and gave them a voice that could not be easily ignored.
- Historically, wildlife and forest management was regulatory and perceived to be indifferent to the needs and aspirations of the local people. Under the colonial regime, control and ownership of forests had been taken away from the communities by the state. A resentment and reaction against this by the local people was obvious.
- Traditional cultural imperatives for conservation were losing ground, while scientific reasons for conservation were neither widely understood nor universally accepted.

The 1980s were also the period when a large number of new protected areas were set up, raising the number from a little over 200 at the start of the decade to nearly 500 by the beginning of 1990. Therefore, the creation of all these new PAs, and the consequent inevitable deprivation of resources for the local communities, further heightened the sense of unrest against this form of conservation.

Innovative ameliorative measures by resource managers at a few places began to yield results, which went beyond mere protection and tackled the issue of people's dependencies over these areas. A government of India document (1983) titled 'Eliciting public support for wildlife conservation' sowed the seed of a philosophy and practice which finally came to be called 'ecodevelopment'.

By the time the process of formulating the 8th five-year plan was initiated in the Indian Planning Commission, in the early 1990s, it was clear that the current system of wildlife protection was not working. Not only were protected areas getting degraded at a very rapid rate, but there was also widespread resentment against them. In fact, many political parties and people's representatives were locally voicing their discontent with the PA network. Added to that, there were many powerful lobbies, especially of miners, tourist operators, timber merchants, land developers, hoteliers, industrialists and contractors constructing dams and other infrastructure projects, that were working hard, especially through money power and political patronage, at diluting the PA network in India and getting access to the land and other resources within them.

The Ministry of Environment and Forests, Government of India and the Planning Commission were, therefore, confronted on the one hand with pressures to lighten the regulatory process associated with wildlife and forest conservation and, on the other hand, with evidence that, even with the current levels of regulation, forests and protected areas were rapidly deteriorating. It was out of such a predicament that ecodevelopment as a strategy gained currency. The 1983 National Wildlife Action Plan formally recognised and mandated ecodevelopment as a PA-people supportive programme. However, it was only in the 8th five-Year Plan (1992 to 1997) that an ecodevelopment scheme found its place for field application and ever since it features as a component in the Central plan wildlife schemes.

Ecodevelopment (ED) as a strategy recognises the traditional dependence of people on the forest resources for domestic use as well as supplementing livelihoods, and seeks to rationalise the demands of the community by facilitating alternatives for resources and livelihoods. It advocates a multi-pronged approach, which bases itself on rational zoning of protected areas and their surrounds so that while security of the full range of biodiversity and ecosystem services is promoted, the way is paved for ameliorating productivity and utilisation of resources by the people with a responsible stake in sustainability. The approach involves evolving and implementing a package of measures, which enhance the productivity of the rural ecosystems, including the agricultural areas and the use zones within the PA. At the same time it includes provisioning means and facilitating activities, which promote use of alternate energy, resources and livelihoods and help in reducing forest dependence. In essence, the ED strategy aims at strengthening nature conservation in participation with and through empowerment and the socio-economic wellbeing of the local people.

The World Bank supported two ecodevelopment projects (FREEP and IEDP) in India in the 1990s, which covered nine PA sites in nine different states. The implementation of these projects has validated the worth of ecodevelopment as a powerful tool to enhance the efficacy of PA management with the participation of the people with benefits accruing to them in a manner promoting their stake in conservation of ecosystems and biodiversity. Besides these, one tiger reserve in Madhya Pradesh received WB inputs for PA management and GOI-MoEF inputs for ecodevelopment with similar aims and results. These 10 PA sites put together encompass varied bio-geographic situations with a wide spectrum of ecosystems and concomitant biodiversity across the length and breadth of the country. The demographic, socio-economic and forest dependence profiles broadly also encompass the Indian spectrum. The planning and implementation performance has varied and so have the level of and the sustainability of success among them. Thus the experiences gained from there are of immense value for the future.

1.2 The India Ecodevelopment Project (IEDP)

The *India Ecodevelopment Project* began in 1995-96 as a five-year pilot project in seven protected areas, namely Buxa Tiger Reserve, Palamau Tiger Reserve, Ranthambore National Park, Gir National Park, Pench Tiger Reserve, Nagarhole Tiger Reserve and Periyar Tiger Reserve.

The IEDP envisaged ecodevelopment as a strategy that 'aims to conserve biodiversity by addressing both the impact of local people on the protected areas and the impact of the protected areas on local people[1]. 'The **objectives of the project, the corresponding activities** and the **financial allocations** as envisaged by the SAR (Staff Appraisal Report) of the project are outlined in Table 1.

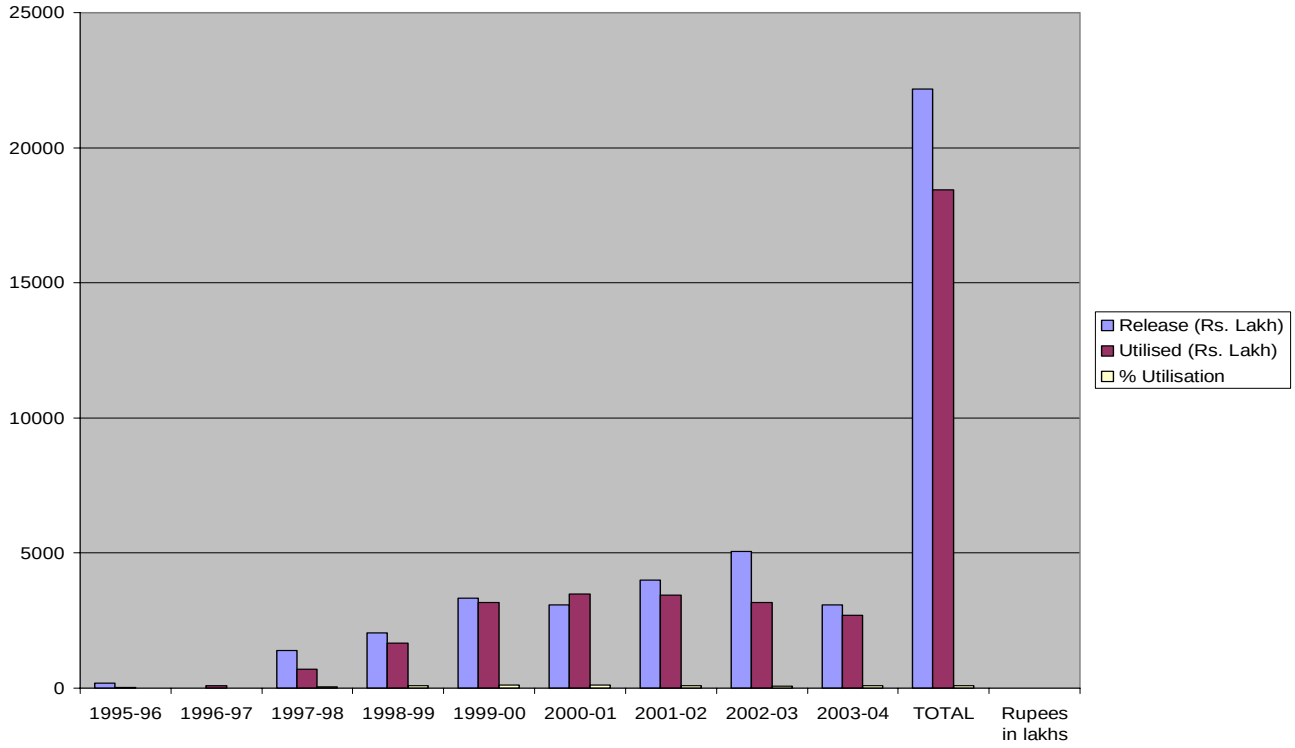
1.3 Project Timeline

1995-96	-	Initiation of IEDP (December 1996)
1996- 99	-	Project activities proceed at a slow pace in many sites
2000	-	Mid-term review (June 2000)
2001-02	-	June 2002 (anticipated project end)
2002-03	-	Project extended phase
2003-04	-	Project end (June 2004)

1.4 Project progress

1.4.1 A perusal of various documents (Bank Aide Memoirs, the IPPR and various Park reports) illustrates that with the exception of Periyar Tiger Reserve, project implementation at the MTR (Mid Term Review) stage was taking place at a slow to medium pace at most sites. So much so that the review mission was constrained at that point to reconsider the continuation of funding (IDA/GEF) support to Palamau (then in Bihar) and Ranthambore (Rajasthan). Many physical and financial targets were revised and reduced at this stage, and several national level consultancies were slashed. Interestingly enough, post-MTR the project picked up considerable speed in almost all its components, and achieved far better results compared to the first half of the project period (see Table 2).

Figure 1: Progress of release and utilisation



1.4.2 The IEDP has been a landmark project in India. Starting as an ambitious exercise, facing civil society criticism, plagued with an agonisingly slow pick up, a serious rethink and downscaling at the MTR stage, it has finally resulted in some exceptional achievements. It has seriously challenged some long-held assumptions and thrown up sound learnings that will guide any future project of its kind. Some learning from the project even goes beyond the limited genre of IEDP and is expected to benefit any externally-aided project.

1.4.3 The seven sites where the project was implemented present a wide range of ecological and biological attributes. The common strand, though, was that the communities living around these sites have had traditional socio-cultural links with the natural ecosystems as well as dependence on their bio-resources for domestic use and livelihoods. The degree and character of such dependence varies from site to site, and it is in this spectrum of biological and socio-economic variance that the challenge to integrate conservation with local development has been tested through the project.

1.4.4 A host of factors have affected the project performance. Commitment, professional capacity and quality of leadership of the senior PA managers and their NGO associates have played the most significant role. The role of state governments has been critical too, through the degree of clarity in orders creating enabling procedures and processes, and for the setting up of village-level institutions and their functioning. On the other hand, the intransigence of some

state governments resulted in fund flow constraints and thus adversely affected the performance of a number of reserves. The park staff and the local people have been primary stakeholders, the main concern of the former being effective conservation and of the latter livelihood and other essential dependencies. During the project, some unique examples of synergic compatibility have been thrown up by the interplay of innovation, motivation and commitments forged by the flow of sustainable benefits on either side. On the other hand, there have also been instances of less than optimum combination of the ingredients for success. Both types of experiences have vital lessons for wide application in field programmes in a project mode, as well as in the routine management of PAs. Broadly, though, the project has shown that with the right inputs in capacity building and with the right approach in leadership, the integrated conservation and development approach may well be an important component of the way ahead for countries like India.

1.4.5 The Madhya Pradesh Forestry Project (MPFP):

The *Madhya Pradesh Forestry Project (MPFP)* was a World Bank-assisted project addressing the overall forestry management issues in that state. Initiated in 1995, the project had a substantial biodiversity conservation component under which 12 priority PAs received support. The aim of such assistance was to enable PAs to improve management through scientific management plans, habitat improvement, staff training, provision of enhanced protection infrastructure, and research and monitoring. Special funds were created to support the development of alternative resources or income for communities' resident within and around PAs. Kanha National Park was among the 12 protected areas identified in Madhya Pradesh for support under the project.

With the support of the Government of Madhya Pradesh (GoMP) and through Project Tiger of the Government of India (GOI), for over three decades Kanha has engaged in successful PA management that has resulted in remarkable improvement in the wildlife population, while also continuing to engage with the concerns of the local communities. The MPFP has strengthened this integrated approach in tandem with the ED support coming from Project Tiger and the GoMP, the latter also backing it up with the transfer of control of the buffer zone to the PA management. The GoMP has also set up a park-people welfare trust fund to which all government revenues coming to the park are credited. On the PA management front, Kanha has achieved singular successes in conservation of overall biodiversity of the 'old growth' and 'secondary' ecosystems, as well as securing the survival of critically endangered species. The lessons from this site add considerable wealth to those from the implementation of the IEDP.

1.4.6 FREEP:

The World Bank-aided Forestry Research Education and Extension Project (FREEP) was initiated in 1994 for a five-year duration. In order to test participatory biodiversity conservation in India, an additional sub-project titled Conservation of Biodiversity (CoB) was formulated.. Under the CoB, two protected areas, the Great Himalayan National Park (GHNP) in north India and the Kalakkad Mundanthurai Tiger Reserve (KMTR) in south India were selected for experimenting with the community-centred biodiversity conservation approach. In the context of GHNP, the project aimed to facilitate conservation of the endangered Himalayan ecosystem, help prepare future projects to address additional critical biodiversity issues, and explore linkages between conservation and development. At KMTR, which is situated in the biodiversity 'Hot Spot' of the South Western Ghats, again the aim was to elicit the support and participation of the local communities in conserving the unique biodiversity, and to safeguard the headwaters of a number of the major and minor rivers, which serve as the lifeline of the otherwise parched southwest Tamil Nadu. The Government of Tamil Nadu (GoTN) set an example by laying down firm processes for genuine participation of primary stakeholders in collective and transparent decision-making. Attempts were made to institutionalise empowerment of women in these processes, and to focus the whole programme on the poorer households. A committed and capable leadership with meaningful support from genuine NGOs has used this mandate innovatively to bring about greater synergy between stakeholders with seemingly conflicting concerns.

The main activity under FREEP in GHNP was the acquisition of rights by paying compensation (over Rs 150 lakh) to a relatively smaller number of privileged families who had recorded rights in the forests since the British regime. Though this left out the bulk of the poorer and more forest dependent families, which continued to exercise pressures on the Park, it paved the way for the final notification of GHNP under the Wildlife Protection Act. The ED programme under the COB was meant to address the PA dependence concerns, but poor organisation and leadership, along with problems in fund flow, resulted in very limited progress. Finally, the World Bank withdrew from the project prematurely. This also coincided with a change in the park director. The new incumbent has demonstrated competence and commitment, is formally trained in ecodevelopment, and has proved to be instrumental in bringing an impressive turnaround on the ground. GHNP is now engaged in women-centric mobilization around micro-credit and income generating activities, with a focus on the poorest and most PA dependent households. The attempt is to reduce their pressures on the PA and forge a healthy relationship between the Park and the people.

The Assignment

The mandate of this study was to understand and document ecodevelopment lessons learned from 10 sites across the country. These include the seven IEDP sites (Buxa TR, Palamau TR, Ranthambore TR, Pench TR, Gir National Park, Nagarhole TR, and Periyar TR). In addition, three non-IEDP sites (Kanha, GHNP and KMTR) where the inputs and achievements in ecodevelopment have been noteworthy were also to be covered by the assignment**.**

2.1 Methodology and Schedule

The assignment on documenting 'Lessons Learned' was awarded to the consulting team in the month of October 2003. In accordance with the TOR (Annex II), an Inception Workshop was held on 21 and 22 November 2003 at Delhi. It was aimed at

a) Introducing the assignment to the key stakeholders (PA managers and concerned authorities in the state and the central Governments, as well as NGOs and noted conservationists).
b) Arriving at a consensus on the formats for the Park-specific reports and the Overall Lessons Learnt Report
c) An important decision at the Inception Workshop was that teams from the respective PAs, comprising officers and staff from the concerned PA, would write the case study for individual PA sites. The role of the consulting team would be to help each PA team identify different parameters for the preparation of the report. The consulting team was also mandated to help the PA teams in the actual writing of these reports.

The *second month* and part of the *third month* of the assignment (November and December 2003) were devoted to secondary research of available plans and reports for the projects as a whole and the PA sites as well as the issues relevant to the assignment. During the *third, fourth* and *fifth* months of the assignment (December 2003-February 2004) the first round of visits by the team members to the Project sites were undertaken. The aim of these visits was primarily to facilitate the PA team in conceptualising the PA specific case studies, and for the visiting team members to see and understand the processes, plans, implementation and results of the IEDP, in order to glean lessons. In the course of the field visits, the consulting team and the identified PA Teams paid joint visits to numerous PA management and ecodevelopment sites. Both teams held joint discussions with different stakeholders like EDC/VFC office bearers, members of their Executive Committees and SHGs. The two teams discussed separately the background of the study, with emphasis on the PA teams' task of developing the PA level case study. Field visits to the ecodevelopment sites as well as sites of resource intervention enabled the identification of possible themes, unique cases, strengths and weaknesses and best practices. The consulting team members gave continual feedback to the Park team, and elicited their views on various aspects of the Project and the lessons learned.

Stakeholders' meetings were conducted at the sites and the facts, issues and lessons learned from these meetings complemented the field visit learning of the consulting team. Thereafter, feedback was given to each PA team through exhaustive field visit reports and follow up email and telephonic exchanges. In addition to facilitating conceptualisation of the PA level case study, field visits were also utilised for the collection of documents that would facilitate development by the consulting team of the 'overall lessons learned'. A second round of visits followed at the stage of report preparation by the PA teams, during months 5, 6 and 7 of the assignment (March to May 2004). Once the PA team reports were drafted, editorial feedback was provided and the reports were finalised.

This report of the consulting team seeks to capture the highlights, pluses and minuses of the project implementation at all the 10 PA sites and tries to distil the experiences in the form of lessons for the future. This report also highlights specific activities at various parks, which we consider as **best practices** worthy of further evaluation and replication. The report is backed by the above-mentioned case studies for all the 10 sites, prepared by the respective PA teams with the support of the consulting team. These form Part II of this report.

ANNEX – I

Tables

Table 1: IEDP – Objectives, Activities, Budgets

Objectives	Corresponding activities	Financial allocation (USD'000)
Improved PA Management Improve capacity of PA management to conserve biodiversity and increase opportunities for local participation in PA management activities and decisions	1. Strengthening PA management plans and capacity 2. Incorporating PA concerns into regional planning 3. Improved habitat protection 4. Upgrading PA amenities for field staff	1,137.8 (1.7%) 12,938.7 (19.3%) 1,229.5 (1.8%)
Village Ecodevelopment Reduce negative impacts of local people on biodiversity, reduce negative impacts of PAs on local people, and increase their collaboration in conservation efforts	1. Microplanning and implementation support 2. Reciprocal commitments and alternative resource uses and livelihoods 3. Special programs in JFM, voluntary relocation and Discretionary funds for special needs	5,634.3 (8.4%) 24,459.8 (36.5%) 5,991.6 (8.9%)
Develop more effective and extensive support for ecodevelopment;	• EE and awareness - Develop an environmental education and awareness strategy - Expand education programs for school children - Run mass media campaigns - Develop alternative media • Improved visitor management - Improve visitor information and interpretation service • Ecotourism - Develop a visitor management and participatory ecotourism strategy - Implement the agreed strategy • Impact Monitoring and Research - Ecological and socio-economic monitoring - Ecological research - Socio-economic research - Capacity building and communication programs	1,258.7 (1.9%) 3,935.5 (5.9%)

Project Management Ensure effective management of the project	• National–level Implementation Support and Capacity development • Publicity and Dissemination Contracts • Implementation Reviews • Policy and Strategy Studies • Administrative Support	5,832.8 (8.7%)
Prepare future biodiversity projects	• Second Ecodevelopment Project • Biodiversity Information Project • Genetic and Ex–Situ Conservation Project	2,581.4 (3.9%)

Source: World Bank SAR.

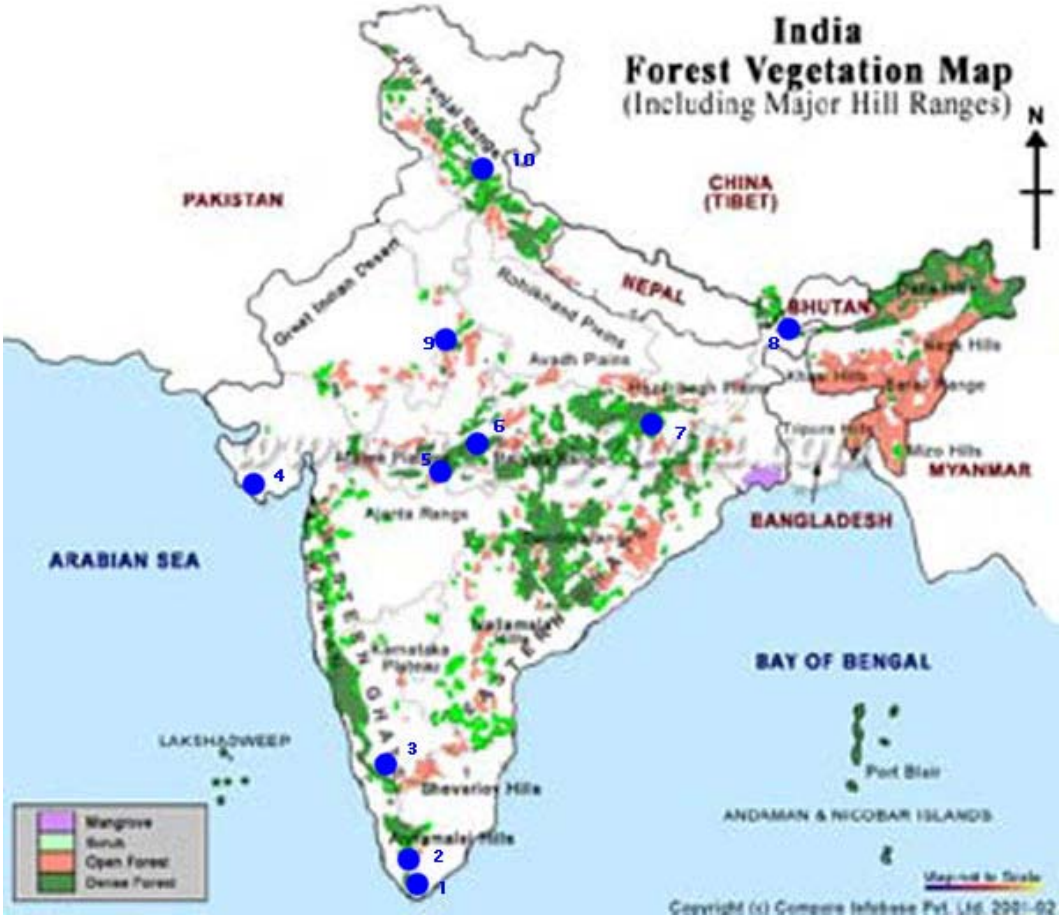
Table 2: Year-Wise Release and Utilisation of Fund Position

Year	Release (Rs Lakh)	Utilised (Rs Lakh)	% Utilisation
1995-96	190.00	20.235	10.65
1996-97	0.00	94.99	0.00
1997-98	1386.50	700.945	50.55
1998-99	2043.50	1664.64	81.46
1999-00	3327.44	3159.71	113.09
2000-01	3085.00	3489.07	113.09
2001-02	4000.00	3440.70	86.01
2002-03	5057.96	3173.53	62.74
2003-04	3082.95	2692.75	87.34
TOTAL	**22173.35**	**18436.57**	**83.14**

Source: Project Tiger Office.

ANNEX – 1I

MAP SHOWING THE TEN SITES



1. **Kalakkad Mundanthurai Tiger Reserve**
2. **Periyar Tiger Reserve**
3. **Nagarhole Tiger Reserve**
4. **Gir National Park**
5. **Pench Tiger Reserve**
6. **Kanha Tiger Reserve**
7. **Palamau Tiger Reserve**
8. **Buxa Tiger Reserve**
9. **Ranthambhore Tiger Reserve**
10. **Great Himalayan National Park**

ANNEX – III

LIST OF SOME NON GOVERNMENT INSTITUTIONS FOR CAPACITY BUILDING ASSITANCE

NAME	CONTACT DETAILS	AREA OF EXPERTISE
SRIJAN	delhi@srijanindia.org	Training on Land use management
MYRADA	No.2, Service Road, Domlur Layout Bangalore 560 071. Karnataka Phone : 5352028, 5353166, 5354457 Fax : ++91-80-5350982	Training and other support on forming peoples institutions, micro credit, participatory processes
DHAN Foundation	18, Pillaiyar Koil Street, S.S.Colony, Madurai, Tamilnadu - 625 010, India. Phone: 91-452-610794, 610805 Fax: 91-452-602247 E-mail: dhan@md3.vsnl.net.in	Training and other support on forming peoples institutions and micro credit
BASIX	501/502, Nirmal Towers Dwarakapuri Colony Panjagutta, Hyderabad AP-500 082 India Tel : 91-(0)40-5561-8846/ 91-(0)40-5563-5461 91-(0)40-2335-0171/2335-0566 Fax : 91-(0)40-2335-8846	Training and other support on forming peoples institutions and micro credit

NAME	CONTACT DETAILS	AREA OF EXPERTISE
CARE	27 Hauz Khas Village New Delhi – 110016 Tel: +91-11-26564101, 26969770 Fax: +91-11-26564081, 26564084, 26529671 Email : cbox@careindia.org	Training on Micro planning and micro credit.
Samarthan	samarth_bpl@sancharnet.in	Training on participatory processes
Praxis	18A, Patliputra Colony, Patna, India 800 013. Tel./Fax: +91 612 2267 557 to 58; info@praxisindia.org	Training on participatory processes. Other support for forming peoples institutions and micro planning
PRADAN	Post Box No. 3827, 3 Community Shopping Centre, Niti Bagh, New Delhi 110 049 Tel: 011 2651 8619 Tel/fax: 011 2651 4682 E-mail: pradanho@vsnl.com	Exposure visits for livelihood enhancing activities, including forming institutions, land management, micro credit
MP LEAP	E2/145, First Floor Near E2 Sector Post Office Arera Colony, Bhopal - 462016 Madhya Pradesh Ph: 0755 - 242 0802, 242 4691 email:mpleap@sancharnet.in	Training and other support for people's institutions, participatory processes, micro credit.

ANNEX – IV

TERMS OF REFERENCE
(Description of Services)

Assignment:

"The Ecodevelopment experience in India: lessons learned from linking Conservation and development around Indian Protected Areas."

Protected Areas under Consideration:

IEDP Sites

a) Ranthambore TR
b) Pench TR
c) Gir NP
d) Palamau TR
e) Buxa TR
f) Nagarhole TR
g) Periyar TR

Non IEDP sites:

h) Kalakkad Mundanthurai TR
i) Kanha TR
j) Great Himalayan National Park

Consultants are expected to:

i) Facilitate formulation of case studies (good/average/poor and unique sites and themes) by the pre-identified PA level staff team.
ii) Prepare an 'overall lessons learned' report
iii) Facilitate a project level inception as well as project end workshop.

Activity plan

First and second month:

- Initial contract
- Outreach through letter / fax / phone to Key stakeholders in the field.
- Access secondary sources of information from the Project Tiger Office as well as selected PA sites. (Essentially required material includes Management Plans, Ecodevelopment plans, pre project indicative plans, consultant's reports, status report of implementation of ecodevelopment at this stage in each PA. In addition, reports like Mid Term Report, Field visit aide memoirs, any other monitoring and evaluation reports, publications etc)
- Desk research.
- Facilitation of Inception workshop (micro site identification as well as finalization of case study formats) (**Milestone**)

- Field visit by Team members to ground truth the identified micro sites and assist initiation of the case studies by the pre identified PA level staff team led by the Director/ Dy. Director.
- Inception Workshop Report to the client (**Milestone**)

Third till sixth month:

- Facilitation of case study preparation by PA level team and study of secondary material by the consulting team to continue
- Field visit by team members for organisation of stakeholder meetings and assessment of progress of preparation of draft case study report/s
- Mid term progress report to the client. (**Milestone**)

Seventh till Ninth Month:

- Finalisation of the draft case study reports.
- Preparation of an 'Overall Lessons Learned' report (Draft).
- Draft case study reports and the Lessons Learned report sent to the client. (**Milestone**)
- Facilitation of project end workshop. (**Milestone**)
- Reports are finalised as per workshop findings and client's comments/observations on the draft reports.
- Final reports are sent to the client. (**Milestone**)

CHAPTER II

Lessons Learned from Ecodevelopment Experience in India

Introduction

In all the 10 PA sites addressed by this study, the PA management envisioned, planned and provided for ecodevelopment inputs/activities in four major areas:

(i) Improved PA management for more effective conservation of biodiversity, and capacity building of PA officers and staff in both PA management and ecodevelopment

(ii) Village ecodevelopment with the local communities to augment non-forest dependent livelihood and to reduce biomass pressures on the PA, thus promoting friendly people-PA interface

(iii) Environment education and awareness for promoting better understanding of PA values and benefits among the local people in order to elicit their optimum participation and support in PA management

(iv) Research and monitoring covering both management and human aspects, for on-course feedback to improve PA management and social justice

These were the four main activity sectors mandated by the project design under the IEDP implemented in seven PAs (Buxa TR, Gir NP, Nagarhole NP, Palamau TR, Pench TR, Periyar TR, and Ranthambhore TR), and also at the two FREEP-CoB sites (Great Himalayan NP and Kalakkad-Mundanthurai TR). The WB-supported MP state forestry project, which mainly addressed state-wide forestry issues, did provide supplemental inputs to Kanha TR in PA management as well as ecodevelopment. All the four activity sectors have also received attention in Kanha under the ongoing inputs from Project Tiger and from wildlife conservation programmes of the state government.

It must be recognised that these are cogent design features and have the potential to gel together into a package capable of addressing effectively the problems of PAs in developing countries like India. However, full realisation of this potential calls for a thorough scientific understanding of PA management issues and PA-related problems of the local people among the project leaders at the PA level. The latter concern especially requires the project leaders to evolve a compassionate acceptance of their responsibility for balancing conservation goals with social justice issues.

The most visible outcome of the project is a remarkable thaw in relations between the people and the park. From an adversarial relation of the past, it is now one of mutual trust and understanding.

The most significant lesson emerging from these sites is that good PA level leadership and prior team capacity in both spheres, acquired through competent

training, have been instrumental in attaining optimum results, while poor attention to leadership and capacity building issues has resulted in mediocre results.

The main issues, lessons and best practices that emerge from this study have been enumerated and elaborated under the following major heads:

- Capacity
- Institutions
- PA management
- Enabling legal and policy framework
- Micro planning and coverage
- Gender
- Equity
- Park–People relationships
- Time frame and fund flow
- Research and monitoring

1. Capacity

1.1 Two dimensions of capacity, namely institutional and individual, are of relevance here. While the institutional capacity relates to the policy, infrastructure and human resource requirements to meet a specified goal, the individual capacity deals with skills, motivation and creative space provided by the organisation in which an individual operates. The capacity of both the institution as well as the individual can be enhanced with appropriate inputs in terms of resources as well as training.

1.2 In IEDP, the project formulators had identified and provided for in the SAR key capacity enhancement needs, both at the institutional as well as the individual level. The design elements relating to capacity can be summarised as under:

- *Improved PA Management*: It was visualised that the Park's management could do with improved management plans; incorporation of PA concerns in regional planning; various habitat and ecosystem protection measures and upgradation of amenities for the PA staff. The project accordingly provided for specialist advice, studies, workshops, travel and training support besides infrastructure development.
- *Village Ecodevelopment*: The project acknowledged that village ecodevelopment activities entailed skills for which the park management would need training and specialists' support, especially with regard to micro planning and implementation and monitoring of the reciprocal commitments from the beneficiaries. It was also realised that the investments under the component should not turn it into another rural development exercise but ensure that the biodiversity of the park benefited from the associated reciprocal commitments. At the same time, it was realised that PAs had their

share of negative impacts on the people too, and hence a provision was made for special programmes for asset-creation for villages, support to voluntary relocations from the Park and a discretionary reserve fund for PA managers to meet area-specific needs. The project thus provided for contracting local NGOs, expert advisors, workshops, materials, training (staff, NGOs and local people) and support for study tours.

- *Education/Visitor Management and Impact Monitoring/Research*: It was understood that the selected PAs could improve their current levels of education and visitor management and benefit from focused research and monitoring of project impacts. These activities were also expected to build into improving the PA management plans as also in evolving innovative measures to be taken up under the village ecodevelopment component of the project. Accordingly, the project provided for local NGOs, experts, training, study tours (inland and overseas), workshops, physical facilities, equipment and materials support.
- *Project Management*: The project designers were well aware that the PTO (Project Tiger Office), as the national manager of the project, would require adequate resources and manpower support to efficiently manage the project on behalf of the main borrower (MOEF). Appropriately, the project provided for additional staff at the PTO as well as for a number of national level studies to aid the project's implementation and monitoring.

1.3 Against these proposed elements, the actual performance during IEDP was as follows:

1.3.1 Management planning:

a. There are new or revised Managements Plans in all the seven IEDP sites and at Kanha TR. The plans for KMTR and GHNP are under preparation by the respective park directors. The activity started slowly but picked up momentum after the MTR stage in mid 2000. Expert consultations and the services of NGOs/expert agencies were utilised at Periyar (KFRI), Ranthambhore (WII) and Nagarhole (expert consultant). Both KMTR and GHNP retained WII to provide cogent and comprehensive research support to be used in their management plan preparation. The Park personnel themselves prepared the Plans at Gir, Pench, Buxa, and Palamau.
b. As assessed elsewhere in this report that while the plans at Periyar, Nagarhole, Buxa, Gir and Pench are adequate, those at Ranthambhore and Palamau could have been better as regards addressing the ecodevelopment component therein.
c. According to the observations made in the WB Mission's aide memoir of November 2003, "Management plans are now the basis of interventions in the PAs within the budgetary constraints of each state."
d. Here, it is pertinent to note that in 1992, the Wildlife Institute of India initiated a special capacity building programme in the planning and implementation of ecodevelopment under a UNDP assisted project. This involved handpicking one officer each from state wildlife wings to prepare the 'PA Management

Plan' and the 'Ecodevelopment Plan' respectively for seven selected PA sites every year. The three-year project comprised an institute-based three-month training followed by the preparation of the two Plans by the trained officers over a nine-month period in the concerned PA. The WII subject-faculty and the specialised external faculty were to help and guide these officers in the field in this exercise. Although the IEDP was on the anvil at this time, the GOI as well as the WB did not opt to make use of this capacity building facility for the project. At the WII ecodevelopment planning has ever since been integrated into the annually offered nine-month Postgraduate Diploma Course and is also on offer as a 'module' to willing and independent takers. As facts brought out later reveal, the WII trainees and faculty members who benefited from this ED training initiative and came to be posted at IEDP and other project sites performed very well in meaningful planning and implementation of ED and also proved to be effective PA leaders.

1.3.2 Staff Placement:

a. The placement of staff (regular as well as contracted) has yielded good results and avoided the over burdening of existing staff with additional responsibilities, which tend to compromise the quality as well as the quantity of the outputs. Two examples as under should suffice:
   - **Periyar**: The placement of an Ecodevelopment Officer with the rank of a DCF and full time contract staff as an Ecologist, Education & Extension Officer and Woman Development Officer resulted in a much needed focus on ecodevelopment and provided excellent support to the Park Director in envisioning strategies and activities that put the project on a firm footing in the Park.
   - **Kanha**: The creation of a buffer division under the charge of a DCF with his full complement of staff devoted full time to ecodevelopment activities has resulted in commendable progress even in the absence of any project-driven support. Consequently, the ecodevelopment effort in Kanha is today an enterprise model for PAs that lack a project driven backup.

1.3.3 Visits, Tours and Training:

a. The projects provided for experience sharing visits, tours and training of senior as well as lower level staff, NGOs and villagers for meeting various project objectives. It included both in situ and ex situ training.
b. The staff most critically needed training in micro planning whereas EDC members needed capacity building in vocational skills and financial skills. It seems that the progress in this component was lagging at most places at the MTR stage (mid 2000) prompting the then WB Mission to observe:

   "Each state should develop a training plan for staff and EDC representatives, which should include a plan for visits to other sites and more formalised training. ……For this purpose they should utilise existing state-level and other institutions, and in-house training facilities and resource persons."

While most sites utilised training opportunities, the outcomes were remarkable, in terms of acquired staff skills and enthusiasm leading to innovative actions, in those sites (*e.g.* Gir and Periyar) where training programmes were held with an identified strategic thrust. As an example, Gir National Park has shown excellent progress in training its staff as well as the NGOs and villagers as exhibited in the table in Annex-3. Gir also utilised the services of SIRD (State Institute of Rural Development) in capacity building of communities in alternate livelihoods in many of their training programmes with good results. Women have benefited from vocational training as well as the formation of SHGs, ably assisted by the women facilitators.

Best Practices - 1

. **Capacity Building of Staff and Local Communities: Gir Conservation Area**

PA management in Gir envisioned the training needs for staff in PA management and ecodevelopment as well as the capacity building needed by the EDCs in collective decision-making and in operation and financial management of their activities and affairs. Also identified were the vocational skills needed by the 'Special Needs Group' among the community in order to successfully pursue alternate livelihoods not depending on the bio-resources of the PA. Gir requisitioned the services of expert institutions from the state and outside to impart these skills directly as well as through 'training of trainers'. The promotion of awareness of the values of the Gir wilderness to the local community as well as to the region spearheaded this effort thereby successfully orienting attitudes of the different stakeholders towards conservation and showing how the project sought to achieve it with social justice.

Regular training programmes were availed of at the WII to train officers and rangers in PA management and ecodevelopment and the same institute was also asked to run field workshops for training field staff as well as some EDC presidents and willing villagers. IRMA (Institute of Rural Management) while carrying out micro planning in selected villages also trained a number of field staff and many local youth in the various micro planning techniques and processes as well as in facilitating collective decision making. Although IRMA opted out of the activity after some 15 micro plans were made, the 'capacity built' staff and the local youth formed 'eco-teams' that completed this exercise in the remaining 40 odd selected villages. The Centre for Environment Education (CEE) formulated and implemented various EE programmes, in particular addressing the value of 'ecosystem services' including the critical aquifer values of Gir PA for the neighbouring community and southern Saurashtra. CEE also trained staff in park interpretation and many educated rural youth as informed park guides.

SIRD (State Institute of Rural Development) was later brought in for capacity building in alternate non-forest dependent livelihoods of the identified SNGs who depended on the PA's bio-resources for livelihoods. These included as diverse vocations as tailoring and embroidery and non-forest dependent cattle rearing besides working for IGAs in SHG mode. Enhancing farmer incomes through improved farming and cattle rearing practices were also some additional aspects of vocational training.

All these very significantly added to the project-implementing efficacy. They also strongly contributed to reducing pressures on the PA as well as to the socioeconomic wellbeing of the local community. A far improved PA-People interface was another positive outcome of this comprehensive capacity building effort.

1.3.4 Infrastructure Development:

Development of infrastructure under various components of the project was provided as under:

a) *PA Management:* Staff quarters, check posts, patrol camps, office buildings, enhanced radio communication network, field vehicles for improved mobility and computers.
b) *Village Infrastructure:* Digging of wells, ponds; construction of anicuts, game proof walls/ trenches; roads; common halls
c) *EE & Awareness Promotion:* Construction of visitor centres, purchase of educational equipment; production of AV material; publication of manuals on ecodevelopment and EE.

In terms of implementation, all sites have benefited from infrastructure development, although in varying degrees.

1.3.5 Reviews:

a. The World Bank Missions: The project provided for WB Missions to supervise the project half-yearly. These review visits have greatly assisted the project performance through timely inputs in the form of advice as well as setting of deadlines and revision of targets. Since the Mission interacted at all the levels of project implementation from the Park to the state and finally the Ministry of Environment and Forests, successive WB teams could act as a good bridge and a monitor of activities at various levels.
b. IPPR: The Intensive Project Performance Review (IPPR) was envisaged as an external stimulus to keep the project on track. Although till the MTR (mid-2000) stage, this consultancy had not been contracted, once it came in place from late 2000 it provided a useful mechanism for a regular project review and monitoring in tune with its major objective:

   ‘Undertake field visits comprising at least twice a year, and provide guidance and advice in matters relating to environmental, socio-economic management and technical issues.’

   Till June 2002 (original closing date of the project) the consultants had made five visits each to all the project sites. Subsequently, with the project having been extended till June 2003, the IPPR was also further extended. The parks, particularly Gir, have reported that they received good assistance from these reports in assessing their progress.

   To this study, however, the extent to which the IPPR exercise actually helped change things on the ground remained unclear. It often appeared that the IPPR was viewed more as a project condition that needed to be complied with, than as a tool to shore up various practices and plug gaps.

1.3.6 Regional Coordination Committees:
The project provided for the constitution of Regional Coordination Committees for each site with the following aim: 'incorporate the concerns of the Park in the regional planning processes so that any developmental activity planned in the district that might have negative impacts on the Park's ecological integrity could be warded off well in time'.

At the MTR stage, it was found that such committees had not been institutionalised at most sites and resultantly the WB review Mission in November 2000 called for the establishment of district level PA coordination committees through a state GO by 31 March 2001.

Now, at the end of the project, although it is found that at most sites these committees are in place but they had not yet become truly functional except at Periyar and to an extent at Palamau.

1.3.7 Impact Monitoring:
The project had envisaged developing for the first time in India a comprehensive ecological and socio-economic impact monitoring strategy for the project in particular and the PA management in general**.** Unfortunately at the MTR stage after evaluation of progress eleven national level consultancies were dropped. This included the development of the impact monitoring strategy. Nevertheless, the contracted staff, ecologists and sociologists have continued to monitor the ecological and socio-economic impact of the project.

1.3.8 Research:
a. The project visualised that the ecological and socio-economic research conducted at various sites would enhance the information base and, as a result, improve the capacity of the Park management to manage the PA better. Barring Ranthambhore, all other IEDP sites have produced a variety of research reports, most of which have been conducted by external researchers/ institutions who had been contracted for this purpose.
b. As was the case with impact monitoring and project performance review, the utility of such research studies for enhancing the capacity of the PA management has been variable. While a few IEDP sites like Periyar, Pench, Nagarhole and Gir contracted and completed the requisite research activities in time to feed their results into the ongoing management plan revision effort, the pace at most parks left much to be desired. In the case of Ranthambhore, the research contracts had not been finalised till late in the project's life.
c. Although research was not an input under MPFP, Kanha has had a long tradition of ecological research that has benefited the Park all through. GHNP and KMTR have meaningfully used FREEP provisions for commissioning good field research by the scientists of the Wildlife Institute of India, which proved of help both in PA management and ecodevelopment. Buxa too has a fairly elaborate system of monitoring fauna.

1.4 Sustainability:

a. The IEDP experience shows that at sites where the quality and quantity of effort at capacity building has been high like at Periyar, Gir, GHNP and KMTR, the results are not only obvious but lasting too. Periyar and Gir have been able to institutionalise the various training efforts for their staff and the villagers. Pench has made commendable efforts. Palamau and Ranthambhore have struggled on this score.

b. One of the remarkable success stories of the project has been the development of tourism at Pench during the course of the project. It is presumed that with good private sector investment and interest the enterprise would only grow further. At a future date, there may be a case to reign in the number of tourists visiting the Park, as is being experienced at many other popular PAs in the country.

c. The capacity of the EDCs at most places to manage their affairs either without the assistance of the forest department or with reduced level of assistance is still questionable. The following observation of the Supervisory Mission (November 2003) is pertinent here:

   "It is important to formalise linkages to other development agencies in order to access supplementary funding for ecodevelopment, improve the management of VDFs to sustain the functioning of the EDCs, enhance capacity and skills of EDC members to consolidate ecodevelopment."

d. A notable finding is that at several sites, despite excellent project achievements there was poor dissemination leading to a lack of ownership of the project not just outside but even within the state forest department. For example Gir, which was one of the better performing sites under the IEDP, could have gained from a wider ownership even within the Gujarat forest department. The PA struggled to complete its micro plans on time and eventually settled for the task to be done by its own staff with assistance from local individuals, both of whom were initially involved in the sample plan preparation with IRMA. The irony here is that the Gujarat forest department has had a long and pioneering history of successfully implementing social forestry in the country, so much so that a special cadre of personnel has been created and specially trained to interface with the people. A Conservator, who was formerly in charge of Gir, observed that in the social forestry wing of the Gujarat Forest Department, such capacity existed within the frontline staff and they could have come to Gir's assistance with ease, had there been a wider ownership for the project within the GFD itself. This emerges as a major lacuna, despite a mandate for 'regional links' and any future project must aim and provide for mechanisms to ensure a wider and fuller ownership of the project within and outside the executing agency or department.

LESSONS

1. *The project has seen exceptional results emanating from good capacity as well as mediocre results arising from a lack of capacity. The study has unequivocally found that wherever the state government was careful in selecting and posting right from the start proven capable officers also trained*

in PA management and ecodevelopment in the lead, the results were excellent and the project directly headed towards attaining its objectives. Such lead officers (park director and officer in charge of ecodevelopment) in all such cases successfully put together good field teams and built capacity for proper planning and implementation of ecodevelopment. They led from the front in initiating dialogue with people, leading to highly focused micro planning with the full participation of various stakeholders. In these processes, they were also successful in enlisting and meaningfully involving NGOs as force multipliers.

2. *Any future project would greatly benefit from a wider ownership and intensive capacity building of all players and the institutions they build or work in as a precursor to any major investment flow from the project.*
3. *For all three areas, monitoring, review and research, it was strongly felt that the outputs of these exercises should be easily accessible to the public at large, particularly to the media and the academic community, so that other parties can engage meaningfully with such projects as force multipliers.*

2. Institutions

2.1: National level institutions

The SAR had recognised that the primary responsibility for project management at the various sites lay with the respective national park/ reserve authorities and with the state governments. Yet the SAR recognised that it was critical that a number of arrangements at the Project Tiger Office (PTO) in the Ministry of Environment and Forests were needed to be made to ensure adequate coordination and a sound monitoring framework. It hence provided for:

(i) Creation of an ecodevelopment wing with adequate staff within the PTO.

(ii) Creation of two national level bodies to steer the project and provide assistance to the PTO:

- The **Ecodevelopment Project Steering Committee** comprising senior MoEF and state forest department officials and representatives of NGOs and other institutions contracted for national-level support, was expected to: (a) facilitate Center-State coordination; provide policy guidance on project activities and work plans; and (c) address conflicts related to application of project guidelines and compliance with project covenants that have not been otherwise resolved by the State Forest Department or MOEF officials.
- The **Ecodevelopment Project Implementation Board** (EPIB) was expected to be an empowered body assigned full financial and administrative powers necessary for (i) programme planning and implementation; and (ii) to ensure that the necessary governmental approvals are processed expeditiously within MOEF.

(iii) The PTO was expected to recruit specialised technical skills to assist it in project monitoring under an intensive project performance review consultancy. This consultancy was expected to provide three full time senior specialists and three full time junior specialists to assist the PTO.

(iv) In addition, a number of key technical assistance consultancies were envisaged, for providing an adequate framework for managing the project. These related to designing: (a) a national level implementation support on research/impact monitoring strategy and national level interchange; (b) project performance review: guidelines and format; (c) multi-state learning and communication on broad project management issues; (d) a framework for project expenditure and procurement review; and (e) impact monitoring guidelines.

(v) Finally, the management arrangements envisaged the engagement of an independent panel of three eminent experts, to report directly to the chairperson of the Project Steering Committee, to undertake an independent review of the project performance.

The ability of the Project Tiger Office (PTO) to steer the project was severely compromised consequent to these arrangements either not being put into place entirely, or being put into place only towards the end of the project. The exact implementation status of the institutional arrangements at the national level is summarised below**:**

a. A full-fledged ecodevelopment wing at the PTO did not get set up. At the time of credit negotiations, it was expected that 10 posts would be set up to assist the Director of PT in project management. At the time of the MTR, only one Joint Director was officially dealing full time with the project. In addition, seven individuals had been recruited as consultants to assist the Director, PTO. However, out of these only four persons were located in the PTO and working on the current project, while three persons were located in another department of the MoEF, and supposedly dealing with future ecodevelopment projects, outside the control of PTO.
b. The Ecodevelopment Project Steering Committee was set up. The Ecodevelopment Project Implementation Board (EPIB) was also set up but did not meet regularly, and in any case was not an empowered body with full financial and administrative powers as envisaged in the SAR.
c. The Intensive Project Performance Review Consultancy was awarded in 2000 and since then the consultants have been submitting periodic reports to the PTO and the respective parks.
d. The MTR points out that the national level implementation support on research/impact monitoring strategy and national level interchange study and the project performance review: guidelines and format were completed, but were hardly utilised.
e. The independent panel of three eminent experts, which was to report directly to the chairperson of the Project Steering Committee, did not get constituted.

2.2: State level institutions

State governments had a fairly pivotal role to play on the conduct of the project insofar as funds from the federal treasury flow to various PAs via state government coffers. PAs such as Ranthambhore (Rajasthan) and Palamau (Bihar

/Jharkhand) experienced serious problems vis-à-vis the flow of funds from respective state treasuries. In fact, Ranthambhore emerged as one of the poorest performers singularly on account of this factor. In a variety of ways, all PAs did experience one or the other interface problem with their respective state governments. Further, the success or otherwise of an ICDP in a particular PA is intricately linked to the policy environment of the concerned state. The lack of an enabling policy environment significantly compromises the efficacy of ICDP interventions.

In this context, it becomes important to dwell upon the institutional structures that can function as an effective facilitator between the PA management and the state government. Though respective Chief Wildlife Wardens have been charged with such a role, the complexity of issues that ICDPs such as the ecodevelopment project face would make it necessary to secure the participation of relatively senior bureaucrats.

Gujarat has made an attempt on these lines by setting up a state level committee under the chairmanship of the Principal Secretary (forests). This body has primarily been created to facilitate the regional planning process. However, this might be a useful precedent to follow in the future by incorporating changes to widen the jurisdiction of the committee

2.3. PA level institutions

2.3.1 The major steps taken in Kanha, Periyar and KMTR relate to the appointment of an officer of the rank of a DCF as the ecodevelopment officer (Dy. Director in charge of the buffer division in the case of Kanha). Such an arrangement did not entail any additional drag upon the resources of the state, but only reorganisation of the existing institutional arrangement at the PA level. Most parks under the project (with the exception of GHNP) have an arrangement that is overseen by an officer of the rank of Conservator, assisted by two DCF level officers. The DCFs are usually assigned posts based on the geography of the reserve, with each officer being given charge of a part of the reserve. Kanha, KMTR and Periyar instead chose a thematic division of labour with one DCF in charge of ecodevelopment operations while the other usually dealt with PA management related tasks. Such a system was found to have the following advantages:

- A uniform approach is applied throughout the reserve based upon the individual officer's understanding of the ecodevelopment concept.
- The officer in charge of ecodevelopment can devote himself / herself exclusively to engineering the complex process that ecodevelopment is. It was felt that the officers not specifically tasked with the ED activities in the Park were figuratively "torn" between the responsibilities of PA management and ecodevelopment and invariably one of the two ended up suffering.

- It becomes useful to place an officer with the necessary orientation and training for community-based activities and people-centred development if the ecodevelopment activities are to be coordinated by him/her.

Best Practices - 2

Creating a Unified Buffer Division: Kanha

Not many tracts in India have as contiguous a forested wilderness as the Central Highlands region straddling the Satpura and Vindhyan mountain ranges with small and large valleys and plateaus providing a marked physiognomic feature. All large and most medium-sized valleys and some plateaus carry age-old human habitations. Interspersion of such bio-resources dependent communities through this wilderness imposes a telling dimension on PA management, more so when the aim is conserving a 'flagship' species *e.g.* tiger and the overall biodiversity of 'old growth' and 'secondary' ecosystems the 'flagship' represents. Project Tiger with such a goal envisaged a 'core-buffer' zoning strategy for PA management in this challenging situation for field conservation.

Buffer Zone (BZ) is essentially seen as a two-way impact moderation zone around an important PA such as the Kanha Tiger Reserve, covering a total area of 1,945 sq. km . The core zone (CZ) of 940 sq. km, a legally constituted National Park (NP), is buffered by a total area of 1,005 sq. km, of which about 60 per cent comprises reserved forests and the rest, villages. The two-way buffering is mainly offered by the forested part where the people affected by restrictions on access to bio-resources within the NP can find such resources. At the same time, the BZ is a potential provider of critical habitat to the wild animals dispersing from the CZ and thus helps reduce damage to crops and livestock in the villages from wild herbivores and predators. The BZ habitats also serve as 'penumbra' habitats and critical 'corridor-links' for the full range of biodiversity in this extensive wilderness region.

Ecodevelopment is an inevitable strategy for BZ management insofar as the human dimension of the PA management is concerned. While forestry operations are prohibited inside the CZ, those in the BZ should ideally serve the twin objective catering to both biodiversity and the local communities. On the main PA management side, extending the protection and habitat-ameliorative management to BZ is essential. At the same time, such operations must also facilitate meeting the community needs for bio-resources. Both these goals ordain subordination of the 'commercial forestry' objective, which normally rules in the valuable timber forests occurring in this region.

In order to achieve this twin objective the management of both CZ and BZ needed to be closely integrated in such a way that the latter complemented the 'integrity' and the regional ecological connectivity of the former and in doing so it did not preclude 'social justice *vis a vis* the local communities'. Kanha Tiger Reserve is the only tiger reserve in the country that has a unified buffer division with such an operational strategic thrust. Under the new integrated management plan for the whole tiger reserve, the BZ effectively provides the social and extension buffering aided by public cooperation facilitated by ecodevelopment inputs in the target villages and reoriented forestry operations to serve both biodiversity and community concerns.

Other than the cardinal thematic change in management strategy, the most notable operative feature of this integrated management is the division of functions between two senior park executives (Deputy Directors - DD) of the rank of Deputy Conservator of Forests under the field director who is the chief executive with the rank of Conservator of Forests. One DD with his full complement of staff is solely responsible for the overall protection and wildlife management aspects, whereas the other DD with his similarly dedicated staff looks after ecodevelopment and conflict mitigation. Kanha, thus, presents a model in PA management as germane to developing countries like India where the resource dependence of the communities interspersed through wilderness must be taken care of alongside managing the PAs for biodiversity conservation.

2.3.2 An alternate view to this is built around the argument that if ecodevelopment is to effectively contribute towards conservation in general and PA management in particular, the individual responsible for PA management processes should also handle ecodevelopment operations in order to bring about a consonance between the two. A bifurcation of responsibility between these two functions could result in a disjoint where ecodevelopment might yield social development outcomes but no significant conservation successes. This view has been countered by the argument that conservation outcomes are implicit within social development successes. In any case, both sets of personnel (those handling PA management and those dealing with ecodevelopment) would function under a unified administrative control that would effect the necessary coordination.

2.3.3 Regional committees – these were meant to serve as bulwarks against larger threats to the park emanating from the surrounding landscape over which park managements do not have direct control. District collectors were designated chairpersons of such regional committees and it was hoped that such committees would be able to influence and moderate land use activities on the periphery of reserves that may go against the interest of biodiversity conservation. While these committees have been set up at many sites, non-forest department authorities appeared reluctant to participate in the regional committees, probably in the absence of any tangible gains for their respective departments. There have, however, been isolated cases of success such as in Palamau, where the regional committee has been able to ensure that the threat posed to elephants by trains has been reduced substantially.

2.3.4. At the PA level, frontline forest department staff formed the backbone of the project. At sites like Palamau, the project was pivoted on the efforts of the frontline staff as the prevalent law and order situation hindered active participation of senior personnel. In any case, the provision of member secretary necessitated active participation of the frontline personnel, particularly forest guards and foresters.

Unfortunately in a very large number of cases it was found that whereas frontline personnel were saddled with a variety of responsibilities, often they were not adequately equipped (in terms of skills) to be able to diligently execute these. This was particularly observed in situations where the staff was called upon to play the role of social facilitators for mobilising EDCs and SHGs. This point has been additionally dealt with in the section on capacity.

2.4. Village level institutions (EDCs / FPCs / SHGs)

2.4.1 Where enabling government orders have preceded micro planning and formation of EDCs / FPCs (also emphasised elsewhere in the report) and have been implemented by committed project leaders and field staff, the result has been equity, social acceptability and sustainability of the concerned institutions. For

example, in KMTR and Periyar, the state government concerned issued orders authorising processes and the setting up of empowered EDCs with clear constitutional features and appropriate roles for people, park staff and NGOs. These orders specifically prescribed enlisting EDC members from all social and economic classes, giving priority to poor and women. In a majority of EDCs, membership and participation by women and poor is high and this is true of executive committees and SHGs.

Best Practices - 3
Three Types of Specialised EDCs: Periyar

A remarkable example from Periyar is the constitution of EDCs and their categorisation on the basis of occupational patterns, geographic settings and dependency levels. The EDCs were constituted in three categories, *i.e.* Neighbourhood, User Group and Professional Group EDCs. *Neighbourhood* EDCs were formed at the village level and covered all families in the village. Their micro plans focused on support to agriculture and economic upliftment. *User group EDCs* comprised members heavily dependent on PA resources. The focus here was on reduction of negative impacts of people on the PA by facilitating alternate livelihoods not dependent on forests. The members of such EDCs were identified because of their link with a particular PA resource and they did not necessarily belong to one settlement. *Professional group EDCs* were constituted for promoting livelihoods with a potential for long-term positive interaction with and support in PA management activities like protection, habitat management and ecotourism. Membership in this category was directed to 'individuals' or 'groups' with a history of close interaction (even negative, *e.g.* theft of spices from the PA) and intimate knowledge of the PA .

Neighbourhood EDC members were helped by micro credit so that they could be released from the 'debt trap' of moneylenders, who grabbed their farm produce for a pittance. Individuals and SHGs also used micro credits to take up organic farming with better quality and higher yields of farm crops, *e.g.* pepper, tapioca, which raised their farm incomes. They also undertook new IGAs like apiculture and vermi-composting. *User Group EDCs* mainly focussed on alternate significantly women-centric IGAs, *e.g.* pickle making, papad making, detergent manufacturing and tailoring. Periyar excelled by setting up 157 all-women SHGs mainly involved in alternate IGAs and group farming.

The *Professional Group EDCs* were centred on skills and knowledge of the reserve possessed by some tribal youth and other individuals. Such skills covered jungle craft such as trekking through forests during day and night, river rafting on 'bamboo rafts' backed by intimate knowledge of the lie of the land and of avoidance of 'jungle hazards'. Through the EDC, these skills and knowledge of these individuals were put to use as they were turning into trekking guides and conductors of adventure trips such as river rafting. These 'professional activities' yielded handsome returns, which not only provided remuneration as guides but also enabled wage employment in protection patrolling in the park. The latter was a remarkable example of discharging 'reciprocal commitment', far superior to the 25 per cent cash or kind contribution.

In fact, motivated by the significant benefits accruing to the people as well as the park through the programme, a self-financing EDC called *Tribal Heritage EDC* has come into existence at the initiative of the communities, which augurs firm self-reliance. The Periyar innovation with EDCs with specialised objectives is path-breaking, and its results are highly positive in favour of communities as well as conservation. They certainly provide a bright torch for other PAs to find a right path in synergic participation of people and park personnel with innovation to accord with their local situation..

2.4.2 The GOs establishing the EDC in most states tended to focus essentially on village level institutions and were silent on state level and PA level bodies. However, largely as a mid-course correction, some States later came up with specific enabling GOs creating institutional mechanisms at the regional and the state levels for better implementation of the Project. In Periyar after reviewing the progress of the project, it was felt by the department that "the implementing officers are finding it difficult to implement the project due to lack of delegation of powers and lack of high level co-ordination committee". This necessitated setting up of a high-powered committee for the smooth implementation of the project activities and for taking decisions requiring approval at the government level. Thus the *Eco-development Coordination Committee* came to be set up, with the Principal Secretary as the chairperson. The committee functioned according to the administrative sanction of the project, ensuring co-ordination with other government departments and NGOs and taking decision for the Forest department where the latter is not able to take decisions for want of delegation of power. The Committee was also to review the work of Ecodevelopment Implementation Committee. This committee, headed by the Field Director and including other government officials apart from two chairpersons from the EDCs, was created to oversee the implementation of the project. Likewise, in KMTR too, both the Project Implementation Committee and a High Level Empowered Committee were set up and functioned effectively.

2.4.3 Some efforts were made to institutionalise the process of regional development planning for the PAs and the surrounding villages. For instance, a state level committee has been created in Gir through a separate GO in 2002, with the specific mandate "to prepare a consolidated regional development plan covering the area of Gir National Park and the area of surrounding villages". The committee is also empowered to decide the activities to be undertaken by other line departments, including the Forest Department, and incorporate these in the said plan. In MP there is a provision for constituting a co-ordination committee headed by the chairperson of the forest standing committee of the district Panchayat for the coordination of the activities to be executed through the micro-plan in each district. In view of the fact that other states like Jharkhand for Palamau are also contemplating the need to formalise a Regional Planning Committee, it is critical to assess the efficacy of such institutional mechanisms and share their experience across all the sites.

2.4.4 The Member Secretary of EDC- The present status of project implementation suggests that the role of the 'member secretary' (forest guard or the forester) should continue in the interim, till a MP like mechanism can be universalised. This member secretary has a vital role as a facilitator for nurturing the linkages that have been established with the community as also for maintaining a fair balance between the stakes of the community and the park.

Best Practices - 4
Transfer of responsibility – Joint Secretary in Kanha and Pench (MP)

Notably in MP while the beat guard or the forester in charge is the ex-officio member secretary of the Executive Committee of the EDC, there is a provision for a Joint Secretary, who is selected from the committee, preferably from the SCs / STs communities. The said Joint Secretary takes over as the member secretary once he gains proficiency in work. It is a welcome step because it ensures that the member of village community shoulders this responsibility only when he is competent and experienced to manage the affairs of the EDC on his own. However, no time limit has been prescribed for this, thus it is left entirely to the discretion of the FD to determine whether or not the Joint Secretary is competent to take over. Perhaps the EDC can by a collective decision decide when the individual is ready to shoulder the responsibility. Even when an EDC member takes over as the Member Secretary, the concerned forester or the Forest Guard who earlier shouldered this job should continue to be a member of the EDC. This would ensure the sustainability of the link with the FD, which is vital for ecodevelopment to remain contextually keyed to the PA at all times. It is critical to take a position on the member Secretary for all the sites in the Project, though considering the variations in different states no uniform stipulation is advisable.

2.4.5 The project aggressively promoted women based Self-Help Groups (SHGs) - institutions that facilitate women to organise themselves in groups and undertake micro credit activities using the money from VDF as well as what they have themselves saved. In the IEDP experience, as also elsewhere, SHGs hold promise for self-reliant continuation and hence sustainability of a number of social development initiatives. The main lessons from the SHG experience are:

- Even in these closing stages of IEDP or a recent closure as in case of FREEP, a number of SHGs need support in capacity building and facilitation of activities. At GHNP, for instance, SHGs require capacity building in rotation of funds among members, in value addition and marketing of products and in rotating leadership and bookkeeping responsibilities. In Ranthambhore, most SHGs, which are of very recent origin, need to be guided and supervised well after the project ends so that utilisation of funds is both proper and result oriented. However, KMTR and Periyar stand out as exceptions because the SHGs there have become strong and are well settled in managing their affairs with responsibility and competence.
- The SHG concept has been around for a number of years in the social development sector and there are well-established best practice principles that have evolved over time. However, in a number of cases, the SHGs being facilitated as part of the ecodevelopment project (GHNP, Gir and Palamau) seemed to be attempting to reinvent the proverbial wheel instead of drawing upon existing knowledge and experience. Often, it appeared that the facilitators (usually the women organisers and/or the local forester/forest guard) were unfamiliar with the vast pool of knowledge and resources that exist in this sphere. For the future, it would be instructive to plan exposure visits not just to other PAs but also to sites of robust social development initiatives that have been based upon the SHG concept. In the event of human resource constraints at the PA level, suitable NGOs could be recruited to bring in these best practices, which are critical to success and sustainability of SHG

based mobilisation of women. Buxa has, in the recent past, contracted CARE, a well-known development organisation, to help with capacity building of its SHGs.

- Identification of IGAs directed at enhancing family incomes, while reducing forest dependence, must keep in view that their potential must not depend too much on technical requirements of value addition and overcoming snags in marketing. For example, the cultivation of medicinal plants by SHGs does potentially serve the twin purpose outlined above, but its success would depend on the park management's ability to provide effective value addition and marketing support at least in the initial years. This emerges very clearly from the GHNP experience.
- Clear-cut norms need to be worked out in order to dovetail SHG functioning under the umbrella of the EDCs, and with the overall panchayati raj institutions. For example, in GHNP an SHG president is a member, *ipso facto*, of the executive committee of the EDC, and the EDCs are being formed with the ward panchayat as the basic unit, to ease dovetailing.

2.5 Role of Professional Assistance including NGO Support

2.5.1 The design of the IEDP had provided for NGOs to be involved in the process of micro planning and micro plan implementation. To quote the SAR:

"For each state forest department, domestic third party (contractual) implementation support would include:

- Direct administrative support and services (for the initial period of project start up and implementation)
- Full time specialists in ecology and in social science and, in some cases in management information system operation
- Specialists for visitor and eco tourism and financial sustainability studies
- Specialists (including NGOs) in participatory planning to be members of village ecodevelopment micro planning support teams
- Research and monitoring specialists working on biological, social, technical, financial and institutional aspects
- Trainers"

2.5.2 This was predominantly for three reasons:

a. Forest department personnel may not all have the needed complement of skills necessary to implement the social dimensions of the project in their true spirit.
b. The forest department staff has a number of other responsibilities and if experienced professional personnel are available at hand to assist with various project components functions, it would mitigate the additional burden the forest staff is likely to feel as a consequence of additional IEDP related responsibilities.
c. A genuine and credible NGO could play the role of a facilitator as well as of a watchdog, the latter in order to discourage deviant elements from within the

local communities and the department from negatively impacting the ecodevelopment process.

What actually transpired and the results it threw up provide a mixed bag of experience. The MTR succinctly summarises the experience with the involvement of NGOs in the project as follows:
'While the village ecodevelopment component is one of the core activities under the project, it was recognised at the outset that the project implementing agencies at the local level, i.e. PA management units had little or no experience in undertaking this component. Therefore, provision was made in terms of support for this component from experienced NGOs and other institutions of repute who would be contracted to build capacity in the PA management units for this purpose. Unfortunately while such specialist agencies were contracted by PA management at several sites, the experience with these agencies has been by and large disappointing and the PA management in most sites (with the probable exception of a couple of PA sites) has had to undertake implementation of this component on its own."

2.5.3 The IEDP experience with tapping professional expertise has been a mixed one, and can be summarised as under:

i. In some cases (for instance in Buxa and Nagarhole during the micro planning stage), NGO(s) that were contracted were not up to the task at hand and actually performed extremely poorly. Their contracts had to be discontinued. However, Buxa had contracted more than one NGO for micro planning support and other NGOs continued to assist in micro planning and subsequently in capacity building of EDCs / SHGs on various dimensions.
ii. In the case of Palamau, even though a local NGO that had previously worked with the PA management and had also carried out indicative planning was available, it could not be contracted as a consequence of fund flow problems. It is however not clear why after 2000 when the fund flow constraint reduced, the NGO could not be contracted for assistance with the implementation of micro plans.
iii. The case of Gir, where a prominent academic institution was contracted for micro planning, is a useful illustration for a variety of reasons. The personnel of this institution were apparently taking too long over the micro planning process and this meant that Gir was getting left behind in the financial and physical targets it was supposed to meet. The institution, on its part, argued that micro planning is a process that cannot be artificially induced or accelerated. As a people centric process it has to move at the pace at which the people are willing to take it. The forest department held a number of meetings with the concerned institution's personnel, but this issue could not be resolved and hence the contract had to be revoked. The forest department staff, which had gained some experience by working with this institution, was subsequently entrusted with micro planning with the help of 'eco teams'

comprising mainly individuals also similarly earlier involved in micro planning.

iv. There is an apprehension among the forest department that NGOs/agencies contracted might end up working against the interests of the project -- for instance, if the project ideology clashed with that of the NGO. Apprehensions have been expressed that agencies attempting to play out their philosophical agendas might sabotage the project. There are also apprehensions that NGOs might attempt to gain mileage out of their involvement with projects such as these.

v. Periyar and KMTR have demonstrated remarkable NGO involvement and the benefits flowing from such professional handholding have been apparent. In fact, in both these cases, a number of local NGOs brought on board with them a variety of skills and became a part of the project. Their skills were utilised both at the stage of micro planning as well as for implementation assistance. A booklet documenting the ecodevelopment experience in KMTR brought out by the WWF clearly demonstrates the efficacy of the use of NGOs for assistance in social mobilisation and for the provision of a variety of services to the VFCs (as EDCs have been referred to in KMTR) such as bookkeeping and financial services. Similarly, the role played by SAHARA in the case of GHNP, where it has provided a host of handholding services to SHGs is demonstrative of the need and utility of professional assistance.

vi. PAs have attempted to bring on board social development expertise by appointing contractual staff (EDOs in Palamau, Periyar and KMTR and Eco teams in Gir) for assisting the forest staff with various social dimensions of the project, particularly with regard to mobilisation of women. Such initiatives have to be acknowledged as a significant attempt to address this issue. However, the appointment of contractual staff is a poor substitute for a professional development agency for the pool of expertise and more importantly experience that it brings. Further, contractual staff is very small in number – three or four for each PA. The sort of social processes that one is referring to require intensive mobilisation through repeated meetings. On an average, each mobiliser would be able to handle not more than 4-5 villages (depending, of course, upon the size and population of the villages). However, there is usually a problem identifying and engaging credible NGOs in several regions.

2.6 Linkage between EDC and Panchayat

2.6.1 At the project design stage, it was felt that EDCs may not correspond to the Panchayat structure, due to their smaller size and differences between administrative and natural resource management boundaries. In this regard, fears have been expressed that forest management organisations don't fit well with systems of local governance and thus linking them to Panchayats could undermine both their independence and effectiveness. However, post the 73rd Amendment, there now exists a categorical constitutional mandate with the Panchayat Raj institutions even for social forestry and general management of

natural resources, and it is too late in the day to have a view that their presence could be ignored. The GOs on ecodevelopment seem to reflect this position to an extent. In MP and Jharkhand – and, thus, for Kanha, Pench and Palamau -- the introduction of ecodevelopment (as also the JFM) is to be carried out first in the G*ram sabha* and EDCs are constituted in the Gram sabha meeting convened according to the respective panchayat statutes. In Buxa, there are provisions for more active involvement of panchayats. Here, the sub-committee of the *Panchayat samiti* and *Zilla Parishad* named "*bon-o-bhumi sanskar sthayee samiti*" is mandated to play an important role. This sub-committee of the Panchayat Samiti is to be consulted while constituting and disbanding EDCs/EC even while a committee of the Zilla Parishad monitors, supervises or reviews the functions of the EDCs. The experience of the EDCs with the said committee of the Panchayat Samiti is one area that needs to be studied closely to ascertain the implications of the EDC-PRI linkages for all the PA sites in the project. Another example of a visible representation of Panchayat functionaries in ecodevelopment can be seen in GHNP, where a VFDS are constituted for a Gram Panchayat ward. All voters of a Gram Panchayat ward shall be entitled to be enrolled as members of the society. Further, a representative of the local Panchayat is also included in the "Conflict Resolution Group".

2.6.2 The above provisions also show that even though at the project design stage, it was only envisaged that 'some states are likely to include the local representative of Gram Panchayat,' the government orders in certain states, themselves, have gone well beyond this expectation. However, it was also apprehended at the design stage that the recently introduced Panchayat Raj Acts might eventually affect the project's village level institutional structures. If the effect of these laws has not been reflected in the EDCs as much as it should have in the project period, the major reason has to be the fact that most of the provisions on Panchayats relating to natural resources management have remained on paper.

2.6.3 Perhaps one area where the strategic significance of Panchayats for ecodevelopment has been repeatedly emphasised relates to the capacity of the Panchayati Raj institutions to mobilise funds for village level development activities. In Periyar, there are suggestions that although the EDCs have local panchayat member in their executive committees, it is not enough to provide them access to funds available with the Panchayats. Field visits to certain villages, like some in Gir where the EDC President was also the Panchayat Sarpanch, showed that he has been able to leverage funds from other state government schemes to enable the villages to build pucca houses or get plots of land in certain cases. Examples could also be found in Ranthambhore of representation of Panchayat members in the EDCs. The villagers present in stakeholders meeting (conducted in the course of the present assignment) expressed the collective opinion that EDCs can appreciate the significance of linking conservation with development much better than Panchayats, and thus both institutions have their own role to

play. However, it was stressed that in cases where the entire village's support is required on some issues – as providing access to safe drinking water -- the panchayat can and must be involved to play a central role in conflict resolution and coordination. Also, duplication of activities needs to be avoided, calling for cooperation between panchayats and EDCs. There is also a question of the Panchayat's ability to leverage funds for activities that reduce pressures on the PAs.

2.7 Sustainability of Village level institutions

2.7.1 Performance on this front varies considerably across sites, but in no site has consolidation reached the levels achieved in Periyar and KMTR. In GHNP, when the FREEP was in currency, most activities did not conform to the true strategy of ecodevelopment. It is only in the post FREEP period that the facets of true ecodevelopment have emerged. In the past year, the PA management has begun taking steps to enhance the participation of women SHG members in the EDCs being formed at the ward panchayat level, so that effective integration between SHGs at the sub-village level and EDCs at the village/ward panchayat level can be brought about over time.

2.7.2 In Palamau prevailing Naxalism has compromised the ability of the park management to meaningfully implement the project. To compound this, until 2000 (when Palamau was a part of Bihar), fund flow was a severe impediment. Money released at the fag end of the fiscal could hardly be used in ED activities, which required people's participation. The situation has eased since 2001 after Palamau became a part of Jharkhand. However, at present the institutional structures and processes are in infancy and the park management in association with credible NGOs shall have to strive hard for making proper and really participatory micro plans.

2.7.3 In Kanha, the EDCs are quite active and since the park did not benefit from any major grant in project mode for village ecodevelopment, it has maintained a slow but steady rate of activities permitted by funds as they come via annual assistance under Project Tiger. Since there is an independent Deputy Director for the park's buffer zone who looks after the ED activities, organisationally there is consistency. This enabling help and the awareness among some EDC members thus assures proper EDC functioning. Other than pressure mitigation activities, *e.g.* biogas plants for individual households, most activities have followed a community benefit mode rather than the individual beneficiary mode. Perhaps, more effort is needed to involve weaker sections and women in activities and in this context, the SHG mode for IGAs needs to be encouraged.

2.7.4 At all sites, barring KMTR, Periyar and GHNP, by and large the power equations prevailing in village society appear to have permeated the EDCs/FPCs (Forest Protection Committees). The immediate implication of such concentration of power is that the EDC's leadership gets concentrated within the "creamy layer"

and also becomes static. In this situation, voices of the poor and backward remain subdued and this seems to have the following implications:

- The village level ED institutions remain heavily dependent on the forest department for momentum, direction and initiative.
- Institutional stability and functioning depends on continued infusion of funds by the park management.

The project provision for a mandatory contribution of 25 per cent in 'individual beneficiary' mode also caused a majority of the poor to be left out from even becoming EDC members in some PAs, *e.g.* Nagarhole. The desired priority of benefiting the poorer and weaker sections through ecodevelopment, in such a situation, may get sidelined. If this compromises the efficacy of provisioning of alternatives to the poorer for forest dependent livelihoods, as is likely to be the case, sustainability as well as the very purpose of creation of EDCs will be compromised.

LESSONS:

1. *The fact that the institutional set up as envisaged by the SAR for an efficient execution of the project at the national level did not materialise is a sad commentary on the Central Government's commitment to the project. There is no question that in the absence of the visualised and agreed arrangements coming into force both the 'watchdog' and the 'counselling' functions on behalf of the key 'national level stakeholder' remained weak and this did undermine the implementation efficacy of the project, particularly at sites where the PA level leaders were of equivocal competence and commitment. The posting of the right kind of key personnel and problem solving for them at the GOI and State level could have been better. If the originally envisaged project 'steering committee' and 'implementation board' were in place and became functional in the early stages of the project, it would have helped. The 'next to nothing' level professional and administration support at the PTO also severely undermined its ability to exercise the needed control and provide backup to the field teams. It may be necessary to provide a stipulation in any future project that the World Bank and the MOEF remain bound not to allow any major fund-flow unless the committed institutional arrangements are in place and become operational.*
2. *Empowered national level institutional arrangements would also contribute significantly towards ensuring that the learnings from projects like the IEDP are suitably mainstreamed in existing government programmes. The Government of India, for instance, instituted a scheme in 1991-92 that makes funds available for ecodevelopment to various PAs in the country. An evaluation of the performance of this scheme in 1996-97 by the Centre for Environment Education, Ahmedabad pointed out a number of shortcomings in its execution. For instance, there was a lack of systematic planning on the part of a large number of PAs that have accessed funds through this scheme. The IEDP pioneered a fairly elaborate planning mechanism that could be adopted by the CSS. In general, the CSS could be modified using the lessons*

emerging from the IEDO. The role of an empowered national level institution could be instrumental in ensuring that the experience of projects such as the IEDP feed into the larger conservation policy and practice of the country.

3. *A state level coordinating mechanism would greatly enhance the ability of PA managers to deliver requisite results. The state level committee set up by Gujarat provides some initial ideas on how this can be done.*
4. *For future projects it is imperative that individuals who are either adequately trained or have shown firm belief in the ecodevelopment philosophy lead project sites. This seems to be a sufficient as well as a necessary condition for success in such an initiative. This is not to belittle or find faults with any individual but only to emphasise that special thematic projects require special skills and orientation and the 'best fit' always delivers.*
5. *It has been suggested that one way of overcoming the reluctance of the line departments in participating in regional committees (or other similar mechanisms) could be to create a tangible stake for other departments in projects like IEDP where some funds (say for infrastructure support or capacity building) could then flow to the EDCs through these departments.*
6. *The necessity of adequate capacity building at various levels of institutions for their sustainability cannot be over emphasised.*
7. *It is useful and necessary to have credible NGOs complement the PA staff with skills in the socio-economic domain, especially when transparent, genuine and equal participation of all sections of the community is an important requisite as in case of ecodevelopment. Across the 10 sites, the varied experience has demonstrated that credible NGOs have proved to be strong and positive force multipliers, whereas poorly motivated and poorly skilled NGOs proved to be counterproductive to the project ethos and its functional efficacy. By corollary, another important lesson is that some effort at the national level project management would be critical in this matter for sites where credible NGO support is not to be found. Perhaps efforts may be needed to prevail upon some national or regional NGOs to open 'dedicated units' for such sites to come on board right at the initial planning stage through the entire project-term, with suitable corrective safeguards if needed.*
8. *It clearly emerges from all PAs that while engaging the community in institution building, small, sub-village level homogenous groups function much better compared to large, village level heterogeneous ones. Further, the history of institution building in the social development sector has demonstrated the relative advantage that small groups based on affinity have over larger ones. There is also evidence that where such groups are women based, they tend to perform much better than male groups or mixed gender assemblages. Based on this experience, it is suggested that in areas where the extant social and political equations appear not to be conducive to the sensitivities of 'equity and gender' concerns, a more flexible model of institution building for future projects may run along the following lines:*
    - *Groups of people with similar characteristics, e.g., caste, creed, sex, occupation, geographical area, place of origin, language, income levels*

and age can be deemed to have some affinity. Such small groups based on affinity and preferably comprising women can herald the institution building process better and undertake meaningful micro planning.

- *Once women based groups have stabilised and have been carrying out activities for a certain period of time, male groups or village level groups can also be initiated. It has been observed that when such village level groups or male groups, have the precedent of a well functioning women's group to follow, they tend to do much better than situations where there have been no prior effectively functioning institutions.*
- *Such an arrangement will intrinsically address gender issues as well.*
- *It must be emphasised that as far as people's institutions are concerned, it is not possible to lay out blueprints, especially where sites are geographically separated and are thus prone to the cultural diversity that follows geographical distribution in a country like India. It is therefore important that PA managements have the flexibility to engineer the sort of institutions that a particular site requires. Further, it is imperative to make available sound social development and institution building expertise to PA managements in order to facilitate the formation of appropriate institutions.*

3. Management Planning

3.1 In the IEDP, as well as FREEP, the project design envisaged improvement in PA management, which included preparation of a proper scientific management plan, if one had not been prepared already. The plan prepared had to appraise the appropriateness and strength of the ecodevelopment measures proposed under the main project *vis-a-vis* PA management objectives. It was by corollary required to suggest any changes if needed in these measures, and to integrate these with corresponding management measures suggested in the plan. In addition, both projects provided for infrastructure and equipment support in order to increase the efficacy of operational management including protection against poaching and fires. The tenth site, Kanha Tiger Reserve (KTR) already has had a long tradition of scientific management since 1965, when the first management plan was prepared. Thus, in all the 10 PA sites covered by this study, improvement in the management of PA through a competent management plan was considered an essential requirement of the project.

3.2 The quality of the plan available or prepared varies considerably. Among the IEDP sites Periyar, Nagarhole, Buxa, Gir and Pench plans are adequate. Co-relationship with ecodevelopment is somewhat weak in the case of Ranthambhore, though habitat management has been well provided for. The Palamau plan is diffused in focus and does little justice to the needed habitat amelioration and its correlation with ecodevelopment. As for Kalakkad-Mundanthurai TR (KMTR) and Great Himalayan NP (GHNP), both FREEP sites, the excellent research backup provided by researchers from the Wildlife Institute of India (WII) was used in improving management on course. However,

management plans for both based on this research and their own experience and knowledge are still in the process of being written by the concerned park directors.

Kanha Tiger Reserve (KTR) has had a long history of high quality scientific management. Its third successive scientific management plan has been recently prepared and is under implementation. With the transfer of BZ to the direct control of the field director and management compatible ecodevelopment inputs funded by Project Tiger, KTR presents a good model for emulation by other sites.

3.3 The implementation experience with regard to management planning can be summarised PA-wise as follows:

3.3.1 Periyar TR: The Kerala State Forest Research Institute (KFRI), as a part of IEDP in PTR revised the management plan made earlier under Project Tiger. This new Plan for 10 years (2000-2010) has already been put to implementation. Remote Sensing and GIS based maps effectively display various biological, infrastructural and plan features, *e.g.*, management-zoning, fire control. Notably, it links up PA management with ecodevelopment as envisioned under the IEDP. For an otherwise fairly good plan, map referencing with details of places, roads, trek-paths and pilgrim routes within the BZ is somewhat inadequate or vague. Details on the maps are often visibly not keyed to those tabulated in the text. Prescribed burning of grasslands is rather *ad hoc* as it does not seem to be based on any research or management-trials on the impact of fires on species composition and relative abundance of palatable, less palatable and non-palatable species. Valid interstate issues with Tamil Nadu have been raised but until needed steps are taken by that state, measures to be taken in the interim have not been clearly laid out. With ecodevelopment support from IEDP, pressures on the PA have been effectively reduced and the Plan has made some valuable suggestions on consolidation of institutional structures.

Best Practices – 5
Effective Management Planning: Periyar

In Periyar, the processes in making of the Management Plan itself - apart from the contents of the Plan - deserve a special mention. Inputs from specialist staff, consultancy studies especially on baseline mapping (using remote sensing and GIS techniques), enclave management, visitor management, financial and social sustainability studies, and staff training improved the entire process of management planning. Participatory stakeholder workshops broadened the involvement of local people and outside support groups in this process. The management plan was prepared through this process incorporating the issues of landscape management and needed research in addition to the opinions provided by fringe area communities.

This enabled the management plan to have a number of new dimensions in its approach and strategies. These included careful and realistic constitution of 'main' core zone and 'satellitic' core zones covering sensitive areas, constitution of extended buffer zone and separate Sabarimala pilgrimage zone, ecotourism zone and cattle grazing zones. Specific habitat management strategies are also provided and there is an emphasis on institutional arrangements for decentralisation of management and involvement of local communities in PA management as well as their improved livelihoods. The plan has picked up the experience based 'evolution' of the 'Range' level and 'PA' level federations of EDCs for more democratic and institutionalized collective decision making with transparency.

In addition, specific access rules have been formulated based on participatory micro planning. These rules cover the collection of fuel wood, thatching and fodder grass, protection oriented camping and guide services in the tourism zone, manufacturing handicrafts using reeds and bamboo, catering services for Sabarimala pilgrims on the traditional routes of Sabarimala and regulated fishing by the tribals in Periyar Lake. The department feels that the management plan is also appropriately outward looking and focuses on the landscape issues, which are crucial for the long-term conservation of PTR.

3.3.2 Nagarhole NP: An experienced and competent project consultant has prepared a comprehensive and well written management plan, using specially commissioned multi-layer remote sensing maps and GIS analysis keyed to a number of relevant parameters. Threats and constraints have been correctly identified and mitigation measures proposed with suggestions for technique follow up operations keyed to site priority as in the case of weed eradication. On the habitat side, weed abundance, monoculture plantations of teak and eucalyptus and water scarcity have been identified as main problems. Because of the national park status, reducing monocultures and promoting native species of trees and shrubs has been proposed. Eucalyptus being an exotic species, its departmental removal and allowing use (non-commercial) by fringe villages has been rightly proposed. As for teak, which is a native species reduction has been proposed along initial management trials but no time bound action plan has been given.

We suggest that reduction in proportion of plantation teak to natural abundance levels should be prescribed in a planned manner over a 30-40 year period with simultaneous and concerted effort to plant native trees, shrubs and bamboo backed by adequate protection and follow-up operations. The net proceeds from

the sale of teak obtained from these operations after deducting expenses should be credited to a specially set up integrated 'Park and Local People Welfare Fund' (trust fund). Its dedicated use in village ecodevelopment, well provided relocation of *hadis* and PA management activities (excluding regular staff salaries) can be acceptable as a non-commercial use in terms of Section 35(6) of the Wildlife Protection Act. This has the potential to make NNP financially self reliant for several decades.

Given its known history of a drop in the water table due to the upstream appropriation in Coorg region of major watercourses, another suggestion is to enlarge the scope of 'water facilitation' as prescribed in the management plan, to the level of planned aquifer recharge operations within the park, addressing main and tributary watersheds. There is certainly scope for lantana suppression in the fringe areas by allowing the use of twigs and rootstock for making 'fire briquettes' for tobacco curing, as there is great demand for these in the area. Since villagers are at present buying these through the Tobacco Board, they could be persuaded to form SHGs and meet part cost of wages for the operation. This should form part of a comprehensive package of measures involving besides the main uprooting operation, planting of native tree, shrub, bamboo and grass species with protection by solar power fencing. The suggested 'Trust Fund' could meet the costs of these operations straddling PA management and ecodevelopment.

A lot of research has been in progress in NNP by a noted NGO dedicated to scientific management issues for over two decades. Though this research activity is outside the purview of IEDP, its value to the burning management problems of the park, which mainly lie in habitat productivity issues, is conspicuous by its absence, as it endlessly talks about only animal monitoring.

Of late, the park management has done very well in terms of controlling poaching and forest fires. Also ecodevelopment measures undertaken in the fringe villages covered have contributed to reduction in the pressures on the park and mitigation of adversities, *e.g.* crop damage by wild animals, notably elephants. Inadequacy and mass turnover of staff have affected the efficacy of both PA management and ecodevelopment.

3.3.3 Ranthambhore TR: The Field Director of RTR has prepared its management plan. It rightly identifies the main threats as livestock grazing, firewood and NTFP collection besides mining of stones and some poaching. Grazing is relatively a longstanding and formidable problem for which solutions are not easy. Wildlife damage to crops and livestock aggravates the conflict with villagers already alienated by restrictions on livestock grazing. Water scarcity in this semi arid tract is inevitable, but the plan lays out measures for revival of old traditional structures, *e.g. baoris* besides construction of anicuts and ponds.

Removal of exotic species, *viz. Prosopis juliflora* and weeds like *Cassia tora* has been done.

Protection infrastructure has been improved with the construction of staff quarters and camps as well as roads, besides strengthening wireless communication network and acquisition of vehicles. All these measures have improved protection and to some extent mitigated water scarcity. Measures under ecodevelopment have helped people in many other ways but grazing has evaded an effective solution.

We suggest a bolder approach by revising the management zoning. Some areas within the PA but on the fringe can be brought under the 'Ecodevelopment Zone', where under an SHG's care pasture development can be done. The EDC must ensure voluntary exclusion of grazing during rainy season and until hay is harvested in the pasture under development, allowing controlled grazing without any lopping during the rest of the year. Degraded forests as well as village commons could also be similarly treated. The hay harvested can be used or sold only within the ED zone. For a few years needed for pasture development, a package can be developed for villages facing acute scarcity by supplementing agriculture residue with subsidised supply of hay purchased from adjacent Morena district in Madhya Pradesh. This facilitation should be backed up by voluntary rotational grazing during rainy season in the 'allowed' pastures within the village or in the ED zone.

3.3.4 Great Himalayan National Park: GHNP, a site under the COB component of FREEP, has had a queer history of little achievement during the project period and really impressive progress post-project when the investment capacity of the park had dried up. The 5-year COB launched in 1994 was withdrawn from GHNP in December 1999 because of poor progress and unsatisfactory performance, though it was continued and extended for two years at another PA (KMTR) in Tamil Nadu. No management plan was drawn for the park. Village Forest Development Committees (VFDCs) set up with hardly any people's participation remained largely non-functional. A peculiar situation regarding the recorded rights extant since early British regime (1880s) meant that only a small number of land-owning (paying land revenue) families (349) had rights, whereas the majority who were landless and poor did not have rights. This majority, which meant some 2,300 households in 160 villages within the 5-km ambit of the park boundary, were strongly dependent on the forests for home use as well as livelihoods and did use the PA forests. They accessed park forests for livestock grazing (20,000 sheep and goat), collection of herbs and edible mushroom (4,000 to 5,000 collectors) and firewood (2,300 households). Some also indulged in snaring pheasants and killing red foxes perceiving them as threat to sheep kids. However, FREEP enabled paying Rs 156 lakh as compensation to the legally right-owning families allowing final notification of GHNP as a national park under the Wildlife Protection Act, thereby permitting strict enforcement by the

management against miscreants. But this certainly did not mitigate the interface conflict between the people and the park.

With a change of guard at the park director level coinciding queerly with the withdrawal of FREEP-COB from GHNP in 1999, a turnaround came about demonstrating what professional capacity and commitment can achieve. With hardly any investment capacity, the PA management promoted the route of self-reliance with women at the focus. This showed slow but steady progress towards finding and establishing livelihoods not depending on forests. With this on way park protection was pursued as a matter of enforcement against miscreants. Besides support from such steady ecodevelopment, sound scientific research backed up PA management in GHNP putting it on the right course. With hardly any external project mode financial support, there is, however, a long way to go in enhancing and sustaining the gains in PA management and social justice.

3.3.5 Buxa Tiger Reserve: Buxa has enjoyed good protection and management since 1983 when it became a tiger reserve under Project Tiger. The main problem has been the pressure on the park's bio-resources from a large population of villagers on the fringe and some within the PA. Wildlife damage to crops including from elephants is also a source of conflict. Forestry operations were stopped in the core zone under the Project Tiger. This reduced overall forest dependent livelihoods because of lower scope of wage employment in wildlife management. It was just before the advent of IEDP that the BZ was brought under the integrated control of the Field Director in 1995. The PA has benefited from ecodevelopment inputs under Project Tiger since early 1990s and JFM inputs under the state government programme in the BZ.

The PA management plan prepared under IEDP for the first time covers the whole PA (CZ and BZ). It meaningfully integrates the components on protection, habitat management and ecodevelopment, the last facilitating alternate livelihoods. The Plan gives preference to conservation over production in the management of BZ forests. The multiple use areas promote biomass and cover for wildlife while also meeting the needs of people. IEDP has also helped the BTR acquire vehicles, computers and communication equipment as well as build check posts and quarters for the field staff. Habitat management has also been undertaken under the integrated programme.

3.3.6 Kalakkad Mundanthurai Tiger Reserve: As mentioned earlier, the management plan for KMTR is under preparation based on the results of meaningful research conducted by the WII commissioned under the project. While saying so, it is necessary to mention some rather inappropriate suggestions made in one of the WII reports concerning the problem of numerous enclaves. In this otherwise well managed PA with meaningful ecodevelopment support, enclaves of numerous kinds including some in the rich tropical evergreen forests are a formidable constraint. It is essential to deal firmly with the enclaves with

commercial objectives (tea and other estates) by offering compensation or not renewing their leases if the lease term is close to expiry. Ecodevelopment support (including relocation and involvement in ecotourism) should be provided to those dependent on these estates for livelihoods. As for hydropower enclaves, the large housing colonies should be relocated outside with essential operation, maintenance and security personnel being ferried in shifts to work sites within the park. While outstanding success has been achieved in reducing pressures from the fringe villages through innovative and purposive ecodevelopment inputs the inner enclaves continue to gnaw at the vitals of the park. The new management plan being prepared should examine this suggestion and provide an appropriate package for this seeking out funding and enabling support through any future Project and until then through Project Tiger and Project Elephant.

3.3.7 Pench Tiger Reserve:

Best Practices – 6
'Mowgli' as a Park Mascot and its impact on tourism: Pench

Before 2001, the volume of tourists in the Pench Tiger Reserve was very low due to a combination of factors like absence of publicity, low availability of quality accommodation and other facilities and permission for entry of only petrol vehicles in the PA. Moreover, the fact that there was apparently nothing to set Pench apart from other parks meant that the tourist attraction was low. The FD's ingenuity in identifying after careful research sites within Pench Tiger reserve that are mentioned in Rudyard Kipling's famous '*Jungle Book*' and then appropriating the book's hero Mowgli as the Park's mascot and USP is indeed praiseworthy.

The Mascot 'Mowgli' was inspired by Sir William Henry Sleeman's pamphlet, 'An account of wolves nurturing children in their dens' which described a wolf-boy captured in Seoni district near the village of Sant Baori in 1831. Many of Jungle Book's locations are actual locations in Seoni district like the Waingunga river, Kanhiwara village and the Seonee hills. The mass popularity of the character of 'Mowgli' from '*Jungle Book*' was seen as a USP for attracting tourists to the Park. PTR has since been promoted as 'Mowgli land', not only through hoardings and advertisements in travelogues but also through various articles in leading magazines like *India Today* and TV channels like *Aaj Tak*. The result is evident in the increase in visitor intake from 5,288 in 2000-01 to 18,308 in 2002-03, in less than two seasons! The introduction of elephants and tiger tracking, boating and rafting has also resulted in the increased attraction of the park for tourists.

3.3.8 Palamau Tiger Reserve: Palamau has been a difficult area to manage because of heavy pressure on its resources from 102 villages within the Sanctuary segment and 79 within five kilometres of its boundaries, accounting for some 75,000 people. Then, there is the problem of Kutku dam whose closure would submerge some habitat and a few villages. The affected people from here and those to be similarly affected from a proposed dam on Auranga River (when that comes up) are bound to seek rehabilitation within the PA. The impact even without these dams is visible in habitat degradation including weed proliferation besides poaching threats. The pitch has been queered by long standing Naxalite insurgency responsible for weakening enforcement and even hindering free access to all villages for proper planning and implementation of ecodevelopment. The

management plan prepared recently seems unequal to the task of strategically addressing these threats or in terms of firm packaged mitigation activities. It is desirable to have the Management Plan revised based on relevant multi-layer Remote Sensing, due ground-truthing and then requesting an expert agency or an expert to advise on right strategies. Protection, habitat amelioration (with special reference to weed abundance and degradation) and special measures needed for rare and endangered species (wolf, elephant) with due regard to addressing conflict aspects is called for. Last, but not the least, a visionary, innovative and bold advice is needed on meaningful ecodevelopment (in the face of extant Naxalism) and on integrating it with PA management. Nothing may bear fruit until the PA senior and middle level leadership is carefully selected and trained in PA management and ecodevelopment by availing training programmes such as are available at the WII.

3.4 At the time of project formulation, it was understood that while all the seven IEDP sites already had regular Management Plans, some of them had run out their term or were in need of updating in the light of the current thrust on ecosystems, biodiversity and concerns of the local people. Accordingly, the project not only facilitated the revision of the existing Management Plans, but also required them to be made more inclusive of local people's concerns, dependencies and aspirations as well as more ecosystem oriented, requiring a shift from their current emphasis on species. It was also provided that the results of the research studies mandated under the project would be built into the process of Management Plan revision.

3.5 During the project period Management Plans have been revised at all the seven sites. But since at all the sites (Buxa, Gir, Nagarhole, Palamau, Pench, Periyar, Ranthambhore), the majority of planned research studies were either delayed or could not be contracted for various reasons, the plans could not benefit from their findings/results. This is a major mismatch between the anticipated and the realised benefits from the research component of the project.

3.6 Management plans would have to revisit zoning and rationalise the scope of ecodevelopment interventions and their coordination with issues in PA management -- for instance, suppression of weeds and monocultures and non-commercial use of the derived material by people, or selling such material to use the proceeds for park and people benefit. Similarly, ecotourism in the permitted zone, if used innovatively with due safeguards, can become an important source of livelihood and also support park protection, as has been proved in Periyar.

Best Practices - 7
Pilgrim Management and Conservation: Periyar

Pilgrimage and its associated problems were a long standing and serious threat to the biodiversity of PTR. Some 50 lakh pilgrims trek through the sanctuary and its buffer zone to visit the Sabarimala shrine over a short period of two months every year. The shrine has a cardinal religious significance, not only in Kerala, but also in Tamil Nadu, Karnataka and even Andhra Pradesh. To erect sheds and tea stalls for the pilgrims, timber poles and huge quantities of firewood were needed during the pilgrimage season.

The ecodevelopment initiative here involved local people in this seasonal business to mitigate the problems. And now the problem has been tackled effectively and the forests have been put back in the process of rejuvenation. The Swami Ayyappa Poonkavana Punarudharana (SAPP) EDCs provide a concrete example in this regard. EDCs like these are operating along the traditional pilgrimage routes, providing quality pilgrim services and are also responsible for the protection of habitat and cleanliness of the area. The EDCs are committed to not use any firewood or timber poles for the construction of temporary sheds and running the tea stalls. Income from pilgrimage services is pooled in the common account of the EDCs and used for procurement of raw materials for running the stalls, as well as for wages of the members. Part of the income is also supposed to go to the park welfare funds, which can be used for emergency PA activities.

Over the past three years, SAPP EDCs have contributed significantly to keeping the traditional paths clear of garbage, protecting the forests from illegal felling of trees and poles, and providing viable livelihood to the local communities. This has given a direct stake to the people in effective conservation of PTR. These institutions are still evolving and would do better with more transparency and social equity. Better accounting and auditing and improved systems for ploughing back a part of the income and human effort into overall welfare of the PA as well as of the local community would help strengthen their sustainability.

3.7 While most revised plans have provided space for village ecodevelopment as a key objective of the Park, it is seen that the delay in preparation of PA management plans has compromised the efficacy of the intended coordination on course. It is felt that in accordance with the main mandate of the project, the management planning agency/individual ought to have been directed to firm up management zoning at the outset. Also alongside such zoning, broadly the scope and the space for the consumptive (*e.g.* material available from weed eradication) and non-consumptive (*e.g.* ecotourism) uses permissible within different zones should have also been roughly defined. As things happened, except in Periyar, Gir and Buxa where the management priorities and the scope for compatible ecodevelopment were well understood in advance, such coordinated spaces remained unutilised or under-utilised.

LESSONS

1. *Any future project aiming to support PA management through ecodevelopment should provide for the production of a robust indicative management plan identifying the management zones and the space for ecodevelopment, well before any detailed micro planning for ecodevelopment is initiated.*

2. *Likewise, a robust indicative ED Plan should also be produced alongside, defining the use of such space and the genre of the activities compatible with the indicative management plan.*
3. *Both these indicative plans should be ready as a preparatory before the actual launch of the project in the field.*
4. *During the first couple of years of the project term, such indicative plans should be fledged out into comprehensive plan documents by collecting authentic planning data, mapping and micro planning for ecodevelopment.*
5. *Both plans should define their respective activities with spatio-temporal connectivities in respect of issues requiring coordination. Full-scale launch of activities should indeed await the completion of the detailed plans, though trust building and pilot trial activities in both sectors can and should be undertaken during the first couple of years of detailed planning.*

4. Enabling Legal and Policy Framework

4.1 Legal Basis of Ecodevelopment:

At the time of conceptualisation of the project, it was felt that even though ecodevelopment could proceed without a formal legal framework to begin with, for the large-scale implementation it was necessary that states issue appropriate orders, which are consistent with the project design. The government orders / resolutions have since then been issued by the respective state governments from time to time and at present in all selected 10 sites the project is carried out on the basis of these orders / resolutions.

Best Practices – 8
Providing a legal basis to Ecodevelopment: GHNP

Whether the Government Orders/Resolutions themselves can provide the formal legal back up to the project, the need for which was envisaged at the project design stage, is a moot question. Technically, even though a GO has the *effect of law*, a Government can depart from its provisions with reasons. It is worth noting that among all the states, it is only in Himachal Pradesh that the regulation of ecodevelopment has been traced to legislation. Specifically speaking, *Himachal Participatory Management Rules 2001,* has been made in pursuance of section 80 read with section 81 of the Indian Forest Act 1927.
Unlike the GOs, such *Rules* have the effect of making the entire programme in the state legally enforceable. For providing a formal legal basis to the ecodevelopment programme, this provision in Himachal Pradesh offers perhaps the best example.

In certain states there are provisions for registration of EDCs as societies[1] under the ***Societies Registration Act, 1860***. It is pertinent to mention here that such societies, registered under the said Act are formed for religious, charitable and literary purposes, and this seems to be fundamentally at variance with the objective of a village ecodevelopment activity, which has an incentive-based approach to conservation and sustainable use of the natural resources in a local area. Thus the implications of such registration need to be clearly explored.

Further, in Madhya Pradesh and Jharkhand there is a provision for registration of the EDCs by the FD officials. The legislation under which such registration is to be done has not been referred to and in such a situation, the registration does not give any legal support to the EDCs.

Apart from the above, for long-term sustainability of ecodevelopment and the institutions under it, the project would need to be placed firmly in the existing legal map of the country. There were apprehensions even at the project design stage that the project would have to contend with *severely constraining* extant legislation. These constraints are presumably most felt in the context of benefit sharing provisions under ecodevelopment and restrictions on it under the ***Wildlife Protection Act, 1972 and the Forest Conservation Act, 1980***. While the IEDP was under implementation, the Wildlife Protection Act was amended in 2003 to allow sharing of forest produce with local communities for bona fide personal uses both from national parks as well as sanctuaries. There have also been suggestions to make this aspect absolutely clear by explicitly laying down enabling provisions under the law. Thus, the Periyar Management Plan suggests that a specific provision under the ***Wildlife Protection Act*** be made to include Ecodevelopment initiatives in and around the PAs as one of the activities that could be allowed by the Chief Wild life Warden under the said law.[2] In fact, it has also been suggested at the same place that EDCs should find a place in the Kerala Forest Code that is currently under revision in the state.[3]

Best Practices – 9
Clear GOs for KMTR and Periyar paved the way for institutionalisation

Both these governments issued well-considered orders authorising various processes and the setting up of empowered VFCs / EDCs with appropriate roles for people, park staff and NGOs. These orders were based on a realistic understanding of the respective stakes – that of people in the security of livelihoods and resources and that of park staff in effective protection and conservation of the diverse park values – as primary stakeholders. The NGO stake and role as the needed bridge and independent facilitators was also recognised in these orders. Thus, while the park staff and NGOs did not have any voting rights in VFCs / EDCs and their executive committees, the local staff and NGOs were made privy to all the meetings and deliberations. They could thus keep the discussions focused and helped the VFCs / EDCs take dispassionate decisions, which helped the concerns of both, the people and the park. The processes also provided for ratification of major decisions by senior park officers so as to secure major investments and ensure that activities serve the twin project objectives of benefiting the people and the park.

A prior demographic survey of the impact zone was a notable feature of planning ecodevelopment in KMTR. This enabled focussed attention on those families, which were poor and more forest dependent. The Tamil Nadu Government GO also made use of the findings of this survey and prescribed priority for the weaker sections during micro planning and implementation of ecodevelopment activities. The GO also laid down that at least half of the elected members of the Executive Committee of any VFC should be women. This gave women a firm voice in decision making in the VFCs. It is to be noted that such a clear order and its motivated implementation by the PA management ensured that of a total of 21,367 families benefited, as many as 15,547 were very poor and highly forest dependent and another 4,995 were moderately so. Likewise, women membership in all VFCs put together (26,209) exceeded that of men (22,155). In all, women hold as high as 56 per cent of the total membership of Executive Committees, whereas all-women SHGs number 540.

Besides a legal framework, an unequivocal GO as issued by the Tamil Nadu Government for KMTR is a model of how a firm tool can strengthen the field realisation of a policy goal.

Apart from this, the MP government has also taken certain initiatives so as to establish linkages with the legislations dealing with land use and environment[4].

However, when it comes to linking ecodevelopment with the formal laws in MP, there are some critical grey areas.[5] Notably, the law specifically dealing with Panchayats in tribal areas, namely, *Panchayat Extension to Scheduled Areas Act, 1996 (PESA)* also provides for ownership of Minor Forest Produce to the Gram Sabha and the Panchayats although many forest departments feel that the provision does not extend to the National Parks and Sanctuaries.[6] This understanding, however, may not be an authoritative interpretation of law. In view of the applicability of PESA in all the states having tribal areas, the purview of these provisions and its implications for ecodevelopment would need to be precisely ascertained -- sooner rather than later.

4.2 Adequacy of GOs:

At the project design stage itself, it was made clear that while the state should come up with the government orders to provide an enabling frame work to ecodevelopment, at the very least they must specify certain minimum conditions. These had to include (a) composition of ecodevelopment committees in each village comprising all eligible household including women, SCs and STs; (b) the rights and responsibilities of the EDC members and the forest department would be established; (c) provisions for sharing of revenues or produce from specified operations; and (d) provisions for conflict resolution and revocation of agreements. An analysis of the GOs in light of these 'minimum required contents' is instructive.

4.2.1 'Inclusiveness' of the EDCs:

While some provisions in the GOs on aspects of involvement of women, poor and landless are notable, in terms of visualising these components as one of the primary requirements of the project most GOs appear to be inadequate. Barring a few like Jharkhand (Palamau) and MP (Kanha and Pench), others do not clearly provide for inclusion of poor and landless families in the EDC and also importantly in the Executive Committees (EC), though Gujarat (Gir) and Rajasthan (Ranthambhore) do provide for mandatory inclusion of certain SC/ST members in the EC of the EDCs. Knowing that a variety of tribal groups reside in and around the project sites[7] in certain cases it was imperative that their traditional leaders or village heads are given a voice in ecodevelopment committees. In Jharkhand, the customary heads of the traditional Panchayats like *Manjhi, Munda, Paha and Mahto* have been made the *ex-officio* members of the ECs of the EDCs.

Besides, most states have made provisions for reservation of 30-50 per cent seats for women in the EC of EDCs. However, interestingly in Gir there is no such provision. In certain states like Jharkhand (Palamau) and MP (Kanha and Pench), either the president or the vice-president of the EDCs shall compulsorily be a woman. Apart from this the representatives of local women's organisations, SHGs, and Mahila Mandals are also given a place in the EC. Though these are definite enabling provisions, perhaps the reservation of seats for women at local levels is the one thing in rural India that sharply brings out the phenomena of *presence of legal spaces* and how they are rendered ineffective in most places by the *absence of social spaces*. In Ranthambhore, a women's advisory sub-committee is constituted for every EDC, which comprises minimum seven members. However, the said advisory committee is largely a toothless body, as its recommendations are not binding upon the executive committee apart from the fact that even these recommendations are put forward to the EC through the forest department official. In fact, in stakeholders meeting carried out in the course of our field visits the women members of these advisory committees brought out the fact that they have had almost no impact on decision-making within the EDC. In this context, it is felt that an instutionalised security for the role of women in decision-making needs to be established and it could be mandated that the

executive committees of EDCs should have half the total membership comprising women**.** In this context, GOs issued by governments of Tamil Nadu and Kerala deserve notice.

4.2.2 Benefits to EDC not Rights of EDCs:

As pointed out earlier, defining the rights and responsibilities of the EDC as also the forest department, was identified as a priority area at the time of project design. While all GOs contain fairly detailed provisions regarding duties and functions of EDCs including benefits to them, the same cannot be said about the "rights" of village communities.[8] In most states, the people have been granted certain "benefits" in respect of sharing of usufructs, revenues from the harvest of forest produce, etc. However, these benefits have been made subject to the satisfaction of the DFO as in MP (Kanha and Pench), to the Chief Wildlife Warden as in Buxa, and to Chief Conservator of Forests as in Ranthambhore. In Gir, the GO only says *"honest attempts will be made by the EDC to provide the usufructs on equitable sharing basis"*. Another example can be found in Palamau where no usufructs have been provided in specific terms. It only talks about the funds to be created for the village EDCs, which includes income generated from the marketing of MFPs, or net profits from the marketing of forest produce harvested from a reserve forest. These benefits depend on the availability of the forest produce and on profits through their marketing, and being so contingent, cannot be guaranteed. Further, in the case of GHNP and Ranthambhore, the GOs categorically say that the benefits given to the people shall not affect their recorded rights. It is clear from all this that these GOs do not really 'define or establish rights' as was emphasised at the time when the project was conceptualised but grant certain benefits to the EDCs and provide "concessions" that apart from being not absolute, are revocable and can be departed from entailing little legal consequences.

4.2.3 Some ponderables:

On the question of rights, the traditional rights of access and customary rights of villages in the vicinity of the Protected Areas has also been of some concern. In MP, certain customary rights in respect of grazing of cattle, obtaining fuel-wood, non-timber forest produce, etc., called "*nistar* rights" in the vernacular language have been made subject to the satisfaction of the DFO. Further, there is a provision that if a member of the committee doesn't perform well or commits a forest offence, the committee, through a decision in the general body meeting may deprive him or her of his/her eligibility for obtaining *nistar*. The legal validity of such a provision is definitely questionable. In Nagarhole, a dominant perception created by some NGOs that participation in IEDP activities would cause people to lose their customary rights upon the forests had an adverse impact on the initial trust building between the forest department and the people. In GHNP, even though the traditional rights of the local people were settled in 1999 on the basis of an 1886 Anderson Report which led to only 349 families being entitled to compensation, this led to widespread local protests from other households, which

had traditionally been entering the park for resource extraction. Whether they have legal rights to do so and how much of their traditional and customary practices can qualify as customary rights are critical, unanswered questions. Although agitation and protests in some of these areas have been localised, and even non-existent in some cases, from the standpoint of the long-term sustainability of the project these questions seem to be too important to be ignored.

4.2.4 Conflict Resolution Mechanism and Revocation of Agreement

As a strong institutional entity, the EDC need to have very clear internal rights (enforceable against its members) and external rights that it could exercise against everyone outside the group. This can have significant far-reaching implications, particularly for resolving any conflicts that might arise in future. In this context, it becomes critical that the GOs contain clear provisions for resolving disputes that arise amongst EDC members or between EDCs and the FD. While most state GOs / GRs provide for conflict resolution mechanisms of some sort, variations within them are notable. In Buxa, “disputes” have been restricted to the ones arising out of disbanding of EDCs / ECs or termination of individual memberships[9], while there can be a number of issues on which there might be conflicts, like sharing of usufructs, selection of area, etc. On the other hand, in Himachal a "Conflict Resolution Group" is constituted that comprises representatives of Gram Panchayat, local NGOs or local community based organisations and the concerned Assistant Conservator of Forests. Such groups look into the disputes relating to usufruct sharing only. Here, the example of Ranthambhore stands out. It provides for separate procedure for filing appeals against disbanding of EDCs/EC, and the concerned Divisional Forest Officer resolves the other disputes like the ones among EDC members or between EDCs and panchayats.

It is also noteworthy that the ecodevelopment initiatives are carried out as agreements between the EDCs and Forest Department. In a few states[10], the GOs specifically mention that a *Memorandum of Understanding (MOU)* is executed between the Forest Department and the EDCs to give a definite shape to the agreement. Despite being an agreement, the power to revoke the same lies with the Forest Department officials only. That means that even if the EDC members collectively decide to discontinue being a part of the project they have no right / power to do so. Once an EDC is functional it can only be disbanded by the forest department. Strictly speaking, these provisions seem legally untenable.

4.3 Need for revised GOs to demonstrate state commitment:

There has been some confusion on the aspect that GOs that established the EDCs are limited to the period of implementation of the current India Ecodevelopment Project. In this context, a specific order in Gir clarifies the position and makes it clear that the village EDCs constituted by the GR ‘have not been prescribed any time limit and as such would remain functional even after 31 December 2001. In Periyar also it has been felt that it is necessary to get the revised government orders issued for continuation of ecodevelopment programme beyond the project period. There could be need for issuing such government orders in others states

too specially as they reflect the states' willingness and determination to continue the process of ecodevelopment beyond the project time frame.

LESSONS:

1. The above analysis reiterates the requirement of a clear-cut policy and legal structure as exemplified by initiatives taken at GHNP, Periyar, KMTR and Gir for providing an enabling environment for effective and sustained ecodevelopment effort. This action needs to be taken early in the life of any future project.

2. A comprehensive GO which specifically addresses 'social justice and forest dependency' together such as the one issued by the Government of Tamil Nadu in the case of KMTR, can be a potentially powerful tool in the hands of implementers in the field. A prior survey to establish the demographic and socio-economic profile of the 'project area' can go a long way in improving the focus of the GO.

3. Even a clear and firm policy tool would need informed, perceptive, competent and committed leadership for making full use of such a tool in a demanding field situation wherein the concerns for conservation need to be balanced against those of social justice, especially when livelihood dependent poor families are involved.

5. *Micro planning and Coverage*

5.1 Village micro planning was envisaged as the scaffold upon which the village ecodevelopment activities were to have been structured. It was in some senses the most critical element of the project, to the extent that it set the tone for project activities. Since it immediately followed the process of establishing the EDC, the micro planning process also acted as the arena in which village dynamics were played out.

The project design clearly identified one of the principles of ecodevelopment as site-specific, micro-level planning, assessing the adverse impact that PAs have on the local people and those that the local people have on the PAs, and identifying the options available. The SAR lists in some detail the desired micro planning process and also elucidates the complexities of social processes and village dynamics that the project staff is likely to encounter during the micro planning (and implementation) process. It also attempts to make provisions for ensuring that considerations of equity, gender, conservation and the like are considered adequately while undertaking micro planning.

5.2 Coverage and Membership: By and large, each village had one EDC, though there have been some cases of two or more villages combining to form one FPC/EDC. Though it was contemplated that all villagers were to be members of EDCs and by that logic participate in the micro planning process, this did not happen across all sites. The variations stemmed from a variety of apprehensions that people had at various sites. It has, however, been observed at nearly all the sites that a number of families who either opted out of the project at the micro

planning stage or were left out on account of any reason(s), became desirous of joining the project at a subsequent date. Since budgetary allocations were frozen at the stage of appraisal, such families could only be included in project activities through SHGs or by accessing funds from non-project sources, as was successfully attempted at Palamau.

As far as coverage of villages is concerned, the IEDP was modelled after an earlier project, the FREEP, under which two PAs, GHNP and KMTR, were provided ecodevelopment support. All villages located within 5 kms of the PAs were selected for ecodevelopment activities. The same criterion was used in the case of the IEDP as well, although some PAs in the IEDP targeted villages only within a 2-km radius.

In some cases, 100 per cent households in the villages under ecodevelopment were covered, having an impact on the PA (as in Periyar and Pench) while in some only about 50 per cent (as in Gir and Nagarhole) could be covered. It appears that while initially, full coverage was envisaged at all IEDP sites, at the MTR stage allocations and targets were scaled down. Also, the process of scaling down did not appear to have followed the imperative of assigning priority to poorer villages and/or those that were more forest-dependent, and/ or suffered from higher interface conflict. Instead, villages for which micro plans were ready and/or some degree of implementation had started were asked to complete the process, while no new plans were drawn up post-MTR.

This has gone against the commonly understood rationale behind selecting all the villages that impact a PA, which is that if ameliorative attempts are made only in select villages, even assuming that such attempts significantly reduce the pressure emanating from the selected villages, other non-project villages will over time occupy the "space" thus created.

Kanha TR, which is the only site covered in this study that has undertaken ecodevelopment through support from the GoI's Ecodevelopment Scheme, initially adopted ecodevelopment as a strategy to ameliorate the adverse impact of displacement on villages that had been relocated from the park. This engagement of the PA management with the displaced villages continues till date. In addition, a number of non-displaced villages outside the park have also been brought under the ecodevelopment umbrella. The resources for the ecodevelopment activities in Kanha are accessed from GOI as well as from other programmes such as the World Food Program.

In Nagarhole, initial efforts at community outreach were impacted by strong advocacy moves by tribal rights groups. This compromised contiguity of coverage of villages in a section of the park boundary. There are numerous instances in Nagarhole of adjacent villages with similar patterns of PA dependence and a similar socio-economic profile, of which only one was selected under the project

while the other was left out simply because it did not come forward to form an EDC. It is reported that at a later stage, some of the villages that had initially not joined the project, came forward and even clamoured for coverage in view of the flow of benefits to project villages. However, at that stage these villages could not be included because of scaling down of allocation for village ecodevelopment post-MTR.

Another factor that compromised the quality of coverage was the requirement of 25 per cent as 'individual' contribution for availing benefit from the project. Though the project design did provide for this contribution being acceptable in kind, *e.g.* 'labour or material', this only found extremely limited application. As a result, in several parks the poor and the landless, in the absence of other livelihood sources, had to access bio-resources from the parks for livelihood and home use, and got left out. As against this, parks such as Periyar and KMTR, which seeded the CDF by an initial grant from project funds and encouraged EDCs to extend micro-credits to individuals and SHGs for various non-forest dependent IGAs succeeded in simultaneously strengthening livelihoods for the poor as well as in mitigation of pressures on the park.

5.3 Process: Though the SAR stipulated that micro plan preparation was to have been carried out jointly by forest department personnel and NGOs/NGIs, the only PAs that were able to follow this stipulation were Periyar and KMTR. There are a variety of reasons why the others were unable to follow this prescription. Gir, for instance, did contract a reputed national institution for both micro planning and for implementation assistance. However, midway through the micro planning process this arrangement had to be discontinued through mutual agreement because of the department's growing restiveness with the slow pace at which the micro plans were being prepared and the institution's reluctance to expedite a process which in their opinion could not be externally driven in pace. In Palamau, although a capable local NGO was available that had in fact actively participated in the indicative planning process, fund flow constraints led to discontinuation of the services of this NGO. In Buxa, more than one NGO was contracted for assistance with micro planning, but the PA management found the quality of plans prepared by one of the agencies contracted for the purpose extremely poor, and hence the contract with the agency had to be nullified. Other NGOs, however, continued to assist the forest department staff in micro plan formulation. In Buxa, therefore, one comes across the curious situation where some micro plans were prepared with NGO assistance, while the rest were drawn up by forest department staff.

Best Practices - 10
Reciprocal Commitments from the People: Periyar, Buxa, Kanha and Pench

Periyar: EDCs undertook a variety of activities against reciprocal commitments as well as project investments. These include joint patrolling, fire protection, soil conservation, and controlling crop depredation. Reduction in the use of fuel wood, plastic eradication, reduction in cattle grazing,

preventing use of explosives in rivers, were also carried out. Participating and substantially benefiting from PTR-based ecotourism was a major programme. Others included gathering information on illegal activities, specified area management, removal of exotic fishes, prevention of collection of timber poles and installation of smokeless chulhas.
Traditional protection stands bolstered by an effective social fence created around the PA by the sustained vigil and commitment of the EDC members causing the incidence of forest and wildlife offences to go down. Illegal Ganja cultivation and sandalwood felling have also reduced by 80 per cent and 90 per cent respectively over the project period. Evolution of protection oriented participatory ecotourism programmes through Ex-Vayana (Cinnamon) Bark Collectors EDC, Periyar Tiger Samrakshana (PETS) EDC and Tribal Trekkers EDC and management of Sabrimala pilgrimage through Swami Ayyappa Poonkavana Ponarudharana EDC, and Vasanthsena, where a group of motivated local women are patrolling the PA fringe areas have added new dimensions to protection. A drop in pending offence cases marks the gains over the project period.
After the implementation of the project, the local communities have significantly reduced their dependence on the forests. The resource utilisation for sale has substantially come down. Viable alternatives have been facilitated for resources like firewood, whereas the collection of black dammar has been totally stopped.

Buxa: The history of collaborative forest protection in West Bengal has ensured that in a number of cases FPC and EDC members have been actively participating in patrolling, at times even on their own without being accompanied by forest department staff. A number of EDCs/FPCs have formulated rosters according to which they carry out patrolling. Recently, there have been instances of patrolling parties comprising women becoming active. This is a unique initiative in Buxa and it remains to be seen how far it will sustain. There have been regular instances of people assisting forest department staff in effecting seizures.

Kanha: There has been a general decline in the number of cases of illicit felling and poaching, as well as the cases of deliberate fire in the forest. With the involvement of the people in grazing control, regeneration has been given considerable support. As far as plantations for rehabilitation are concerned, a total area of 1,175 hectares has been planted through the EDCs. Most of these plantations have been successful due to the protection that was provided by the committees. In some other cases, the committees have revived plantations that were once destroyed. Social fencing has also proved to be effective in a few villages, an example being that of *Chatuakhar*.

Pench: The EDC members have resolved to protect the forest in lieu of the ecodevelopment investments, through assistance in forest patrolling, prevention and control of forest fires, detection of offences and apprehending the offenders (*Kohka* EDC, *Barelipur* EDC), rescue of wild animals in distress (*Satosha* and *Turia* EDC), etc.

5.4 During the Project Preparation phase (1995-97), spearhead teams from each PA were invited to undergo specialised training conducted by a combined team from the NGOs Action Aid, MYRADA, and SPWD. It was expected that these spearhead teams would, in turn, train others at the PA level, and also undertake micro planning necessary for preparing indicative plans. Subsequent to the indicative planning process, when the project finally got under way, each PA was required to generate three "model" micro plans that were sent to the World Bank for approval.

Unfortunately, there have been instances where microplans have been reproduced using the indicative plans or the model plans. This was particularly observed in the case of Palamau, and in GHNP during the FREEP period. Each PA, partly to counter such instances, also put into place a system whereby micro plans were to

be continuously revised in order to keep pace with the changing scenario in a village.

5.5 The lack of professional facilitation has had the following consequences:
(a) In a number of cases, activities inappropriate to local conditions or at any rate inadequately discussed with local communities, were taken up. This was particularly visible with items such as LPG and pressure cookers. Though it would apparently seem that the distribution of such devices should help in the reduction of dependence on firewood, in reality a shift to such fuel saving is dependent upon a variety of cultural factors that did not get adequately considered in the micro plans. Particularly, the penetration of biogas / LPG is very limited among communities like the Maldhari (or the Siddhi in the case of Gir). Anthropologically, there are certain communities that demonstrate certain very specific cultural traits that are very different from the other so-called mainstream communities. Such communities have been known historically to absorb any new technology with much greater reluctance compared to others. Thus, the mere distribution of LPG units (or biogas) to such communities is almost certainly unsustainable in the post-project period. A case from Gir NP of a heterogeneous village consisting of upper caste Patels (constituting a majority in the village), backward class communities and a single Maldhari family is illustrative. It was found that the Maldhari family had given their LPG unit over to a schoolteacher. It emerged that the family had been virtually steamrolled into taking LPG (upon payment of 25 per cent of the cost of the unit) because an influential villager, who is also very active in the EDC, had set a condition that before any household received any other benefit (house construction material, in case of the Maldhari family) under ecodevelopment, that household should have installed an LPG unit. While such enthusiasm is otherwise welcome, it reflects somewhat poorly on the micro planning process and the participatory nature of the exercise. It is further interesting to note that immediately adjoining this house was the house of a Patel agriculturist who was using both biogas and LPG conjunctively. This example emphasises the need for micro planning to be sensitive to cultural mores, and illustrates how such sensitivity is often a function of expert facilitation.

(b) A corollary to the above example is that inadequate facilitation results in skewed participation in favour of the more vocal elements of the village. A further corollary to this is that Special Need Groups (women, tribals, dalits and other such disadvantaged sections) have tended to get sidelined. GHNP has found a unique way out of this by working with sub-village level institutions formed around shared values (affinity), thereby nullifying the complications that heterogeneity breeds. Similarly Periyar has overcome this problem by working with user groups – a system that largely circumvents the complications associated with village level dynamics.

(c) There have been cases of inadequate identification of threats to the PA or of inadequate attention to these threats. To again quote an example from Gir, the

perceived pressure of the Maldharis on the PA does not seem to be reflected in the activities and investments undertaken in their *Ness*. The forest department and the state government have in principle decided to shift these *Ness* from the sanctuary to its periphery. It is, therefore, argued that no land-based activity would be taken up with the Maldharis, as this would hinder the process of eventually shifting them out. Whereas this line of argument is itself open to debate, the investments that have been made in various Maldhari *Ness* (which have been restricted so far primarily, though not exclusively, to provision of tin sheets as roofing material) could have been much greater in financial terms and much more innovative in thematic terms in view of the pressure that they are believed to exert and their economic backwardness relative to other villages in the same area. It appears that the micro planning process was severely constrained for ideas when it came to dealing with communities like the Maldhari, with whom land-based investments were considered inappropriate. As a result, though villages on the periphery received significant investments, the Maldharis, who have been identified as those exerting maximum pressure upon Gir, perhaps received less investment than was necessary.

LESSONS

1. *It is imperative that future projects ensure very robust micro planning, which is in turn a function of good facilitation. Though the IEDP did make design provisions for such expert facilitation, in a majority of the cases, this was not followed due to reasons enumerated above. Further, the time pressure that the project operated under contributed to PAs rushing through the micro planning process using their own staff. The results of this have been obvious. It is therefore imperative that future projects make clear provisions for necessary professional assistance for micro planning (and micro plan implementation) through a process that does not leave the entire onus of accessing such assistance upon the PA management staff. It was strongly felt that a number of park headquarters, on account of their remoteness, have found it difficult to access adequate professional assistance. It has been suggested that a possible solution to this is to shift the onus of accessing professional assistance to the project secretariat (in this case the PTO) The current project did attempt this partially by centrally contracting NIRD Hyderabad to impart training to PA staff in micro planning. This fell somewhat short of the sort of handholding that the PA staff required, and in any case it was found that NIRD began training fairly late into the life of the project by when micro planning had already been completed and PAs were well into implementing the plans.*
2. *Further, as the experience of Buxa shows, the project needs to carefully whet the professional competence of agencies contracted for training or handholding assistance.*
3. *Processes such as micro planning can seldom be artificially hastened. Any attempt at such hastening invariably leads to a dilution of the results expected from the process. As evidenced from the proceedings of the meeting convened*

by MoEF[11], the apprehension that the slow pace of micro planning would invite strictures from monitoring missions and would jeopardise future projects led to a directive that forest department staff can themselves undertake micro planning once they were adequately trained. As subsequent field experience testifies, the PAs that invested adequate time and effort in micro planning reaped benefits during the implementation phase, and were also able to address various social justice issues better. The outstanding results of Periyar and KMTR underscore this point. It is clear that the severe pressure upon PAs to expend funds speedily has affected adversely the quality and robustness of the micro planning process. From this, it becomes apparent that the project design needed to have been realistic about the question of the time available for strong micro planning. Micro planning is a standard development tool employed by a whole host of agencies in the development sector. Tapping such expertise would have ensured that realistic time frames are available for this process dependent activity.

4. *There is a viewpoint that for PAs like Kanha with uncertain resource inputs, micro planning may not be the best way forward as the process generates significant expectations among the people and an inability of the PA management to fulfill this could lead to deterioration in PA-people relationship*
5. *While budgetary management is essential and one cannot fault decisions by the WB at the MTR stage, the discretionary fund at the disposal of the Park Manager could have been utilised to bring in such bona fide village people who had been left out in the initial phase of the micro planning for whatever reasons but who were showing interest at a later date, into the EDC fold. In future it would be useful to have such discretion at the grassroots.*
6. *For future projects, full coverage of the impacting villages should be ensured, as this is critical for realising project objectives and consolidating its gains. A fixed 'ambit' such as two or five km from the park boundary should indeed be reviewed at the 'indicative' planning stage in the context of the ground situation of pressures and the quantum of funds available. It would be justifiable to select sections of the PA boundary where incidence of pressures is high and provide full coverage to the impacting villages.*
7. *In situations where full coverage does not seem possible, mechanisms need to be developed by which preferential selection occurs of poorer villages and/or villages that have greater impact upon the PA. A prior demographic and socio-economic survey, as was done in KMTR, provides an excellent tool for prioritising coverage not just in terms of selection of villages but also for enabling preference within selected villages being given to those families that are poor and more dependent on the PA resources.*

6. Gender

6.1 By design as manifest from the SAR, the IEDP recognised gender concerns as a vital strategic ingredient of the project. The main points with regard to gender issues that the SAR addressed include the following:

1. A strong overall commitment to the inclusion of and protection of the interests of marginal groups, including women is reiterated at many places in the SAR, for instance, in the very definition of eligibility criteria for EDC investments.
2. The SAR recognised that the resource and income strategies of women may be different from those of men, and therefore "PRA micro planning exercises will need to make special efforts to ensure that less vocal and powerful fully participate". The SAR also stipulated that while conducting PRA micro planning, separate exercises should be carried out with vulnerable sub-groups to ensure that their concerns get articulated and taken on board.
3. The SAR also specified that while formulating GOs, gender concerns must be addressed explicitly in the form of equal rights to women in the Executive Committee of EDCs, in the opening and operation of bank accounts of EDC members, and in registration of EDC members with the forest department.
4. In outlining the specific impacts of the IEDP on women, the SAR anticipated that implementation of village ecodevelopment as well as PA management interventions may have positive as well as negative impacts on women. The positive impacts could take the form of increased employment, operation of micro-enterprises, reduction in expenditure as well as drudgery through energy-saving devices like improved stoves and LPG, and increased crop and livestock production. The negative impacts may include loss of access to firewood for use or sale, increased fodder collection workload due to breed improvement or stall feeding of livestock and crop diversification, and increase in workload due to non-participatory nature of ecodevelopment options. It is important to note that the SAR suggested specific strategies for enhancement of the benefit flow and mitigation of the negative impacts outlined above, and among these, ***the principal strategy was to elicit a high degree of participation of women in micro planning***. Thus, the project design itself underscored the importance of high participation of women in EDCs and of special efforts to channel towards women the benefits from employment generation and alternative income generation opportunities created through the project.
5. To this end, the project design envisaged a strong role for national and local NGOs in introducing best practices in community mobilisation for eliciting maximum participation of women in the process of micro planning and implementation of ecodevelopment investments. For instance, the SAR specifically mentions NGOs like MYRADA (an organisation well-known for its path breaking work with women's mobilisation around micro-credit and self help) as possible agencies for assisting the forest department with PRA based micro planning.

6.2 Thus, it can be concluded that the project design was highly aware of and sensitive to gender concerns, and serious attempts were made to emphasise this aspect explicitly at the project formulation stage. However, the project design could have been more explicit in outlining ***specific strategies*** through which gender concerns could actually be incorporated, for instance, suggesting

guidelines, tips and examples of best practices and innovative approaches aimed at breaking traditional societal barriers to women's participation.

6.3 Compared to the parameters set out in the SAR, the actual impact of the project on women has varied from excellent at a few sites to being largely unimpressive in most others. Barring three sites, namely Periyar, KMTR and GHNP, it appears that gender concerns are reflected very weakly in ecodevelopment (it is noteworthy that of the three sites mentioned above, only one is an IEDP site, while the other two are FREEP-CoB sites).

6.4 It is important to assess the impact of the project on women based on two parameters:
Parameter 1: Positive or negative impact on women as a result of activities undertaken towards PA management or village ecodevelopment. **Parameter 2:** Degree of participation elicited from women during the project, which is the conscious means envisaged at the design stage for mitigating negative impacts and enhancing positive impacts

Seen in this perspective, the broad picture emerging from all sites is that performance ranges from good (Periyar, KMTR and GHNP) to poor across most sites. In KMTR and Periyar preference to and empowerment of women in ecodevelopment activities was mandated in the GOs, which were implemented in letter and spirit by the spirited PA management at both sites. The appreciation in the social status of women by empowerment in EDCs and through enhanced family incomes from their act were clearly manifest during the field visits undertaken by the consulting team and at the stakeholders meetings in Periyar and KMTR. In GHNP, though, after the withdrawal of FREEP, the entire ecodevelopment process and activities were focussed around women. The gains have been attempted to be further consolidated by the creation of a CBO called SAHARA, also largely managed by women, which acts as an umbrella organisation.

In other PAs such organised and institutionalised as well as successful attempt is not seen. In other words, even though women have emerged as important beneficiaries of some ecodevelopment investments like those related to drinking water and LPG supply, women's participation in the project (and specifically in the micro planning process carried out by EDCs) seems to have been quite inadequate, and thus their ability to influence the micro planning process to mitigate negative impacts and leverage greater benefits has remained limited. In most sites, other than the three named above, it emerges that women members of EDCs remained reticent and were sidelined because of entrenched male dominance, and their role in micro planning and plan implementation was marginal at best. Because of their low social and economic status compared with men, their role in decision-making continued to be insignificant, and the implementing agencies were largely unable to break established societal barriers

to women's participation. This has resulted in the specific concerns of women being reflected poorly in micro plan formulation and implementation at these sites, and as a direct consequence, the positive impacts of the project have percolated to women only marginally, while the negative impacts on them could not be mitigated to the desired extent.

It must be emphasised here that some exceptions to these norms can be found in some sites, and these form the basis for the lessons learnt and future directions outlined later.

6.5 At Ranthambhore, project benefits have percolated to women in the form of reduced drudgery (LPG, improved stoves, better drinking water availability), greater output of agriculture and livestock (water harvesting measures), and increased employment (construction of crop protection walls, water harvesting structures), while project costs incurred are reduced access to the forest for fuel and fodder. The role of women in EDCs in general, as well as the role of women's advisory committees formed in each EDC seems to have been extremely limited, as articulated by women participants at a stakeholders' meet. The PA management has now started organising women into SHGs in some project villages, so that concerted efforts can be made to target women as part of the PA management's efforts at conserving the park. However, sustained inputs in training and capacity building need to be provided to the PA management as well as the SHG members over a period of time for the success of these endeavours.

6.6 At Nagarhole, gender concerns have been addressed by providing women-oriented benefits like fuel saving devices, tailoring training and computer training. Membership of women in EDCs and their executive committees has empowered them to some extent in village society.

6.7 At Pench, the positive impacts include drudgery reduction (due to introduction of biogas and LPG), income enhancement through micro-enterprises, and improved access to fuel and fodder through plantations developed in some villages.

6.8 At Periyar, almost half the investment support made under the project was targeted to women. For the empowerment of women 157 SHGs have been made functional involving women members from different EDCs. Formation of micro credit system, sale of various provisions, pickle making, tailoring unit, detergent manufacturing, etc. are some of the activities done by them

6.9 From the gender perspective, the experience of GHNP (though not an IEDP site) responds best to the concerns outlined in the SAR, in that women have been recognised as a critical constituency affecting conservation and brought to the forefront of the official efforts at participatory conservation. They have been the primary target group of ecodevelopment interventions by the PA management. As

part of the post-COB intervention at GHNP, local women from the poorest families were organised in small savings and credit groups, detailed capacity building and monitoring support was provided by the PA management, and a number of alternative and non-PA dependent income generation activities were initiated to mitigate negative impacts arising out of reduced access to the PA. In addition, women are increasingly being made the focus of "credit-plus" activities such as literacy programmes, women and child health care, and veterinary care. Conscious attempts have also been made to link women's SHGs with Panchayati Raj institutions and JFM programmes for long-term sustainability of this women's empowerment effort. Consequently, the GHNP management has succeeded in reducing the negative impact of people on the PA, along with mitigating the adverse impacts of reduced access to the PA on people, and have managed to do so with increasing participation of a severely marginalised group, namely women from the poorest household.

Thus, in spite of many gaps in the women's mobilisation efforts at GHNP (which, unless addressed, may even threaten the sustainability of the entire effort), it is undeniable that the lessons emerging from GHNP provide by far the best pointers to the future direction of village ecodevelopment initiatives, in terms of equity as well as sustainability. GHNP also stands out because it has made its achievements in a near fund-famine situation following the withdrawal of FREEP.

At the same time, Periyar and KMTR present the recipe for success in a project mode in the form of comprehensive and institution-setting GOs and their spirited implementation by a committed PA management for ensuring full participation and empowerment of women.

6.10 It is important to note here that the MTR is totally silent about the impact on women at the mid-term stage, and the fact that performance on this front ranged from poor to average and was falling short of the standards set out in the SAR was neither highlighted nor flagged for any appropriate mid-course corrective action.

Best Practices - 11
Women Saving and Credit Groups: GHNP

The women-centered intervention at GHNP began with efforts to organize poor women in small savings and credit groups (WSCGs) through a micro-credit programme. For doing so, the PA management undertook a detailed capacity building and monitoring programme for 12 selected women Group Organisers (GOs) from the buffer zone beginning in January 1999. A number of training sessions were organised for the GOs in various aspects of community mobilization, including poverty surveys in ecozone villages and skills of group formation for organizing women from poor households. For effective participation, the average WSCG size has been kept small (about 10 to 15 poor women) and care is taken to pick members from homogenous backgrounds (women with similar socio-economic conditions).

WSCG members have begun by saving a small amount (like one rupee per day), and in cases of extreme poverty, the PA management assisted group members with daily wage opportunities in the medicinal plant nurseries of the forest department. Each WSCG chooses one of its members as the 'Animator', who facilitates record keeping and deposits weekly savings of the WSCG in the nearest bank. The group members pay for the services of the animator. The GOs and WSCGs have come together and organised themselves into a community-based organisation called SAHARA (Society for Scientific Advancement of Hill and Rural Area), which is a body registered under the Societies Registration Act, 1886, and provides ongoing support to the WSCGs in group formation, skill development and marketing of produce. Till the end of 2003, 95 WSCGs consisting of 1,050 members have been organised by SAHARA. The cumulative savings of these groups are more than Rs 5.3 lakh.

WSCGs at GHNP are evolving into production centres for undertaking many non-PA dependent income generation activities like medicinal plant cultivation (in the buffer zone), vermin composting, organic farming and handicraft making, which have been able to compensate to some extent for the loss of their herb collection rights in the PA.

However, even groups that have managed to save large amounts of money are wary about lending this money within the group, as a result of which in most WSCGs, credit offtake continues to remain low. Thus, the link between savings and ultimate livelihood security is still tenuous in GHNP.

LESSONS

1. *It is not just desirable but also possible to mainstream gender concerns effectively and weave these into ecodevelopment strategies, so that the negative impacts of people and protected areas on each other can be reduced in a participatory and equitable manner (GHNP, KMTR, Periyar).*
2. *In order to do so, it may be better to reverse the sequencing of community mobilisation efforts, so that first, sub-village level institutions like women's SHGs are promoted, and only at a later stage, village level institutions like EDCs are formed. The foundations for this assertion flow from the experience of social sector interventions like those of MYRADA in Karnataka, as well as ecodevelopment efforts at PAs like GHNP. In both, it was found that from the perspective of equity and sustainability, it is desirable to begin with mobilisation of small, affinity-based groups with a common socio-economic and cultural milieu (for instance, women's SHGs). Once these are successful, the participation of marginal and vulnerable groups in the village-level institutions is relatively more certain.*

3. *Moreover, their own savings generated by SHGs, as also the credit management skills acquired by SHG members can play an important role in ensuring the financial sustainability of ecodevelopment efforts, since EDC funds can be loaned to such groups rather than to individuals, with a better chance of loan recovery and continuous enhancement of the common fund of the EDC (Ranthambhore is now experimenting with such a model).*
4. *The role of external experts in the mobilisation of women is critical for introducing standard best practices and dealing effectively with crucial regional specificities. Such experts can also provide vital long-term capacity building and handholding support for savings, credit and income generation activities of the SHGs, and later for follow-up support in marketing and quality control of products and various credit-plus activities by SHGs or federations of SHGs. The positive experiences at Periyar, KMTR, GHNP, as well as the problems arising due to the absence of such inputs at Ranthambhore strengthen this assertion.*
5. *Institutionalised security for the role of women in decision-making should be facilitated, as in the case of KMTR.*

7. Equity

7.1 Ensuring equity in the flow of ecodevelopment benefits is perhaps the most vexed issue that confronted the project. The SAR and various other documents relating to the project repeatedly stressed that vulnerable sections of society – women, tribals and otherwise disadvantaged sections such as the landless should be targeted specifically as part of the project, and that benefits should flow preferentially to these sections (such groups will be referred to as Special Needs Groups- SNGs, in consonance with the terminology used in the Bank Aide Memoirs). In fact, the SAR outlines some provisions to facilitate equity. For instance:

"PRA micro planning exercises will need to make special efforts that less vocal and powerful sub groups fully participate. Course reference material collected by WII documents one of the most effective means of ensuring this participation. This is to hold separate exercises with each identified sub group and then discuss the results in a general assembly meeting. This ensures that discussions with different ethnic and social groups are conducted in ways that are sensitive to their cultural norms."

7.2 The general experience emerging from all sites is that the institutions created (or used) as part of this project, i.e. EDCs/VDCs/FPCs continue to mirror the same power equations that prevail in the village. Often, the dominant voices in the village continued to be the dominant voices in the EDCs as well. In fact, one may even argue that by their very nature, institutions of the sort envisaged in this project will preclude any meaningful participation of the weaker sections of the

village community. In its present form, ecodevelopment as a process that assists in the empowerment of the weakest sections of the village; and through this attempt to realign the inequitable access to resources which in the first place causes unsustainable or otherwise undesirable dependence of SNGs on the PA, seems to be somewhat off the mark.

There are a number of reasons for this:

a. The forest department, particularly the frontline staff (which actually forms the cutting edge of ecodevelopment), is not, in the normal course of things, oriented towards the nuances of social development processes, and in fact, their traditional role as custodians of the PA antagonise them against PA-dependent sections of the local community. Therefore, without a concerted effort towards all-round reorientation of the FD for undertaking such a process, it is unlikely that meaningful Park-people interface would be possible. Even after such orientation, it would take very intensive capacity building efforts to actually enable the staff to undertake effective social engineering exercises.
b. The time and budget pressure that the project functioned under meant that the PA staff was constantly under pressure to meet various deadlines. Since targets were defined in quantitative terms – for instance, number of EDCs established, number of bank accounts opened and number of LPG units distributed, this did not provide the best environment for fine tuning the qualitative aspects of the complex social intercourse underlying ecodevelopment. The issue of the time frame of the project is discussed elsewhere, but it may be emphasised here that it may help if a process-dependent project of this sort is judged more in qualitative terms than simply in terms of achievement of physical targets.
c. Typically, the more socio-economically secure (and, therefore, more vocal) sections of a village are more likely to show initiative when any new activity is launched in a village. Hence, it is quite normal that in the early stages, especially if the project facilitators are somewhat unfamiliar with village dynamics, they tend to rely on these highly visible community leaders to help with the project. These leaders typically are far more articulate than individuals belonging to SNGs, and have the ability to organise meetings and gather people due to their influence in the area. Thus, in the normal course, the top-down nature of initial mobilisation and lack of social engineering skills results in a scenario where quite unconsciously, the ecodevelopment initiative tends to get aligned along the existing power equations.
d. There is a general reluctance on the part of any state agency to tinker with the power equations in any village, because of the common official perception that as outsiders, it is undesirable to interfere in internal matter of a village

7.3 The persistence of existing power equations in ecodevelopment related institutions has the following implications:

a. The primary motivation of the dominant sections (who often also corner leadership) remains the furtherance of economic benefit for themselves and their kin, and ecodevelopment institutions are seen simply as vehicles to achieving such ends. In the absence of institutional strengthening, these institutions therefore tend to remain overwhelmingly dependent upon the forest department for momentum, including organisation of meetings, decision of agenda and choice of activities undertaken by EDCs.
b. In the absence of meaningful participation by all sections of the village community, ecodevelopment institutions at the village level tend to retain their dependence upon continuous injection of external funds for undertaking tangible activities, around which community interactions among themselves and with the PA management are played out.
c. The participation of members from SNGs has to be induced artificially, or may even become sidelined altogether. Thus the coverage of the initiative may remain confined to a particular group, which may not necessarily be the one that has the greatest impact upon the forest or even the greatest need for ecodevelopment inputs from the equity and social justice perspective.

A notable exception to this trend at the project sites studied by this assignment has been the experience in GHNP, where women-centric sub-village groups have been made the fulcrum of ecodevelopment initiatives in the post-FREEP period. The PA management at Periyar too was able to address this concern by setting up user groups where members of particular SNGs (such as bark collectors) have been able to work through homogenous groups towards an improvement in their livelihood status.

7.4 There have, however, been some notable counter-arguments from PA managers to the analysis presented above, which have emerged at the different sites covered by this study. To summarise these:

1. It is beyond the scope of ecodevelopment, and by corollary of the forest department, to address larger issues to do with social change.
2. By encouraging sub-village groups and user groups, one is actually exacerbating fractures that already exist in society. One should instead attempt to bond the entire village community by promoting institutions like the EDC. The proponents of this argument have held that it is possible to "convince" the creamy layer to bring on board the disadvantaged; in return, the creamy layer is rewarded through leadership of the EDC. Thus one can offer to the dominant sections of a village an exchange between leadership and a more inclusive institution.
3. Only revolutionary social change processes and not processes like ecodevelopment can engender radical social change that can truly empower SNGs.

7.5 In part, these arguments spring from the fact that PA managers have interpreted the issue of equity in different ways. For instance, the view emanating

from Gir was that it should be possible to "convince" the traditional centres of power in a village to also factor in the needs of the poor and get EDCs to work in a harmonious manner. In return for such sensitivity, the dominant sections can be "rewarded" with leadership of the institution, an ambition that they anyway nurse. The instance of three EDCs has been cited in Gir where the groups have pledged to ensure that sections of the village that have been marginalised from the operations of the EDC as a consequence of their inability to meet the requirement of 25 per cent community contribution would also be brought on board. At the time of writing, information was not available on precisely how this was going to be accomplished.

On the other hand, the Periyar model appears to take the view that in a milieu of acute social and political disempowerment, often steeped in history, SNGs need special attention to the extent of devising different institutional structures that protect them from influences of the power centres. This would enable SNGs to gradually gain social and economic strength and the confidence that flows with such empowerment. The user groups instituted in Periyar have been formed with such a design in mind.

Some of these arguments raise fundamental questions about the nature and scope of ecodevelopment, and consequently need to be debated further. Given the scope of this study, however, it may just be emphasised that the experiences of Periyar, GHNP and KMTR demonstrate quite clearly that it is possible to bring about significant participation of SNGs, and for the process of ecodevelopment to serve as a vehicle for larger social change.

Best Practices - 12
IGAs for Conservation with Social Change

Successful development of non-PA dependent Income Generating Activities (IGAs) holds the key to marrying conservation and equity imperatives. If successful, these can act as powerful tools for correcting the skewed access to income and livelihood that characterize the poorest households around PAs, who become unwitting engines of forest damage in their desperate struggle for survival. IGAs can help such households to alter their livelihood strategies such that PA resources (access to which is tenuous as well as declining) are substituted by more dependable and sustainable means of income.

The KMTR example:

The first set of project leaders at KMTR envisioned a novel strategy for mitigating park fringe communities' forest dependencies recognized as a major constraint in conserving biodiversity. Over 3200 head loads of firewood removals every day, herding 22000 cattle into the park for grazing and collection of a variety of NWFP engaged well over 15000 poor and underprivileged families in their bid to eek out a living. Forest fires were a concomitant feature of such activities. The resolution strategy was pivoted on seeding a corpus fund for the EDCs to revolve it through micro credits to individual members and SHGs. The beneficiaries were guided in using the credit amount in the first place to break the debt trap of the moneylenders and in the second to start non-forest dependent micro enterprises. The beneficiaries themselves chose the IGA they wanted to take up. NGOs joined in capacity building where needed for an IGA and in value addition skills through grading and packing their products. A myriad of IGAs (over 60) included collecting and processing Agave-fibre, making coconut leaf mats, making 'masalas' pickles and 'papad', binding books, starting a bakery or a tea stall as well as setting up petty shops for groceries, sweets and snacks. Some joined as vendors to reach these products to shops in the villages and towns around. Others took to tailoring, repairing bicycles or motorbikes or raising and selling milch cattle and milk.

Over 15500 highly forest dependent families were covered by ED inputs through such micro credits, the number of women beneficiaries being nearly 7000, and of all-women SHGs 540. Total amount of loan availed by women beneficiaries 93.63 lakhs with cent percent recovery success. By design and institutionalization women and poor were given preference as both categories were relatively more involved in exercising pressures on forests. Their success has been instrumental in bringing thousands of families above the poverty line and in genuinely empowering women in families as well as in the society, besides assuring financial sustainability of the EDCs. The sparkling evidence of the success of this strategy is that while the project placed a total of Rs. 394 lakhs in the overall corpus of all the EDCs the, people have revolved this amount to 1098 lakhs.

Lessons:

The IEDP experience demonstrates that 3 factors are crucuial for success of IGAs:

(a) Selection of households: The poorest / most PA-dependent households must be the primary focus of IGAs (for isntance, prioritization of households into red, yellow and green on the basis of PA dependence in KMTR; initial poverty surveys in GHNP to identify the poorest women;)

(b) Selection of IGAs: Activities that the community is familiar with or which dovetail easily with other existing livelihood practices may work better than entirely new activities, for which receptivity is low and training needs are higher (for instance, medicinal plants cultivation by ex-collectors of such plants in GHNP; vermi-composting for sale to the forest department and to local users of compost by women WSCG members at GHNP; ecotourism in Periyar)

(c) Handholding support: Initial training and capacity building support by the PA management or professional development agencies towards product development, marketing and quality control can go a long way towards ensuring sustainability of IGAs by opening up new markets and helping to improve returns. KMTR (see above) and GHNP (see Ch.9, Part II) are good examples of this.

7.6 It has emerged from this study that the poor, who haplessly become engines of forest damage in the absence of alternative livelihoods, stand a greater chance to benefit from a 'village ecodevelopment' programme in the 'loan' mode, particularly involving SHGs. This does not require them to make the mandatory 25 per cent financial contribution to avail of ecodevelopment benefits, a provision that has resulted in the exclusion of the poor due to low ability-to-pay across all the sites.

For instance, at Nagarhole, apart from a modest 'membership fee', the Village Development Fund consists of only individual contributions made under the '25 per cent' clause. While this has succeeded in holding the project beneficiaries together, they do not seem inclined to use the VDF to help the poor, who were left out initially from project benefits because of their inability to contribute as per prescribed norms for 'reciprocal commitment'.

In Gir and Buxa too, there were cases of poorer people, who were not able to contribute 25 per cent, having been deprived of ecodevelopment benefits. Hence, in effect, the programme had an adverse effect on equity, benefiting preferentially the families that already had financial strength. Apart from going against the principle of equity, this may not be desirable from the conservation point of view either, as these are not likely to have been the households that have the greatest impact upon the PA.

LESSONS

1. *The degree to which particular parks have attempted to enhance the participation of SNGs has clearly been a function of the perspective of individual PA managers. The diversity of arguments that have been received from PA managers and summarized above demonstrates clearly that the more "adventurous" park leaders have attempted a variety of innovations that have succeeded in enhancing equity. Thus, a major lesson of the project is that it is possible to ensure that traditional societal imbalances do not creep into EDCs, provided project leaders are willing to think out-of-the-box and innovate.*
2. *It emerged from this project that the key to inducing equity in traditionally fractured societies lies in strengthening SNGs by linking them 'sideways' with each other, which enables them to have a more effective 'voice' in village level decision-making. This can be achieved by organising SNGs into affinity groups (SHGs/ user groups and the like), a point has been dealt with in some detail in a previous section.*
3. *At the start of any project of this kind, a common understanding needs to be evolved for terms like equity, which are open to multiple interpretations. Though the SAR did point out that the needs of disadvantaged sections were to be catered to in particular, and this was reiterated at several places in successive Aide Memoirs, it emerged during the course of this study that different PA managers interpreted this point in different ways. Though such*

diversity of approaches is to be welcomed in the ordinary course of things, and is in fact inevitable, the fact that differing interpretations may have contributed to marginalisation of SNGs at some sites compared to others offers a case for greater prescriptive ness on matters like this.

4. *The lessons emerging from an assessment of the clause calling for 25 per cent community contribution for ecodevelopment activities suggests that corrective action needs to be taken to modify this requirement, especially by substituting it with a 'loan clause'. Equity concerns will continue to suffer in future too, unless there is fair, just and quick follow up now to cover the poor by an add-on programme that allows them to access ecodevelopment funds in the form of loans, rather than as grants with a 'community contribution' clause. Issues relating to loan repayment capacity of the poor also need not be a cause for worry, provided that the SNGs are linked to each other through institutions like SHGs and user-groups, which can be entrusted with the task of ensuring loan recovery.*
5. *For the future, even for activities that benefit individuals belonging to better-off households, loans may be preferable to outright grants, as these will reduce unnecessary off take of EDC funds, and thereby help target scarce resources towards poor households and /or households which have greater impact upon the PA.*
6. *In fact, one may go further and argue that in order to take cognisance of differential financial strength of various groups in the village, the provision of community contribution (though imperative) must be based upon the economic condition of the individual family. The uniform prescription that each family must contribute the same amount goes against the spirit of the project, which seeks to benefit the poorest preferentially. For such projects in the future, it may be prudent to introduce a differential contribution regime, or one may even consider a system by which the rich in the village cross-subsidise the poor.*

8. *Park-People Relationship*

8.1 Generally speaking, the project has been able to engineer a remarkable thaw in the relations between the forest department and the local people, though the degree of improvement varies from excellent to moderate levels among the sites. This has been the result of close and sustained interaction between the two primary stakeholders and the testing of the forest department by the people from the benefits as they flowed to them. Also, the degree seems to have been directly proportional to the degree of transparency in the functioning of and the empowerment of the EDC/VFC. This certainly has taken considerable time and it is during the last two to four years of the project at different sites that this favourable situation has emerged. If this improvement in the relations is to sustain, this interaction must be maintained. The VDFs (Village Development Fund) and the concomitant institutions of EDCs/VFCs and SHGs provide the

basis and the rationale for continuing the interaction between the village communities and the forest department.

8.2 Even after the project, it is important that the role of the 'member secretary' (forest guard or the forester) should continue as a facilitator, in order to maintain the linkages that have been established with the community as also for maintaining a fair balance between the stakes. The stakeholders, themselves, expressed the need of such continued role of park staff in no uncertain terms at the stakeholders meetings organised at various PAs by the members of the consulting team. However, we find that barring a few sites, the EDCs are still very much dependent on the member secretary for administrative assistance, maintenance of accounts and overall momentum and guidance. Periodic World Bank supervisory missions laid considerable emphasis on capacity building of EDCs and SHGs in institutional management as well as in strengthening alternate IGAs, both of which are a critical requirement for consolidation of gains and their sustainability. While the linkages created between the people and the forest department must continue and be further strengthened, the EDCs must come out of such dependence through capacity building and evolve to be self-reliant in the functions mentioned above.

In Himachal Pradesh, for instance, the new Participatory Forest Management (PFM) guidelines formulated for the state on the basis of the best practices evolved at GHNP have sought to phase out the *hand holding* role of the forest department by stipulating that the member secretary is selected from within the village community.

8.3 Having made these comments, *if a singular success from the IEDP experience was to be named, a remarkable turn around in People-Park relationship would be the one.* It is more than evident that once the PA frontline staff ably led by the senior level park managers (and in some places aided by the local NGOs) successfully weathered the local people's initial phase of doubt and diffidence and the EDCs came to be formed, a real thaw took place in relations between the erstwhile adversaries. The degree of positive change in the PA-people relationship is manifest from several observations made by EDC/SHG members at the stakeholder workshops, "The forest department has outdone any other government department in ensuring genuine well-being of the local communities". It must be admitted that this change was not easy to bring about in either parties. On the one hand the park frontline, used to enforcement *vis a vis* people, took time to undergo a major attitudinal change in the manner they related to the local people. On the other hand, the local people had always treated the park staff with apprehension and even antagonism and took time to assess and perceive their new image as benefactors. Only close and repeated interactions clarified the potential for synergy and the scope of enabling ecodevelopment interventions energising this potential. It is thus no surprise to find examples like Karmajhiri in Pench National Park, where it took at least 19 meetings between the

locals and the park staff before the EDC could be established. Likewise, in Nagarhole NP despite PA management and associated NGOs' bid to convince fringe village communities, some villages and some families within willing villages refused to come on board the integrated development and conservation strategy of IEDP at the outset. Later, seeing the benefits accruing to those on board they clamoured to be included but financial constraints hindered this. Even the latter instance is one of a change in peoples' attitude for starting a friendly relationship.

Lessons

1. *The project provision that a Park staff work as the ex officio member secretary of the EDC helped the people and park to come closer. In some situations, this relationship has taken the form of a dependence, which must be avoided in any future project by providing for capacity building of members of EDCs and their Executive Committees in promoting genuine participation as well as in conducting administrative and financial functions with transparency and efficiency. However, accounting procedures would need to be simplified to accord with collective decision making with transparency rather than an insistence on fiscal-code bound government procedures. While such functional independence is to be encouraged this should not go to weaken the synergic bond between the PA staff and people.*
2. *The fundamental premise that ecodevelopment is a two-pronged strategy for securing conservation with social justice in the juxtaposed context of the PA and local people cannot be lost sight of. This premise enjoins that the PA staff responsible for conservation, and the local people with their concerns for resources and livelihoods are equal stakeholders in the processes and outcomes of ecodevelopment interventions. Their synergic links must always remain strongly forged. Thus even when, as should be aimed, a member-secretary is one of the village people and discharges the role with competence, the PA staff must continue to remain 'non-voting' members of the EDC and EC. Also major EDC decisions should continue to be reviewed/ratified by senior PA managers, if necessary by referral to an existing or 'to be created' higher institutional body e.g. a 'Range' or 'PA level' federation of EDCs where PA mangers and staff are also represented. It is in this manner that PA-People relationship can be productively sustained in favour of both the stakeholders.*
3. *The lesson from this experiment of having a park staff as an EDC member secretary has proved highly successful in forging relations and is worth emulation in any future project of its kind.*

9. Project Timeframe and Fund Flow

9.1 The IEDP was planned for a period of five years (1995-96), and this study found across sites that given the range and the park-people participatory nature of

tasks to be undertaken under the project, combined with regular PA management activities, this time frame was unrealistically short. Moreover, the project envisaged a number of highly process-driven and effort-intensive activities like awareness promotion, micro planning, and capacity building of both people and staff, which themselves could not have be fast paced. These also needed to make a clear headway before full-scale implementation of planned activities could begin. Even in the early stages of the project, critical start-up requisites like issue of GOs laying down enabling administrative and institutional mechanisms for forming EDCs and processes for micro-planning and for functioning of EDCs and delegation of financial powers took considerable time to get under way. Another critical pre-requisite of selecting and posting suitable project leaders also took quite some time at several sites. Considering these preparatory steps and enabling mechanisms to fall in place, only after which any realistic implementation could proceed, the 5-year period was woefully adequate.

9.2 A clear consequence of this was the need across sites for 2 to 3 extensions in the project tenure. With the final extension expiring in June 2004, the actually availed project tenure worked out to be seven years and seven months, assuming that the effective date of initiation is taken as December 1996, following the SAR in August 1996. By the MTR stage (early 2000), all three categories of players *viz.* PA staff (including contracted specialists), local people (EDCs and SHGs) and the NGO facilitators had gained reasonable levels of capacity and experience. This is reflected in the improved achievement of physical and financial targets from the fiscal 1999-2000.

Table 2: Year-wise Release of Funds and Utilisation under the IEDP

Year	***Release (Rs. Lakh)***	***Utilised (Rs Lakh)***	***% Utilisation***
1995-96	190.00	20.235	10.65
1996-97	0.00	94.99	0.00
1997-98	1,386.50	700.945	50.55
1998-99	2,043.50	1,664.64	81.46
1999-00	3,327.44	3,159.71	113.09
2000-01	3,085.00	3,489.07	113.09
2001-02	4,000.00	3,440.70	86.01
2002-03	5,057.96	3,173.53	62.74
2003-04	3,082.95	2,692.75	87.34
TOTAL	**22,173.35**	**18,436.57**	**83.14**

Source: Project Tiger

Table 3: Restructuring of Project Costs at the MTR Stage (Rs/ lakh)

	Stage	PA Mgmt	Vill-ED	EE & Aw	R&M	Info-Tech	Total
Total Exp. All PAs	SAR	4948 25%	12655 64%	461 2%	1523 8%	62 0%	19649 100%
	Exp. 03/00	2980 61%	1659 34%	135 3%	136 0%	13 0%	4923 25%
	MTR Rev.	5490 35%	8910 56%	510 3%	900 0%	70 0%	15880 81%
Project Tiger Office/MoEF	SAR						3245 100%
	Exp. 03/00						172 5%
	MTR Rev.						1160 36%
Total Project	SAR						22894 100%
	Exp. 03/00						5095 22%
	MTR Rev.						17040 74%

Source: World Bank MTR, 2000

9.3 The MTR, in the year 2000, suggested an overall reduction in the total project cost from Rs 22, 894 lakh (as proposed in the SAR) to Rs.17,040 lakh, that is approximately by 25 per cent. However, as actual performance has shown, the tempo achieved from the fiscal 1999-2000 onwards ensured utilisation up to 2003-2004 (31 March 2004) of over 83 per cent of the original SAR estimated cost of Rs 22, 894 lakh. By the time the project finally closes on June 30, 2004, it is expected that the actual utilisation would cross the 90 per cent mark of the SAR outlay.

If we see the year-wise pace of utilisation against releases (Table below), it started with about 11 per cent in the first year (1995-96) and peaked at 113 per cent in the 5th and 6th years (1990-00 and 2000-01). The peaking in utilisation coincided with the timing of the Mid Term Review (2000). This percentage utilisation again shows a drop from the year 2001-02 but this is only a percentage drop, the actual utilisation remaining around Rs 3,000 lakh per year. The conclusion is inescapable that it is the annual capacity of fund utilisation by the PAs that peaked in the 5th year and oscillated only mildly around the Rs 3000 lakh peak between the 5th (1999-00) and the year gone by *i.e.* (2003-04). This indicates the status close to the project closure (30th June 2004).

It has also been observed that the 'village ecodevelopment' component became subject to greater proportionate cut following the MTR as compared to 'PA management' component. This appears to have gone along the perceived higher absorption capacity of sites in respect of the latter component even though relative priority lay in favour of the former. As the 'village ecodevelopment' component

actually needed greater time in micro planning and trust building, the initially earmarked limited tenure may also have contributed to such decision favouring 'PA management'.

9.4 With hindsight, it is easy to see that the project term ought to have been fixed initially at seven to eight years. The scheduling of activities in the first two years should have clearly provided for enabling institutional processes and structures, training and posting of project leaders, micro planning and capacity building of local community as well as PA staff. This would have meant that the outlays in initial years were lower and these would have picked up as the field implementation activities picked up from the third year onwards. In such an event, project progress in the mid-term evaluation would not have caused the concern it did given the 5-year term. Although the MTR did envision extension of the project term by up to two years, its concern about the low cumulative utilisation caused it to suggest downscaling of the overall outlay. An initially provided longer term and slower pacing of allocations in the first two years would have obviated the need for downward revision of the outlays in the first place. In any case in such an event the relative effective primacy among components would not have been disturbed, as happened in the absence of a prior envisioning of a realistic time frame and year wise pacing of allocations.

9.5 Another problem, which affected a majority of IEDP-PA sites, was the *flow of funds* to them. Although the MoEF mostly released the funds timely the state governments did not promptly pass them on to the sites. In many cases, even the first releases in a fiscal year arrived more than six months late, the subsequent releases reaching the sites closer to the end of the fiscal *i.e.* in February-March. The delay in fund flow caused delay in utilisation and resulting late arrival of 'utilisation certificates' from the States to the MoEF. In turn this caused a delay in the first releases in the following fiscal.

This problem is not unique to this project. It is therefore necessary to envision a mechanism whereby the funds can be directly allocated to a 'Special Authority' on the lines of the 'Forest Development Authority' (FDA) set up in some states. Such an 'autonomous' body will not have any fund flow constraints and once the field utilisation has been ascertained to be satisfactory the funds as allocated can be timely placed with the PA sites. Any future project would need to keep this situation and suggestion in mind at the planning and negotiation stages.

LESSONS

1. *One of the most critical lessons to emerge from the study is that IEDP's time frame was seriously inadequate. While a 5-year timeframe is acceptable for an ongoing thematic scheme in the governmental framework, a field project trying to break new ground and test an emerging strategy like ecodevelopment certainly called for some advance preparatory period to be built into the timeframe before a full-scale launch.*

2. *The IEDP aimed at integrating conservation and development through a rapport-seeking approach between the hitherto adversarial PA management and PA dependent communities. An important lesson emerging with the benefit of hindsight is that the project term ought to have been originally visualised and fixed at 7-8 years. The initial two years of this should have been dedicated to preparation involving detailed planning and all-round capacity building with full-scale implementation following from the third year onwards.*
3. *Accordingly any future project aiming to integrate conservation and development at the field level should have an 8-10 year timeframe with the following tentative schedule of activities:*
   ***Year 1**: This should focus on (a) Broad outline planning of PA management (Management objectives and constraints, zoning requirements, identification of non-PA dispersal areas and critical corridors with identification of 'space' for ecodevelopment); (b) Broad outline ecodevelopment planning (including socio-economic profiling, identification of main dependencies and potential ED interventions); (c) Obtaining enabling government orders on processes and structures for ecodevelopment; (d) Contracting GIS compatible geographic and ecological mapping*
   ***Years 2-3**: The main activities should include (a) Detailed management planning; (b) Coordinated ecodevelopment planning with participation of communities and frontline staff; (c) Initiation and completion of processes of micro planning and community institution building; (d) Launching activities on small scale pilot trial basis for learning and experience.*
   ***Years 4-8** (this may even extend to Year 10 for landscape level project-sites): The focus will be on full-scale launch of activities, and attainment of logical and satisfactory outcomes in terms of conservation with social justice.*
4. *Fund flow mechanisms of allocations from the MoEF to any PA (or landscape) site under any new such project must be so envisioned that funds reach the site timely and are not constrained for any reason other than quality of performance and the pace of utilisation. An arrangement on the lines of a 'Special Authority' similar to the FDAs set up in some states should be considered at the planning and negotiation stages.*

10. Research and Monitoring

10.1 Both IEDP and FREEP provided for ecological and management research to be an important activity to feed into improving PA management planning. They also provided for socio-economic studies of the local communities insofar as they had dependence on the natural resources for domestic use and livelihoods as well as for cultural and ethno-biological links. The latter findings were to be input into better participatory planning of ecodevelopment interventions. In addition, organised participatory monitoring by the PA staff and EDCs of the direct and indirect impacts of PA management and ecodevelopment interventions were also laid down as a project activity. The findings of such monitoring of impacts on the PA habitats and biodiversity status as well as on the economic well being of the

participating families were to feed into improving the interventions on course. Kanha TR, a MP Forestry Project (MPFP) site has had a near 30–year history of largely in-house organised research thanks to a competent and qualified Research Officer supported by field staff for profiling and monitoring habitat status and animal abundance. Critical research on highly endangered species and their habitats has also led to notable successes in saving them. For close to 10 years, the PA has undertaken a correlative research on pressures of local communities and its impacts on conservation to yield clues for conservation planning on a statewide basis with concomitant scope of JFM and ecodevelopment.

10.2 Both IEDP and FREEP also provided for a fair amount of investment for undertaking organised research by contracting competent institutions and individuals and this has certainly helped in most sites in acquiring very valuable data and findings on both ecological and socio-economic aspects. These investments have also facilitated land use and vegetation cover mapping supported by the use of remote sensing data and its close analysis using GIS tools within the PA and its impact zone. Kanha also benefited from similar inputs from the WB supported MPFP. Thus, all the 10 sites had an equal enabling support for meaningful research and monitoring for better planning of PA management and allied ecodevelopment interventions. Certainly the quality of the effort has varied from site to site but by and large the results are encouraging and the experience leaves significant lessons for future application.

10.3 A brief site-wise appraisal from the learning angle is presented in the following.

10.3.1 Gir National Park: Gir has excelled in commissioning highly relevant management and socio-economic research by carefully selecting institutional and individual consultants of proven professional competence. It also acquired excellent mapping support using modern technology. Officers and staff have for a long time also undertaken management monitoring with connected human aspects. In particular the open pasture dependent cattle raising Maldhari community and the fringe villages have been well studied. The movement of lions outside and the resulting conflict has also been regularly studied.

Gir management is to be complimented for their effort to share research findings with frontline staff by having select studies translated and conducting meetings with frontline staff where these were discussed.

10.3.2 Periyar TR: Periyar's performance on the R&M front has been equally impressive and result oriented in both ecological and socio-economic sectors. Cogent identification of problems and hiring of competent consultants has led to correct profiling of ecosystems and biodiversity status. The allied management and socio-economic aspects have also been well studied by the park's own trained officers and scientists of both disciplines hired on whole time basis under the

project. The findings have been fed into the preparation of a high quality management plan by Kerala's own State Forest Research Institute. Again, organised participatory monitoring of the reduction in pressures, of resulting habitat amelioration alongside the improvement in incomes and well being of EDC member families has proved very productive. It has enabled better designing and implementation of ED interventions helping livelihoods as well as conservation. On the social justice side it has enabled focus on the poor and women directly contributing to a higher level of all round sustainability.

10.3.3 Buxa TR: Buxa, like Gir and Periyar, very ably followed the route of in house as well as contracted research with excellent results. As a part of in house research, a competent ecologist and a sociologist were hired who worked with staff to monitor observance of reciprocal commitments by the VFCs. They developed suitable formats for such participatory monitoring in the local language. Besides, the use of assets acquired by individual beneficiaries and the extent to which these and other ecodevelopment interventions brought about a changeover to alternate IGAs for livelihoods, were also monitored in participation with VFCs. To what degree these helped reduce pressures was also likewise collectively estimated. A notable contribution of this exercise and other efforts by the contracted ecologist and sociologist was help in capacity building of the staff and VFC/SHG members. The ecologist further conducted research on natural and accelerated 'river erosion' and the external causes responsible for the latter. He also studied incidence of fires and grazing impacts on habitats. The reserve also hired WII to study seasonal movements of elephants within and in the adjacent areas in North Bengal. Other contracted research importantly covered 'Process Documentation of Micro-Planning' and a study of 'Stress Management among PA Staff'.

Bank supervision Missions (particularly November 2003) have stressed that continuous assessment and feedback is essential on the qualitative gains being achieved due to various activities, such as canopy opening; stream bank stabilisation; soil conservation works; degraded area planting; and maintenance of grasslands, water holes, saltlicks.

10.3.4: Ranthambhore TR: The only meaningful data support acquired by the PA was in remote sensing and GIS-based land use and vegetation cover mapping, which has helped preparation of the management plan. Otherwise, both in house and contracted effort in research and monitoring of ecological, management and socio-economic parameters has been rather poor. Of course the PA staff is used to seasonal monitoring of water sources and the concomitant movement of major mammals in this intrinsically semi-arid and drought prone area. The staff also every year monitors the animal abundance and makes population estimates of tiger, leopard and their main prey species.

The earlier, ongoing and IEDP induced effort in research in ecological and human aspects has been rather poor. This is reflected in the lack of coordinated thrust on problem solving as a part of the PA Management Plan as well as the weak micro-plans and their less than efficient implementation under IEDP. No doubt this deficiency contributed to poor preparedness at the outset as well as during project implementation resulting in delays and sub-optimal performance.

Tourism management is a big management issue, what with heavy visitations thanks to tiger viewing becoming a star attraction. So is the problem of livestock grazing, especially in the national park segment of the PA. Both these aspects need concerted research support for devising bold management, ecotourism and ecodevelopment strategies. For want of these inputs, it's not been possible to establish any worthwhile link with the poor and landless with respect to their participation in meaningfully organised ecotourism, as well as addressing effectively the grazing problem. The archaic approach of erecting animal barriers for controlling grazing and crop depredation by wild animals is held to question on long term sustainability as well as ecological merit. Likewise, WB Missions have repeatedly asked for impact monitoring in terms of ecological propriety of water facilitation measures within the PA so as to avoid 'overdoing' in this semi-arid tract.

10.3.5 Nagarhole NP: The Park commissioned NRSA for multi-layer mapping of physical, vegetation and land use features, which have directly fed into the management plan preparation and in enabling efficient map support. This and other investigations done by the management planning consultant ended in a reasonably good PA Management Plan. Besides, 22 studies were farmed out to private consultants and NGOs on biological, management and socio-economic aspects including the tribal population living inside the park. Many such studies were of no direct significance to the mandate of the project and quite a few were of equivocal quality. With a few exceptions, studies were mostly done by individuals/NGOs of limited competence. A couple of studies on tribal population and on their relocation outside the park helped in somewhat better organisation of the relocation operation. Another useful study was on human-animal (including elephant) conflict due to animals moving out of the park, which helped in better-planned laying of solar fences and elephant-proof trenches. All in all the research and monitoring effort in NNP left a lot to be desired in terms of cogent prioritised identification and addressing of the problems through competent and focused studies yielding clues for potential mitigation strategies and actions. For example, weed abundance is a major habitat constraint but no experimental research was mounted to evolve a foolproof technique capable of success in the interior and fringe situations, the latter having a simultaneous potential for habitat amelioration as well as ecodevelopment inputs for the fringe communities.

10.3.6 Pench TR: A number of research studies with potentially relevant subject areas were awarded to established institutions of repute, a couple of NGOs and a private consultant. Baseline mapping of physical features, vegetation cover, land use and other management relevant features was carried out for the PA and its impact zone by WII, which helped in management planning and continues to have a high utility in ongoing management and ecodevelopment activities. State Forest Research Institute developed methods for monitoring by PA staff in association with local communities. Other subjects of study covered topics like documentation of traditional knowledge, participatory ecotourism and PA visitor management. The Indian Institute of Forest Management conducted an important study on process documentation, the findings of which can be of potential use for the PA as well as in planning future such projects. An NGO prepared an action plan for environmental education and awareness promotion. Although all the final reports were received within the project period, some were late to be made use of during the project implementation. An ecologist, a sociologist and a women facilitator were also contracted by the PA under the project and are reported to have participated in monitoring activities.

The November 2003 WB supervision Mission has pointed the need for monitoring the impact of water conservation works on animal distribution and behaviour, especially since distribution of wildlife concentrations will influence tourism and visitor use of the park. The mission further stressed and recommended that regular staff should be able to take over impact monitoring duties (currently being carried out by contracted sociologist and ecologist), under the supervision of a senior officer.

10.3.7 Great Himalayan National Park: The park made excellent use of the scope under FREEP to commission WII for a 5-year multilateral baseline study to profile the main attributes of the 'GHNP conservation area', which besides GHNP included the adjacent PAs. The study encompassed physical environment, range of biodiversity (systematic taxonomic coverage of flora and fauna), history of land use and conservation as well as current socio-economic status as well as perceptions and attitudes of local communities towards the park. The findings have been published in a six-volume report of high value. The park used this data in improving coverage and quality of PA management and ecodevelopment. The report is currently being used as the base for a detailed management plan including the coordinated ecodevelopment component, being prepared by the park director.

10.3.8 Kalakkad Mundanthurai TR: The park made full use of the scope under FREEP for commissioning meaningful research encompassing biodiversity-attributes, its conservation and the allied human aspects. Reputed scientific institutions, *e.g.* French Institute-Pondicherry and WII were commissioned for detailed baseline profiling of physical, ecosystem, biodiversity and human-use attributes. Together with good GIS generated maps of vegetation cover, land use,

and human use factor, the researched socio-economic data forms the basis for preparation of a comprehensive management *cum* ecodevelopment plan. The WII report makes detailed suggestions for PA management as well as coordinated ecodevelopment. While this database served both these sectors of activity during the project period, the PA management plan itself is presently under preparation by the Field Director of the park. A few other useful studies which were commissioned related to rare and endemic species in this 'biodiversity hot spot', local ethno-botanical knowledge, community dependence on the PA, economic valuation of the ecosystem services and of PA's natural resources and the human-wildlife conflict. These other studies also fed into improving the overall activities in both sectors during the currency of the project and are proving valuable in management plan preparation.

The close interaction mode that developed between the PA staff and EDCs/SHGs has become a feature of the excellent park-people relationship that continues to function in observance of reciprocal commitments and in the form of the help flowing to the stakeholders through the impressively grown revolving community development fund seeded by the project. The joint activities also include informal monitoring of reduction in pressures, fire and offence occurrences and continuing amelioration of habitats and biodiversity status. Such monitoring also covers impact of past and continuing ecodevelopment assistance flowing to the communities. All in all, KMTR has made good use of organized research and informal participatory monitoring to assist its all round activities.

10.3.9 Kanha TR: Kanha is a unique PA in the Central Highlands region, distinguished as much for its 'old growth' as for its diversity-enriching 'secondary' ecosystems. The latter evolved under the ancient and long-term traditional community lifestyle influences ranging from hunting-gathering, slash and burn farming to later settled agriculture and cattle raising with continuing dependencies on bio-resources. The most typical representatives of the secondary ecosystems are the valley and plateau grasslands and their dependent diverse and teeming fauna exemplified by the 'hard ground swamp deer' or the barasingha of the Central Highlands. Kanha has the distinction for saving this species from the brink of extinction, its only population having dwindled to just 66 in 1970. Organised research based management effort has revived the population taking it to its current level of around 400.

KTR made full use of the scope provided by the Project Tiger since mid 1970s fledging out its initial research effort into systematic baseline profiling and sustained periodic monitoring of the habitats and fauna. Besides personal research efforts by senior park managers, the park has had a qualified research officer all along. In the process, it has developed field-friendly and scientifically sound techniques for profiling forest and grassland habitats as well as the status of prey-predator populations. Later, it diversified its effort to cover multi-dimensional gathering and analysis of data in the managed forests and non-PA

habitats having the play of varied biotic pressures. The preceding Field Director tested this technique at the state level to correlate the state's tiger population to the prey base combining wild animals and livestock.

With access to funds provided by the MPFP Kanha commissioned remote sensing and GIS multi-parameter mapping of KTR and its surrounds. With the support of these maps and the long standing researched data, the preceding Field Director prepared a comprehensive PA management plan covering also the buffer zone, where permissible forestry operations have been modified along the needs of biodiversity conservation. Likewise, it provides for planned ecodevelopment support in the buffer zone including for the relocated villages.

10.3.10 Palamau TR: The PTR management has, since 2000, commissioned nine research studies that were meant to feed into PA management practices. It was found, as pointed out also by the WB supervision mission in October 2002 that though some of the reports presented considerable academic narration, they lacked hard data and its analysis such as could be helpful in any aspects of PA management. For example some of such deficient reports pertained to fire-control, moisture conservation/harvesting structures and those dealing with documentation of impact on PA of village ecodevelopment activities reflected by a reduction in timber smuggling, green firewood collection, grazing and NTFP collection.

Bank Missions also strongly and repeatedly recommended that water-harvesting structures should be monitored for their impact on wildlife before the construction of new structures. It is not clear if this was actually carried out and if so with what findings and how it was employed in improving water facilitation activities.

In the context of research studies, it has been singularly difficult to elicit the interest of competent individuals/organisations to work in Palamau Tiger Reserve. It took considerable time and effort on part of the PA authorities to mobilise consultants for the research studies that were finally carried out.

General finding: In general, though considerable money and effort was expended on the research and monitoring component as described in the preceding sections, not all the PAs have used or may ever use the findings to effect changes in the field and to fill management gaps. This is because problem solving research priorities were not determined in advance or if identified were not focused on problem solving. Also several agencies contracted for this purpose were not competent enough.

LESSONS

1. *It is necessary that subjects or issues with direct bearing on ecological and socio-economic aspects of PA management and ecodevelopment are carefully*

identified in advance so that research can meaningfully feed into management and ecodevelopment action, with findings from at least some of them helping project implementation on course. Peer reviewing of research outputs would go a long way in increasing their robustness.

2. *It is necessary that potential agencies, institutions or individuals for undertaking research on identified problems/subjects are identified through a national level exercise. Assigning topics to individuals or institutions on subjects of their own choice should be avoided all together. A better organised and staffed HQ support than what the PTO was allowed to muster is critical for result oriented commissioning of research in both management and socio-economic domain in the PAs in any such future major project.*
3. *It is necessary to commission a baseline demographic and socio-economic survey of the PA and its impact zone well in advance of initiating micro-planning as its findings can greatly help in prioritizing villages within identified boundary sections and give preference to more forest-dependent families within selected villages.*
4. *Multi-parameter GIS friendly mapping of vegetation cover, topographical, hydrological and land use features can greatly help in better preparation of both PA management and ecodevelopment plans as well as their better implementation. Only established competent institutions can do such tasks so as to give useful results.*
5. *Monitoring of impacts on the community as well as upon the PA by joint teams of PA-staff and the EDCs can and should be undertaken based on a prior defining of parameters as well as needed simple forms for recording data and/or visual appraisal. A regular exercise on these lines during project implementation would not only yield useful information but also help improve activities on course.*
6. *The Aide Memoirs emerged as a most consistent and exhaustive tool for monitoring the project. At least one PA manager clearly articulated the utility of WB supervision missions in ensuring that project activities proceeded according to schedule and in ironing out gaps.*
7. *The consensus emerging from discussions with park staff about the efficacy of the IPPR was that since the IPPR was based extensively on secondary documentation made available by the PAs themselves, there was little information emerging out of the exercise that would shed any new light for the PA staff. Though there was a component of primary data collection from villages as well, it was strongly felt by park staff that unless significantly more primary work is carried out at the village level, the information emerging from the IPPR is of limited utility.*
8. *Further, exercises like the IPPR could serve as vehicles for the sort of professional assistance that has been found to be an essential prerequisite for success in projects like this one. Given the fact that the IPPR team is supposed to have both ecological as well as social expertise on board, for the future, it might be of assistance if IPPR teams also double up as professional handholding support providers.*

9. *It would be of utility to the conservation community and society in general if the vast amount of research knowledge that has been generated as part of the project is put in the public domain (perhaps over the Internet).*
10. *It is necessary that an effort at the Participatory monitoring of ecodevelopment currently being tried out at most parks is continued even after the project ends. This should also encompass the components of long term ecological monitoring (LTEM). This in due course shall facilitate the emergence of a widely accepted strategy for a holistic monitoring of the PA s.*

CHAPTER III

Looking Ahead: Imperatives for a Future Project

Integrating conservation with social justice

The experience gained in concurrent implementation of PA management and ecodevelopment in the 10 PA sites throws up lessons in a conceptual domain for a better-designed future initiative for effective conservation of biodiversity with social justice. The socio-economic and demographic profiles of potential sites in any future such initiatives are quite likely to be similar to those in the studied 10 PA sites with their buffer zones and multiple-use surrounds included.[12] The per capita inadequacy of rural development inputs and their inappropriateness arising from non-recognition of the inevitable link between the rural and forest ecosystems in such 'landscapes' are also not likely to be any different. The threats and constraints affecting conservation prospects are also bound to be similar. It is thus imperative that the lessons learnt from these 10 sites directly feed into the planning of any future project with similar objectives.

Communities living in close proximity to natural landscapes are by definition located in remote and inaccessible regions, which have largely been bypassed by mainstream processes of development. In this sense, the poorest households in such regions may be viewed as "doubly deprived" – in relation to the national level of basic needs availability per capita, as well as in relation to the more affluent households within such villages. Also, given their low access to income earning assets, it is such households that tend to exert the maximum pressure on the resources in their surrounding areas for survival. Thus, a case may be made for giving priority attention to the poorest households situated in close proximity to natural landscapes under projects like ecodevelopment. This can have a beneficial impact on conservation as well as social justice, thus creating a win-win situation.

Also, a case may be made for levying an 'ecodevelopment' surcharge on any 'development' projects that aim to harvest natural resources from such landscapes, and for using the proceeds of such a levy for ecodevelopment-type activities aimed at improving livelihood of natural resource dependent communities that are affected adversely by 'development' projects. This logic must also extend to forestry operations with a commercial objective. A fair percentage (say 20 per cent) of the net timber revenues should also flow into the ecodevelopment fund earmarked for the landscape and secured as a 'trust fund'.

At the landscape community level, the contextual relationship of ecodevelopment with conservation also needs to be clearly defined. Ecodevelopment, as distinct from rural development, is inevitably a strategic support for conservation and must preferentially, *though not exclusively*, address those sections of the village community that are the 'tools' of exercising pressures on natural areas because of

paucity of alternative livelihoods. The poor, landless, underprivileged and women (the last also for several other reasons) would call for more focused and preferential attention for ensuring 'conservation with social justice'. This has to be ensured by conscious design through an empowering process for their active participation in decision making in the planning and implementation of micro-plans *via* EDCs, VFCs, their executive committees and SHGs. This empowerment has to ascend upward into EDC/VFC federations at different institutional levels as may be envisioned and created.

Strategic Framework

The fundamental principles, with the concomitant strategic path ahead for nature conservation along with social justice, that emerges from the above discussion as well as from the experience gained from the 10 studied PA sites, and which also accord with the national law and policy framework are enunciated in the following. The bullet points elucidate the concept, while the italics describe the strategy.

- Given that biodiversity resides both in 'old growth' and 'secondary' ecosystems in forest as well as non-forest natural areas, only an integrated 'landscape' or 'seascape' approach can deliver.

This would call for a prior identification of target landscapes and seascapes on the basis of their bio-geographic attributes, biodiversity values and geographic integrity with an eye on the extant demographic profile and land/resource use.

- The aim has to be security of 'ecosystem services' and conservation of the full range of biodiversity with social justice within the landscape/seascape covering all land use categories *i.e.* RFs, PFs, national park (NP), sanctuary (SA), 'conservation reserves' (CNR), 'community reserves' (CMR), managed forests 'coastal resource zones' (CRZ) and even village commons.

Important 'penumbra habitats' and 'corridors' for biodiversity/wildlife around and between PAs within the landscape/seascape shall have to be identified for special management assistance aimed at revival and long-term viability ensuring the security of 'ecosystem services' and of the full range of biodiversity with social justice.

- Large landscapes are to be found only along major mountain ranges including their immediately adjacent foothills or within the expansive stretches of 'hot' and 'cold' deserts. Likewise large seascapes can only be found in a couple of stretches on the east coast within the states of Orissa, Andhra Pradesh and Tamilnadu. Insofar as conservation of the overall range of biodiversity within 'old growth' and 'secondary' ecosystems

within a landscape or seascape is concerned, an agglomeration of the 'main PAs' (national park or sanctuary), 'managed forests' and/or relatively moderately used 'scrub-savannah' or desert segments with critical corridor links (even if degraded or diverted), needs to be visualized.

The imperatives emerging from this discussion require that each 'project landscape or seascape' would have to be given a 'crisp and practical' geographic constitution. This would entail selecting in continuum as large sections of the landscape as possible so as to meet the combined functions of 'natal habitats', 'dispersal habitats' and 'corridors' linking the different habitat stretches in these two categories. 'Contiguity' (with or without corridor facilitation) and 'potential' to serve all the different conservation and social objectives and 'as large as possible' are the three ruling criteria.

- The potential of 'wildlife tourism' to serve conservation as well as local communities (affected by the restrictions inherent in PA management) must be redeployed by orienting it to have the attributes of true 'ecotourism'.

Ecotourism is potentially a powerful tool if innovatively used for generating non-consumptive livelihoods. Additionally, the levy of an 'ecodevelopment surcharge' on park entry fees as levied in some PAs is a valid route for augmenting resources for ecodevelopment. Such 'strategic use' of ecotourism would go a long way in forging community stakes in the PAs of all categories including the national park.

- The amended Wildlife Protection Act permits the 'forest produce' coming from habitat management operations in PAs to be given away for *bona fide* use to local people in a non-commercial manner. Such provisions could facilitate the genre of ecodevelopment activities. Other than a NP or a SA, the 'managed forests' within buffer zones or elsewhere within the landscape, of course, do not attract any restrictions on introduction of JFM and also ED support. Operations mandated by ecological propriety, e.g. for phasing out 'monocultures' and exotics as well as those for weed removal and helping the areas re-vegetate with native species, have the scope for not only wage employment but the 'forest produce' obtained can legally be allowed to be given away under an ecodevelopment activity as small timber or as domestic fuel.

In fact, the provisions of Section 35(6) of the WPA would allow even the 'timber' to be 'used' for a 'non-commercial purpose' e.g. crediting the net value of sale proceeds of such timber to a dedicated trust fund for park management and ecodevelopment.

- Ecodevelopment essentially needs to be process driven and not target driven.

The project should serve as a means of initiating participatory processes for planning and transparent decision-making in order to evolve and implement a package of measures, which seek reduction in forest/bio-resource dependence and also provide effective alternatives for such resources and livelihoods. It should be recognized that both local people and PA staff are primary stakeholders all through the processes of planning and implementation when the aim is to integrate conservation and development. Accordingly, the ecodevelopment process must be opened up much more effectively for review and audit by the community, to enhance the degree of trust between the community and the PA management, as well as the stake of the local community in ED activities undertaken. This can be achieved by much more sincere and effective use of tools like social audit, EIA and PAMIA. While some pointers towards these have emerged in the design and mid-term review stages of the current project, much greater fine-tuning is required for the future for sincere implementation of the spirit of participation.

- The concept of ED needs to be explained at the local level in its true sense as people apprehend that conservation is thrust on them because it is for the larger good of the region, the country and the world at large.

It is thus imperative that local communities are made aware that conservation is also of direct good for them for food security through water security. Local people must also be made aware that the project aim in supporting conservation through JFM and ecodevelopment is to ensure that their share of costs of conservation 'for universal good' is reduced to the maximum extent.

- Some parks covered under the IEDP and the FREEP are at a stage where potentially exceptional gains can be achieved by continuing support for specific activities for some additional period of time.

To consolidate achievements at selected sites it would be prudent to provide necessary support for such identified activities alone as can consolidate the gains in favour of better conservation or ecodevelopment, regardless of their being situated or not in a selected landscape-site under the new project.

- Of the 10 studied sites, there are some whose performance in some activity sectors in terms of visualisation, planning and implementation has been remarkable with great potential for on site learning. Some notable examples of such 'field training-school PA sites' are Periyar (ecotourism), KMTR (cogent focus by design on target community sections and IGAs), GHNP (SHGs), Gir (EE and training for staff and EDCs) and Kanha (PA management with integrated buffer zone).

It would greatly help implementers of any new such project to visit and receive capacity building inputs at these sites in the concerned activity sectors both as a part of any structured training programmes or through specially organised field workshops.

- Increasingly natural areas are being subject to a wide spectrum of commercial pressures. Ecodevelopment as a strategy is not directly capable of countering such threats. A possible approach to addressing such threats is that the institutions developed as a part of planning and implementing ecodevelopment become truly aware of the portents of such threats to their own stakes in natural areas and thus are by themselves inspired and committed to contend with such threats. PAs like GHNP have demonstrated that building strong community-based institutions can actually act as a vehicle of larger social and political change.

Ecodevelopment institutions need to evolve to a stage where they can address larger threats facing natural areas. Such an evolution would require project facilitators to be alert to this larger role that the ecodevelopment institutions may be required to play to defend their stakes in natural areas.

- Leadership has emerged to be the single most significant factor that makes or mars the potential of an ecodevelopment programme. The IEDP experience has clearly demonstrated that dynamic leaders who have been willing to "think out of the box" have achieved remarkable success, even with vexed social issues.

*It becomes critical for any future ecodevelopment initiative to ensure that the selection of **project leaders** is made carefully identifying individuals who demonstrably have performed well in community-related issues, have undergone and meaningfully used such training or have a track record that confirms the person's faith in the ecodevelopment philosophy.*

- Ecodevelopment as a management tool for biodiversity conservation has today reached a level of complexity and importance that it shall be necessary for the state to deal with it in a manner which goes beyond the stage of trial and error into the realm of firm policy, legal support and a long-term commitment.

It is, therefore, suggested that the government of India may even consider instituting a national scale project/ mission for ecodevelopment, so that it becomes a full fledged discipline in its own right.

- The success of ecodevelopment as well as JFM as programmes is primarily anchored in the development of mutual trust between people on

the one hand and PA management on the other as well as amongst the different stakeholders within the community. A careful building up of such trust and the promotion of an informed awareness of the issues and of the potential of these tools in addressing them is a sure way to enhance the functional efficiency of planning and implementation of ecodevelopment and JFM activities. Last, but not the least, planning and implementing capacity on the part of the stakeholders, the PA management and the associated NGOs is another essential requirement. The processes of ecodevelopment and JFM are therefore inescapably slow paced initially but once the preparatory ingredients cited above are in place these can acquire good pace and momentum as well as achieve resolute and sustainable success. These raise questions about the timeframe and pacing of activities in the project plan of operations.

Accordingly any future project aiming to integrate conservation and development in the field at landscape level should have an 8-10 year timeframe with main activities paced in the following manner.

1. *1st year: Identification, posting and capacity building of project leaders and of the second level executives as well as of identified NGOs through special training programmes conducted jointly by the WII and the IGNFA with assistance from relevant institutions and subject matter experts (3-6 months). Broad outline management planning of PAs and non-PA areas will follow this at landscape scale (Management objectives and constraints, required zoning, identification of non-PA dispersal areas and critical corridors with identification of 'space' for JFM and ecodevelopment), and broad outline Ecodevelopment planning (Socio-economic profiling, identification of main dependencies and potential JFM and ED interventions in PA and non-PA areas). Also obtaining enabling government orders on processes and structures for ecodevelopment as well as contracting GIS compatible geographic and ecological mapping and commissioning studies for socio-economic profiling of local communities.*
2. *2nd-3rd years: Detailed management planning at landscape scale and coordinated ecodevelopment planning with participation of communities and frontline staff. Also initiating and completing processes of micro-planning and setting up structures for ED e.g. EDCs/SHGs as well as launching activities on small scale pilot trial basis for learning and experience.*
3. *4th-8th years (even 10th year may be needed for large landscape level project-sites): Full-scale launch of activities and attaining logical and satisfying achievements in conservation with social justice.*

[1] In GHNP, KMTR, Periyar and Ranthambhore.

[2] Here the suggestion was to amend Section 33 of the Wildlife Protection Act 1972.

[3] This is as per the Draft Management Plan of the Periyar Tiger Reserve for 2001-2001 to 2010-11.

[4] In fact revenue villages around Kanha Tiger Reserve have been *specified* under the *MP Land Revenue Code, 1959* with the implication that now if a resident owner changes his land-use from agriculture to any other use he has to take the permission of Sub Divisional Officer (SDO). Further there is move to accord recognition to Ecodevelopment as a legally valid land use activity by amending certain State Rules. Further to foster eco-tourism in the TR, certain guidelines have been suggested with larger implications on providing legal sustainability to the Project along with maintaining ecological sustainability of the TR. The guidelines intend providing a surer legal footing to Eco Tourism while providing statutory protection to special areas around identified eco-tourism sites. The replicability of these provisions in other States is an area that needs further exploration.

[5] Interestingly the MP GR describes "village" for the purposes of ecodevelopment as a 'community managing its affairs traditionally' and this definition is on the lines of the law specifically dealing with Panchayats in tribal areas, namely, *Panchayat Extension to Scheduled Areas Act, 1996 (PESA)*, Even though the PESA applies only to Scheduled areas' MP GR extends this definition to both scheduled and non-scheduled areas. In non-scheduled area, this provision might create certain problems. In such areas a village has meant a revenue village as notified by the Governor, on the basis of area, population etc. Thus the villages for the purposes of ED (on community lines) will be different from those on the revenue records. This will further create problems forming linkages with the Panchayats at various levels.

[6] In fact in the State of Gujarat the exclusion of National Parks and Sanctuaries has been made clear through a legal Amendment to the Panchayat Act in 1998.

[7] Atleast 32 Scheduled Tribes have been identified living in areas around the seven project Sites..

[8] It is pertinent to mention here that rights are legally enforceable, though they might not be absolute.

[9] In such cases the appeal lies with the Range officer and any appeal against the decision of the Range officer lies with the Chief Conservator of forests,

[10] Jharkhand, Ranthambhore, MP etc

[11] In a meeting convened by the MoEF on 22.9.1999 PAs and CWWs were explicitly informed that it was not mandatory to undertake micro planning with NGO facilitation and if the PA can train its personnel (Gir had been quoted as an example), forest department staff could themselves carry out micro planning. This was apparently in response to slow pace of micro planning which generated the apprehension of negative observations from forthcoming supervision missions and of placing future projects into jeopardy.

[12] Note that the sites studied did not represent any integrated seascape zone.

CHAPTER 1

PERIYAR TIGER RESERVE[1]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Background

Periyar Tiger Reserve (PTR) with an area of 777 sq km is a representative of Bio-geographic Zone 5-B Western Ghats[1] and straddles parts of Idukki and Pathanamthitta districts of Kerala state. The coordinates are $9^{0'}$ 40' N and 77^{0} 55' E & 77^{0} 25' E. Unique for its scenic beauty, religio-cultural heritage and a rich spectrum of flora and fauna, it owes its name to the river Periyar, whose catchment forms the bulk of the reserve. It has a conservation history of over 100 years, initiated with the construction of Mullaperiyar Dam in 1895. Forests around the Periyar lake were constituted as Reserved Forests in 1899. In 1935, this area was elevated as a Game Reserveand in 1950, it became the Periyar Wildlife Sanctuary. Its conservation importance led to its inclusion under Project Tiger in 1978 and under Project Elephant in 1991. Following these major milestones in the conservation history of the reserve, the next stride is the intended elevation of its Core Zone segment (350 sq km) as a National Park.

I.2: Biodiversity and Cultural Values

PTR, with the adjoining forested tracts in Tamil Nadu (Sirivilliputhur Grizzled Giant Squirrel Sanctuary, proposed Meghamalai Wildlife Sanctuary and Tirunelveli Division) and those in Kerala (Kottayam and Ranni Forest Division), forms an important conservation unit. The tract has a critical role in regional connectivity in the otherwise fragmented forests of Western Ghats. As per Champion and Seth's classification, seven different types of vegetation have been identified at the Periyar Tiger Reserve. These are west coast tropical evergreen forests, southern hilltop tropical evergreen forests, west coast semi evergreen forests, southern moist mixed deciduous forests, southern montane wet temperate forests, southern montane wet grasslands and South Indian subtropical hill savannahs. Of these, evergreen and semi evergreen forests form the major chunk. Broadly the area is comprised of tropical wet evergreen and semi evergreen forests (74.6per cent), moist deciduous forests (12.7per cent), grasslands 1.5per cent and eucalyptus plantations (7.1per cent). Periyar Lake forms an important aquatic ecosystem, occupying 3.5 per cent of the total area of the reserve. Species like *Measua*, *Palaquim*, *Cullenia*, *Hopea*, *Dipterocarpus* and *Vateria* are associated with *Polyalthia*, *Myristica* and *Calophyiium* in the west coast tropical evergreen forests. Southern hill top tropical forests and west coast semi evergreen forests have species like *Syzygim*, *Palaquium*, *Cullenia*, *Artocarpus* and other such associates. Moist deciduous forests have species like rosewood, teak, *Terminalia Paniculata*, *Largestroemia microcarpa*, etc. Southern montane wet temperate forests have lots of orchids and species like *Rhododendron arboreum*, *Vernonia travancorica*, etc. Hilltop grasslands have species like *Themeda* and *Cymbopogon* withdispersed tree species like *Terminalias*, *Careya arborea*, *Phyllanthus*

[1] Anil Bharadwaj, Field Director, Periyar TR; Pramod Krishnan, Ecodevelopment Officer, Periyar TR, Kottayam

emblica, etc., whereas the marshy grasslands have species like *Panicum repens*, *Leesia hexandra*, *Eragrostis*, etc.

The diverse habitats found in PTR account for its unique assemblage of flora and fauna. It has 2,000 recorded plant species, 26 per cent of them endemic and 7.5 per cent threatened. The Angiosperms are represented by 1,965, the Gymnosperms by three and the Pteridophytes by 150 species. More than 300 plant species available in PTR are found to be of medicinal value. *Gloriosa superba*, *Pterocarpus marsupium*, *Gymnema sylvestre* and *hemidesmum indicus* are some important medicinal plants. Three species of plants *Syzygium periyarensis* (a tree), *Habenaria periyarensis* (an orchid) and *Mucuna* p*ruriense thekkadiensis* (a climber) are reported to be endemic to Periyar. PTR has a tiger population of over 35 along with associated herbivore species and about 900 elephants.

Periyar Lake irrigates some 68,000 ha in Theni, Madurai, Ramanad and Dindigul districts of Tamil Nadu. It's perhaps the most visited PA in the country with 4.5 lakh visitors annually, and therefore of vital importance for the local economy, supporting impressive quanta of livelihoods and incomes. Besides Periyar, the Pampa is another major river at the PTR. The Sabarimala shrine is situated close to PTR's buffer zone and draws over 50 lakh pilgrims annually. Mangladevi–Kannagi temple is yet another important religious site for people from Kerala and Tamil Nadu and carries archeological value too. These facts highlight the socio-economic and cultural significance of PTR for both Kerala and Tamilnadu.

PTR's northwest and south fringe within Kerala is heavily populated. Nearly 2.25 lakh people live within 2-km ambit of PTR and depend on it directly or indirectly for fuel wood, thatching grass and NWFP. Estimates suggest some 20,000 to 30,000 people in the immediate vicinity are substantially dependent on PTR for their livelihoods. This includes some 2,500 tribals belonging to Mannan, Paliyan, Urali, Malmpandaram and Malaryan tribes, who have distinct eco-cultural association with the forests of Periyar.

I.3: Threats

The difficult terrain of the core area and the remote 90-km long interstate border with Tamil Nadu exposes the core segment to poaching as well as transient encroachments for Ganja cultivation in the pristine tropical rain forests. Effective protection ensured by intensive patrolling, better communication and mobility have eliminated organised poaching of tiger and elephant but some poaching in interior areas remains a problem.

About 50 lakh pilgrims headed for the Sabarimala shrine pass through the buffer zone of the PTR in a short span of two months. Catering to these pilgrims causes severe habitat damage as there's large-scale littering of non-biodegradable waste and innumerable trees are cut for firewood and poles to set up temporary shops. Heavy pollution of streams, forest fires, obstruction in diurnal movements and other disturbance to wildlife occur too.

Although movement on boats for wildlife viewing ensures minimal disturbance, yet the rising visitor numbers (now over 4.5 lakh annually) raises questions about the ecological and cultural sustainability of this activity. Another feature of this mass tourism

phenomenon was that hardly any benefits reached the local forest dependent communities.

A number of private estates along the border of the PTR and adjacent reserved forests both in Tamil Nadu and Kerala caused a serious threat to these forests by unsustainable reed extraction. But for these enclaves, about 3,000 sq. km of these forests would form a large and effective conservation unit for the 'hot spot' biodiversity of the Western Ghats. Pachakanam estate is a very serious break in the contiguity of PTR with adjoining forests.

The present maximum water storage level of 136 feet at the Mullaperiyar Dam, which has been fixed since the 1970s, is proposed to be raised to 152 feet. Besides the engineering hazard it could pose to this old dam structure, there is a serious threat to the ecosystem along the lake fringe, as it would submerge habitat being used by wildlife at present.

The pressure exerted on the bio-resources of PTR by 58 fringe villages (with 35,000 families and 2.25 lakh people) in Kerala and about 3,000 workers from 22 estates along the Tamil Nadu border pose a serious management problem. Sandalwood smuggling and cattle grazing (about 2,000 cattle) in the Tourism Zone, forest fires and fishing in the Periyar Lake are other threats to this unique ecosystem.

I.4: Objectives of PA Management and Ecodevelopment

The management plan prepared for PTR by the Kerala Forest Research Institute lays down the following major objectives:

- To conserve the full range of PTR's biodiversity with special emphasis on the threatened, endangered, rare and endemic species of plants and animals, along with their communities, sites, habitats and connectivity.
- To maintain viable populations of tiger and elephant across their range of habitats.
- To maintain and protect the catchment of Periyar Lake and other rivers.
- To stabilise and maintain a balanced equation between the PA and the local people.
- To regulate tourism for minimising negative impact and promote conservation awareness by giving a rich wilderness experience to the tourists.
- To regulate the pilgrimage to Sabarimala over the traditional path through the Park so as to minimise negative impacts on Park values.
- To formulate and implement programmes of conservation education and promote awareness among the local people and Sabarimala pilgrims.
- To identify, prioritise, facilitate and promote research programmes and activities in order to strengthen and elevate management efficacy of the Park.
- To identify staff training needs, devise packages and an implementation plan.

I.5: Goal of the India Eco-Development Project

The central theme of the IEDP is conservation of biodiversity through peoples' participation. Its main objectives are:

1. To improve capacity of PA management to conserve biodiversity and increase opportunity for local participation in PA management.
2. To reduce negative impacts of local people on PA's biodiversity and *vice-versa* and increase collaboration of local people in conservation efforts.
3. To devise and provide effective support for community development.

I.6: Evolution of Ecodevelopment Strategy in PTR

The strengthening of the protection network between 1987 and 1990 sharpened the conflict with local communities and motivated the initiation of a dialogue with them. As a first step, handpicked staff were given orientation and capacity building took place before the the initiation of dialogue with communities in the early 1990s. Trust-building activities like setting up medical camps, providing drinking water and educational support, and giving preferential employment to locals then formed the thrust. This was made possible thanks to small funds available under state/central budgets and the World Food programme. . In 1993-94, when preparation of the IEDP in PTR began, close interaction with people led to the visualisation of a cogent strategy for mitigation of threats through ecodevelopment. This was followed by genuinely participatory micro planning with the assistance of credible NGOs, which helped identify potential opportunities and focussed programme elements. PTR is one among the seven cardinal biodiversity sites selected for the implementation of IEDP. The major objectives of the IEDP, launched on December 29, 1996 in PTR, were to improve the capacity of the PA management to conserve biodiversity and to minimise negative impacts of people on the PA and *vice-versa* by seeking the collaboration of local people in the conservation effort. The total revised cost of the project was Rs 3,059 lakh.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

The state government paved the way by laying down institutionalised as well as flexible mechanisms for project implementation through the constitution of empowered ecodevelopment committees (EDCs), focussed self-help groups (SHGs) and by setting up and operating revolving funds. A competent state level co-ordination committee and a PA level implementation committee were vested with powers to take informed decisions on running the project. Aiding this was the selection and posting of proper lead officers for long periods duly supported by key contract staff, *viz.* an ecologist, an education and extension officer and a woman development officer. The major components addressed under the project are:

II.1: Improved PA Management

This component aims at improving the PA planning process, protection and management of habitats and ecosystems and amenities for field staff. The activities undertaken under

this component include staff training, construction of staff quarters, patrolling camps, watch towers, improvement of roads and trek paths and procuring vehicles for better mobility. The habitat improvement works included amelioration of *vayals* (fields), shallow water bodies, controlled burning of grasslands and eradication of weeds.

II.2: Village Ecodevelopment

Extensive micro planning using the participatory tools of PRA and PAMIA (Protected Area Mutual Impact Assessment) was undertaken after identification of the ecodevelopment zone in priority villages according to a fixed criteria, *e.g.* predominantly tribal settlements, colonies of under-privileged and other marginal and backward fringe area communities. This involved extensive consultations among the stakeholders, the staff assisted by contract experts specialised in socio-economic and ecological aspects. A highlight was the constitution of EDCs and their categorisation on the basis of occupational patterns, geographic settings and dependency levels. The EDCs were divided into three categories, *i.e* neighbourhood, user groups and professional group EDCs.

Neighbourhood EDCs are at village level and cover all families in an identified area. Their micro plans focussed on support to agriculture and economic upliftment. *User group EDCs* comprise members who are heavily dependent on PA resources. The focus here was on reduction of negative impacts of people on PA by strengthening their livelihoods. The members of such EDCs linked themselves around a particular PA resource and they did not necessarily belong to one settlement. *Professional group EDCs* were constituted for promoting livelihoods with long-term positive interaction and support in PA management activities like protection, eco tourism, etc. The membership is based on the level of interaction and knowledge about the PA in the past.

So far 72 EDCs have been constituted under the project and have made remarkable headway covering some 5,540 families. Motivated by the significant benefits accruing to the people as well as the Park through the programme, a self-financing EDC called tribal heritage EDC has come into existence, at the initiative of the communities themselves, which augurs firm self reliance.

The village ecodevelopment activities are broadly of four types:

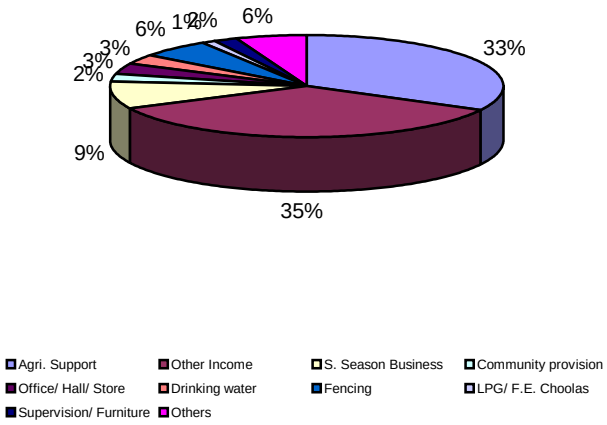
II.2.1: Community-based activities: These activities, using about 30per cent of project inputs, focused on community works like organised pepper collection and sale, Sabarimala pilgrimage business, vermi-composting, community nurseries, manufacturing and sale of handicrafts, ecotourism, dealership in LPG, group farming, community electric supply, etc. These activities provided community assets like community halls with furniture and utensils, electric and barbed wire fencing. They also strongly contributed to additional livelihoods for EDC members.

II.2.2: Women-centric activities: Empowerment of women has always been one of the major objectives of the project. Almost half the investment support made under the project was targeted at women. For the empowerment of women, 157 SHGs have been made functional involving women members from different EDCs. Formation of micro

credit system, sale of various provisions, pickle-making, tailoring units, detergent manufacturing, etc. are some of the activities done by them

II.2.3: Individual-based activities: Village EDCs required improvement in agriculture, which was ensured by loans to individuals. Individual loans also helped several alternative income-generating activities. About 50per cent of the total village ecodevelopment investment was used for these activities.

II.2.4: Conservation-oriented activities: EDCs undertook a variety of activities against reciprocal commitments as well as project investments. These include joint patrolling, fire protection, soil conservation, and controlling crop depredation. Reduction in the use of fuel wood, cattle grazing, plastic eradication, and preventing the use of explosives in rivers, were other measures taken.. Participating and substantially benefiting from PTR-based ecotourism was a major programme. In addition the programmes included gathering information on illegal activities, specified area management, removal of exotic fishes that destroy indigenous fish population, prevention of collection of timber poles and installation of smokeless chulhas. Nearly 20 per cent of the investment on village ecodevelopment has been used for this.



The figure here shows the category-wise break up of village ecodevelopment investments made under IEDP. Attempts were also made to link some EDC activities with the developmental programmes of other agencies like Panchayat and NGOs.

II.3: Environmental Education and Awareness Campaigns

Intensive nature education activities carried the conservation message to different target groups, especially in the fringe areas. Even though the pace of these programmes was slow in the beginning, it picked up momentum in later stages. A variety of awareness programmes, some of which are still ongoing, include nature camps (45,014,000 participants) for different target groups, special camps for EDC members (601,600 participants) and extension programmes for educational institutions (757,000 participants) and EDCs (1,004,000 participants). Academic forums (22 sessions, 7,000 participants), folk-theatre performances and street plays by talented artistes (*Vanambadikal*, 70 programmes), regular environmental awareness campaigns like "Plastic Free Day' (48,3800 participants) and massive rallies in connection with Wildlife

Week (5 years, 25,000 participants per year) and Environment Day celebrations (4,900 participants) also played a key role. Constitution of nature clubs (60, 1,600 participants), conduct of awareness workshops and training, publication of inter EDC newsletter and a website for PTR are some others.

II.4: Research and Monitoring

A research and monitoring cell has been set up, which oversees these activities involving various agencies and using local talent. In all 85 studies were done by the project's contract staff, 15 by other institutions and 22 by local talented individuals and groups. These covered biological, management and socio-economic aspects and reports and/or information from a number of them became available early enough to be used in redirecting project activities.

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

The project has effectively and sustainably mitigated the pressures and threats from the fringe area within the state of Kerala and this has bolstered the ecological security of PTR, which is a cardinal PA in the biodiversity 'hot spot' of the Western Ghats.

The management plan prepared under the project has addressed the concerns of ecological sustainability on a larger scale by redefining management zoning. The extended buffer area provided in the plan ensures coverage of important habitats and areas, which lie outside the territorial boundaries of the Tiger Reserve. Similarly, it prescribes suitable management inputs in the pilgrimage and tourism zones. In the identified Satellitic Core, the plan aims at providing effective protection to the sensitive areas. The only question that remains is the manner in which implementation of management activities in the extended buffer zone can be done, because as of today it is not in the direct control of PA management. Similarly, the proposed declaration of Meghamalai area in Tamil Nadu as a sanctuary can only happen at the discretion of the Government of Tamilnadu. This is necessary as much to prevent the negative impacts on PTR from tea-estate workers and miscreants from that side as to secure this important biodiversity area in that state. Pachakkanam estate on PTR fringe within Kerala represents a serious break in the forest contiguity in this segment of the larger Western Ghats landscape.

III.2: Institutional Sustainability

To start with, the Government of Kerala issued clear enabling orders for the constitution of EDCs and laying down processes for decision-making by the EDCs with appropriate supervisory powers at the PA management level. Good and innovative leadership by senior officers of the park further proved effective in laying firm foundations for transparency and social justice in the EDC' functioning. Preference to women SHGs and to poor and forest dependent people in EDC membership have helped the cause of social justice. All this has been supported by better awareness of the Park values and strategy

of ecodevelopment through steadfast project implementation. Capacity building of both EDCs and staff has also added to the strength of these village-level institutions.

Village-level institutions have since been organised into two confederations. As a further step in strengthened institutionalisation, the constitution of an apex institution by the name Periyar Foundation is being contemplated. This apex institution will facilitate continued efficient implementation of ecodevelopment programme as well as provide support to the PA management. This would otherwise be difficult to support under the regular budgets of the PA. This proposal is already under consideration by the state government. This would provide a firm base for institutional sustainability. However, of immediate concern is the need for enabling orders for the continuation of ecodevelopment programmes beyond the project period, which is still awaited from the state government. There is also a need to provide for EDCs as recognised institutions under the Kerala Forest Rules and link EDC activities with the local government. Likewise, strengthening women SHGs and creating nature clubs for youth is called for. Awareness programmes for the EDC members also need to be continued.

III.3: Social Sustainability

An important approach under the project in PTR right from the beginning was to cover the poor and those more dependent on forests, giving preference to activities involving women. The SHGs, many of them all women and a good number involving both men and women, rendered excellent performance through well-chosen income generation activities (IGAs). Likewise, a number of ecotourism and farming activities were focussed on the tribal population. Another very thoughtful move at the beginning was to use CDFs of EDCs to give short-term small credits to members to help them get out of the debt trap of moneylenders. This enabled them to get right prices in the open market for their farm produce and for products of IGAs helping them rise economically.

Further, the secular and apolitical constitution and functioning of EDCs allowed them to remain focussed on collective decision-making and action. This perceptive, fair, apolitical and result-oriented approach adopted from the beginning and sustained all through has ensured social justice and empowered women and the underprivileged. To add to this, it has forged a very positive relationship between the PA and the people based on understanding and transparency. These are all features of a firm foundation for social sustainability but require continuity in the post-project period.

Once the grassroots institutions, *e.g.* EDCs/SHGs acquire self confidence in collective and transparent decision-making and implementation, they would have the strength to contend with and use local level political and administrative institutions or agencies to the benefit of village community. For example in PTR some EDCs have set up links with the local Panchayat to get some village development activity to their area. Impressed by the gains of ecodevelopment, several local politicians (MLAs) have supported EDCs and also joined the park level ecodevelopment committee.

The process of creating awareness among the communities, politicians and other stakeholders needs to be continued and further strengthened. The concern for greater

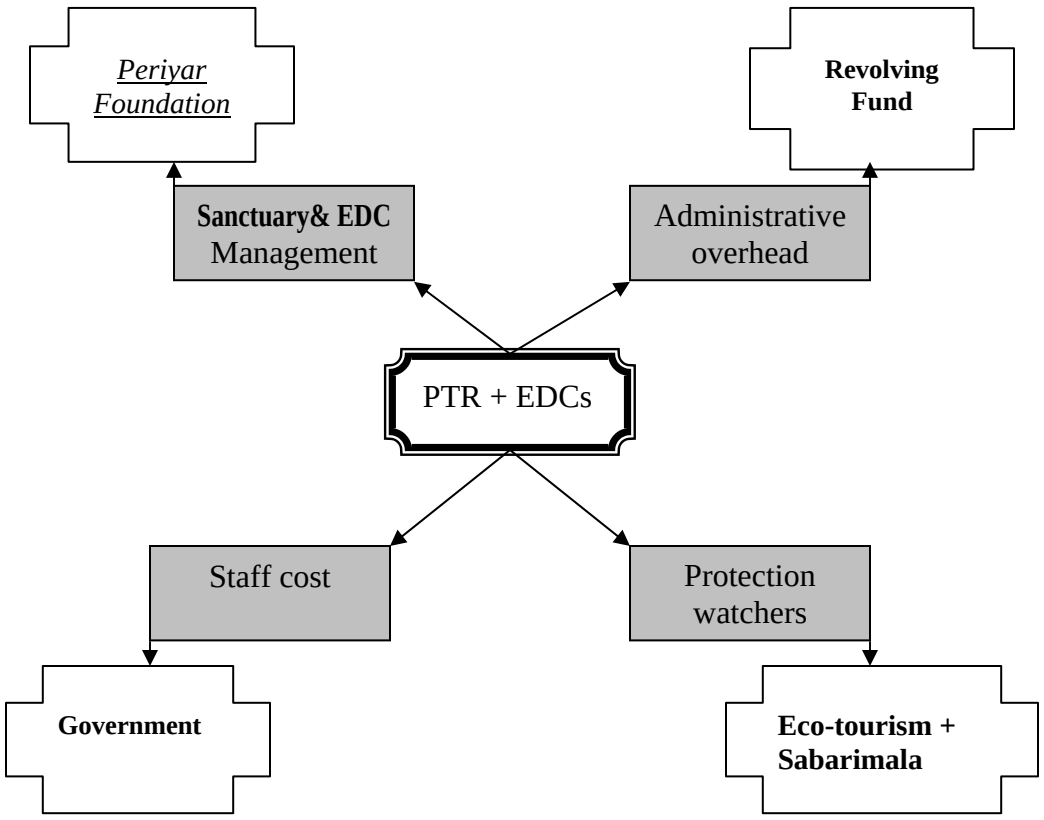
transparency and equity in the functioning of SAPP EDCs who are engaged in the 'short-term, high turnover' business of catering to Sabarimala pilgrims is genuine. Proper auditing and accounting also needs to be systemically installed in order to ensure public accountability as a factor for social sustainability

III.4: Financial sustainability

A well-planned and executed ecotourism strategy with the direct involvement of stakeholders has provided an opportunity to the local communities to benefit from these park-based incomes on a sustained basis. Already more than Rs 2 crore is available as CDF with the EDCs. The need of the hour is to design and put in place the rules for using this money. The establishment of the Periyar Foundation, creation of a Park welfare fund and levy of ecodevelopment surcharge on visitors can provide long-term financial sustainability.

Funding PA management has been the sole responsibility of the government. There is now a need to find alternative sources of money, which would cover some aspects of PA management. A potential resource mobilisation model is presented here. The shaded boxes represent key sectors requiring support and the polygons the corresponding potential sources. The proposed Periyar Foundation is what can make the whole scheme of things possible.

Proposed Resource Mobilisation Model



SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

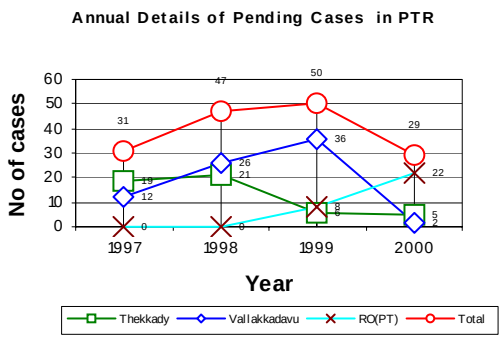
IV.1.1: Improvement in Park Scenario

Improved PA planning: Inputs from specialist staff, consultancy studies especially on baseline mapping, enclave management, visitor management strategy, financial and social sustainability studies, and staff training improved the entire process of management planning. Participatory stakeholder workshops broadened the involvement of local people and outside support groups in this process. The management plan was prepared through this process, incorporating the issues of landscape management and research in addition to the opinions provided by fringe area communities. This enabled the management plan to have a number of new dimensions in its approach and strategies (See Box 5). The current management plan is also appropriately outward looking and focusses on the landscape issues, which are crucial for the long-term conservation of PTR.

NEW DIMENSIONS: HIGHLIGHTS OF REVISED MANAGEMENT PLAN

- Constitution of a main core zone and satellitic core zones covering sensitive areas.
- Constitution of extended buffer zone to address landscape issues
- Constitution of Sabarimala pilgrimage zone to deal with the issues of pilgrimage.
- Extension of ecotourism zone and provision for new ecotourism ventures.
- Identification of cattle-grazing zone and framing of access rules.
- Strengthening of protection network in core zone – establishment of 15 camps.
- Improved mobility and communication - vehicles, IT and radio equipment.
- Habitat management strategies – vayals, grasslands, degraded areas, water holes.
- Institutional arrangements for decentralisation of management and involvement of local communities in PA management as well as their improved livelihoods.
- Stress on capacity building of frontline staff and local communities.
- Institutional arrangements for veterinary care and awareness programmes for fringe area people and other stakeholders.
- Adequate inputs and institutional mechanism for on going monitoring & research and wildlife health.
- Restructuring of PTR into two territorial divisions and smaller ranges, sections, and census blocks for more efficient and intensive management and monitoring.

*Improved PA protection***:** Increased PA infrastructure and the synergy created between the Park and people brought in a sea change in the protection scenario. Traditional protection stands bolstered by an effective social fence created around the PA by the sustained vigil and commitment of the EDC members thereby reducing the incidence of forest and wildlife offences. Illegal Ganja cultivation and sandalwood felling have also reduced by 80per cent and 90per cent respectively over the project period. Evolution of protection oriented participatory ecotourism programmes through Ex-Vayana (Cinnamon) Bark Collectors EDC, Periyar Tiger Samrakshana (PETS) EDC and Tribal Trekkers EDC and the management of Sabrimala pilgrimage through Swami Ayyappa Poonkavana Ponarudharana EDC have added new dimensions to protection. A drop in pending offence cases marks the gains over the project period.



Benefit sharing with local communities: Using Section 33 of the Wildlife Protection Act (1972), which allows product outputs from positive interventions in habitat management in a PA to be given to local people, some activities have been introduced in PTR. Specific access rules have been formulated based on participatory microplanning. These rules cover the collection of fuel wood, thatching and fodder grass, protection oriented camping and guide services in the tourism zone, manufacturing handicrafts using reeds and bamboo, catering services for Sabarimala pilgrims on the traditional pilgrimage routes and regulated fishing by the tribals in Periyar Lake. EDC members have directly benefited from this as ecotourism provided livelihood to the local people, generating around Rs. 50 lakh during this year itself. This has helped forge local peoples' stake in PTR.

IV.1.2: Positive shift in tourism policy

Despite being perhaps the most visited park in India, a scientific tourism policy was conspicuous by its absence in PTR. The visitor management strategy combined with the rich experience of protection oriented ecotourism with direct involvement of local people in ventures, has indeed transformed wildlife tourism in PTR into true ecotourism with substantial benefits flowing both to the park and the people.

EX-VAYANA BARK COLLECTORS EDC –FROM OFFENDERS TO PROTECTORS
A SAGA OF SOCIAL CHANGE

Ex-Vayana Bark Collectors EDC comprises a group of individuals who used to steal and smuggle Vayana (Cinnamon) bark from different areas of PTR. They also resorted to occasional poaching while inside the forests. This group of about 23 members was taken into confidence through prolonged interaction, culminating in the disposal of forest offence cases against them. Their field skills which enabled them to make a quiet entry and move stealthily in the rich interiors of the forest formed the basis of an innovative activity. This activity combined anti-poaching patrols with adventure treks through forests for park visitors.

A strong training support helped these individuals serve as ecotourism guides. This led to the launch of the first participatory ecotourism *cum* protection programme in Periyar, popularly known as Tiger Trail. Under this programme, a small group of 5-6 tourists are taken on adventure trekking and camping in the tourism zone of PTR along with armed staff. This served the dual purpose of protection of vulnerable areas of the PA and providing the visitor an intimate experience of nature and wildlife. The proceeds from this ecotourism activity is used for providing assured and dignified year-round livelihoods to members and for procuring materials and equipment required for trekking and camping. This also helps generate funds for community welfare.

Through this venture the earlier skills of these people, who were smugglers, were redeployed for ecotourism and park protection. This yielded assured and sustainable livelihoods to them. Their efficiency is reflected in the successful apprehension of several miscreants involved in smuggling activities from the forests. The Ministry of Tourism and an organisation called Pacific Asia Travel Association (PATA) rewarded this EDC in 1998 and 1999, respectivity. Following the bombing of the World Trade Centre in New York in September 2001, the flow of foreign tourists who were the main clients for the Tiger Trail programme suddenly dropped. This created a major setback. But the PA management and the EDC took this as a challenge and evolved alternate an ecotourism programme called Bamboo Rafting, which has become very popular and continues to ensure the twin objective of livelihoods to these EDC members and enhanced PA protection.

A year 2000 study has revealed that earlier the illegal activities of these reformed individuals accounted for collection and removal of about 30,000 kg of cinnamon bark with 10,000 trees/ saplings being cut every year. This problem is now under full control. The resultant regeneration of cinnamon trees has caused the degraded areas where due to their past influence there was a poor density of cinnamon trees to graduate to medium and even high density categories. As of 2003, this EDC has directly or indirectly helped the management apprehend offenders in 77 cases. In a nutshell, the park destroyers have now reformed to become park protectors, thereby greatly enhancing the social capital for PTR conservation.

Sabarimala pilgrim management

Sabarimala pilgrimage and its associated problems were always a serious threat to the biodiversity of PTR. Agencies and individuals worked with unscrupulous profit motives and used to seriously damage the natural ecosystem. Through ecodevelopment initiatives involving local people in this seasonal business, this problem has been tackled effectively and the forests are now in in the process of rejuvenation (See box).

FROM WILDLIFE TOURISM TO TRUE ECOTOURISM IN PERIYAR: A HALLMARK PARK PEOPLE SYMBIOSIS

Periyar has a heavy tourist inflow now, with 4.5 lakh visitors annually of which 8 per cent are overseas visitors. This strong potential has been harnessed by the park management for economic benefits to local people through innovative packages of ecotourism combining the visitor urge for close experience with nature and the knowledge and skills of nature among the local tribals. Under close supervision of PA management, nine such ecotourism programmes meaningfully blend providing a rich nature experience to visitor with park protection. The Tribal Trekkers Ecodevelopment Committee (TT EDC) is playing this twin role of protection and ecotourism successfully. The fees charged from visitors flow into the community development fund and ensure year round livelihoods.

Periyar Tiger Samrakshana Ecodevelopment Committee (PETS EDC) is another example of combining ecotourism for livelihoods with park protection. This group of 104 people is organised in two EDCs. Earlier their livelihoods mainly came from park activities like protection, monitoring, tourism and pilgrim management. After the constitution of these EDCs, the members have been provided opportunities of managing tourism related facilities *e.g.* cloak room, toilet facilities, souvenir *cum* provision shop, providing food for nature camps and training workshops. They also take out visitors on night trekking and operate

the 'jungle inn' and 'bamboo grove complex'. Members of these EDCs on a rotational basis manage these facilities and undertake the protection activities of the PA. The money generated through running of these facilities is used for providing wages to them for up to 16 days a month. The government has to pay only for remaining 12 days a month, but year round livelihoods become assured. The EDCs committed to effective conservation of PTR have an aim to generate their year round livelihoods exclusively from PA based ecotourism.

HARNESSING HEAVY PILGRIMAGE TRAFFIC TO MITIGATE PA IMPACTS: MILKING A CRISIS TO YIELD POSITIVE SYNERGY

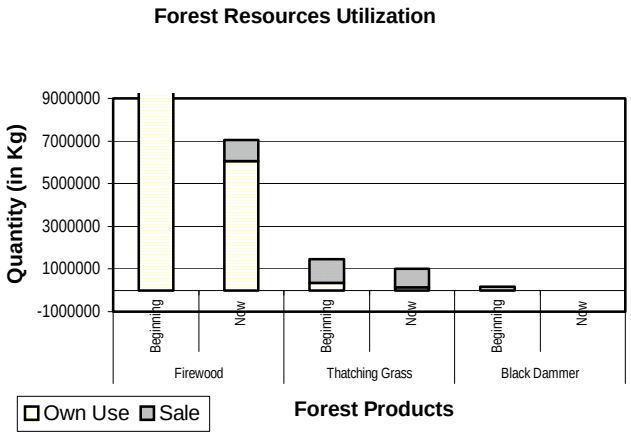
Swami Ayyappa Poonkavana Punarudharana (SAPP EDC) is instrumental in generating positive synergy between seemingly conflicting concerns. On the one hand it is necessary to facilitate the religiously sensitive and regionally important Sabarimala pilgrimage through PA forests. On the other hand, it was critical to mitigate the severe impact of this pilgrimage, which attracted nearly 50 lakh pilgrims over a short period of less than two months, on the forests. These EDCs comprising local people operate along the traditional paths providing quality pilgrimage services and are also responsible for the protection and cleanliness of the area. The EDC is committed to not use any firewood or timber poles for the construction of temporary sheds and running the tea stalls. The income from pilgrimage services are pooled in the common accounts of these EDCs and used for procurement of the materials for running the stalls as well as for the members' wages. Part of the incomes is also supposed to go to the park welfare funds, which can be used for emergency PA activities.

During the last three years SAPP EDCs have significantly contributed to keeping the traditional paths clean, protecting the forests from illegal felling of trees and poles and providing livelihoods to the local communities. This has given a direct stake to the people in the effective conservation of PTR. The confederation of EDCs in Periyar West Division has started a LPG outlet, which is providing gas to the EDCs for running their stalls, thus ensuring substitution of firewood. These institutions are still evolving and would do better with more transparency and social equity. Better accounting and auditing and improved systems of ploughing back part of the generated money and the human effort for the overall welfare of the PA as well as of the local community at large, would help strengthen their sustainability.

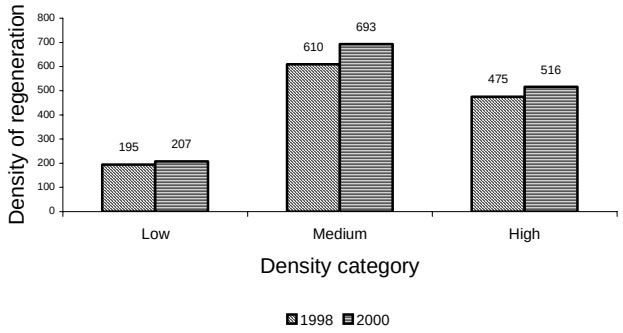
IV.1.3: Reduction in park resource utilisation by local communities

Five years ago, around 20,000–30,000 people were depending, directly and indirectly, on the resources of the PA. After the implementation of the project, the local communities have significantly reduced their dependence on the forests. The commercial resource utilisation has substantially come down. Viable alternatives have been facilitated for resources like firewood, whereas the collection of black dammar has been totally stopped. The following sample taken from a cross section of the fringe area EDCs indicates the changes in the forest resource utilisation over the project period:

IV.1.4: Habitat Recovery



Severe anthropogenic pressure had caused degradation of fringe area forests. Large scale cutting of firewood and thatching grass, heavy grazing and unscrupulous felling of poles and saplings by villagers were responsible. Miscreants indulged in pilferage of sandalwood, timber and cinnamon bark, poaching and illicit and brewing of liquor. These stand eliminated or drastically reduced by participatory initiatives. The results are:



Improved regeneration status and wildlife sightings: After the five-year programme implementation, there is remarkable improvement in the regeneration status of plant communities in the ecodevelopment zone of the PA. Various habitat improvement measures in the tourism zone have led to increased direct sightings and indirect evidences of increased utilisation by animals.

Forest Fires: The forest fire incidence seems to have stabilised. With greater transparency and patrolling, gradually the reporting of the fires has improved. This year has witnessed comparatively more fires due to severe drought and the extent of the area affected by fires has doubled from 300 ha to about 700 ha as compared to last year.

IV.1.5: Improvement in Socio-economic Scenario

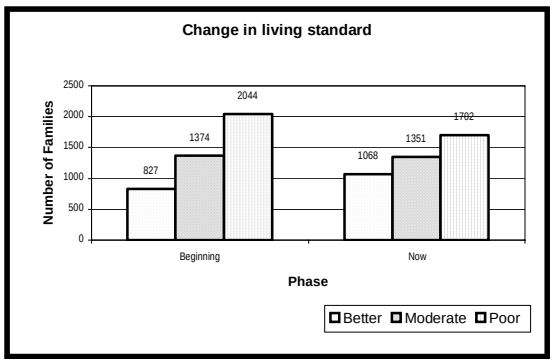
The social capital being built in the EDCs through the inputs and activities of the project has started assuming the role of an engine of economic development, especially among the poor and socially deprived sections of fringe area communities, with women emerging as strong participants. The social capital has helped economic development mainly by facilitating transactions among individuals, households, and groups. It is found to have affected economic performance by:

1. Involvement of individuals in social networks, thereby increasing the availability of information and lowering the cost of this information (*e.g.i*Information about different financial schemes to SHGs).
2. Participation in local networks with mutual trust to reach collective decisions and implement collective action. For example, the initiative of SHGs in Paliyakudy for cleaning the hospital motivated the authorities to run that hospital regularly.
3. Networks and attitudes have reduced opportunistic predation by community members. For example, in Sabarimala pilgrimage SAPP EDCs, some unscrupulous elements, who sought their own personal benefits, were reprimanded and made to observe the rules and regulations.
4. Creation of social capital has often generated innovative ideas and programmes among the community. The synergistic effect of collective thinking, decision making and implementation is found to be permeating the social and economic life of otherwise unorganised and marginalised people. Recently tribal youths from Mannakkudy decided on their own to venture into a community-based ecotourism programme in their tribal hamlet.
5. The social capital has led to social cohesion in the EDCs thereby bringing about changes hitherto considered impossible. Social capital and social cohesion are positively co-related, the latter being a primary factor for development.
6. Formation of EDCs has resulted in the ***creation and consolidation of social capital among individuals and society***.
7. The social capital has increased the sense of social responsibility. For instance, despite a sudden fall in the prices of agriculture produce, the corresponding impact on the ecological and social set up was found to be minimal. Similarly, despite the large-scale forest encroachment seen throughout the state, the fringes of PTR have remained largely unaffected.

Although an in-depth analysis into the nuances of social capital generation in the EDCs is yet to be made, the above directly visible attributes are firm indications of improved socio-economic conditions engineered by project interventions.

Improved employment opportunities to local people: Of the total investments made in PA management component up to March 2003, about 75 per cent consists of wages to labour and more than 90 per cent of it is being provided by the members of the EDCs, thereby increasing the employment opportunities to the locals. Between April 1998 and March 2001 about 2 lakh man-days of employment were availed of by the EDCs in PA management activities, which, in monetary terms, is equivalent to about Rs. 2.25 crore.

Improved socio-economic status: The financial support extended by the project has opened up new avenues of income for villagers resulting in significant improvement in their wealth ranking. The trend indicates that over the project period, many families have moved out of poor



category to moderate or better off categories. A study conducted by park sociologists indicates that in a sample of about 1,500 families about 338 have moved from very poor category to moderate category. Similarly, about 200 families have moved from middle category to the comparatively better off category in wealth ranking parlance.
Removal of agencies of exploitation: Prior to the implementation of the project, the moneylenders and middlemen drove the tribal communities into a debt trap. The EDCs initiated collection and marketing of pepper on their own with the help of marketing NGOs and in the process nearly Rs 90 lakh was collected by the EDCs in the Labbakkandam tribal settlement helping them to come out from the debt trap of middlemen. Of late they have also started marketing their organic pepper in the international market as well.

Similarly, contractors for pilgrim sheds exploited the petty vendors from fringe villages, operating along the traditional pilgrimage routes to Sabarimala, by levying a heavy rent for their use of forest spaces. The project stopped this practice in two of the three routes by organising these vendors into EDCs and providing them space free of cost.

Empowering local communities: The EDCs of PTR are being further consolidated into federations for strengthening decision making at local levels. Periyar West Federation comprising 32 EDCs for Sabarimala pilgrimage is now running an LPG agency providing cooking gas to the SAPP EDCs and locals, thereby reducing firewood pressure on the forests. Another such confederation has been constituted in Periyar East.

The successful functioning of 157 women SHGs has remarkably improved the social status of women in village society as well as provided them with economic benefits. Another example of women's empowerment is the Vasanthsena where a group of motivated local women are patrolling the PA fringe areas on their own without any remuneration from the PA management. Similarly, some linkages of EDCs with Panchayat programmes have also lead to the empowerment of local communities.

Enhanced Social Standing and Capacity Building: As organised bodies and partners of the Forest Department in PA management, the EDCs have begun to exhibit a greater social cohesion and improved self-esteem. The ex-*vayana* collectors, who were earlier haunted by the stigma attached to thieves and smugglers now enjoy social respectability as protectors of the park. One member of EVBC EDC has been elected to the Kumily Gram Panchayat. Similarly, the vendors on the Sabarimala pilgrimage routes are being viewed as a strong socio-political group influencing the affairs of the pilgrimage management. Likewise, the trained tribal guides have gained respectability from visitors as well as from the employers for their services. By participating in village ecodevelopment programmes, the park staff has also had a good exposure to the processes of ecodevelopment and collective decision making. This has boosted their morale and capacity as ex-officio secretaries. Thus the staff has enhanced its social prestige and is able to elicit support from locals in conservation activities, which was not happening before.

IV.1.6: Improved Awareness of PA Values and EDC Programme

The education and awareness programmes, particularly by EDCs, though delayed initially, have begun to communicate park values to a wide range of visitors to the PA. The ecodevelopment initiatives are also being wider publicity thanks to extensive coverage by the print and electronic media. An institutionalised and ongoing dialogue with the Fourth Estate in the form of the *Ecologue,* and a quarterly newsletter '*Sahajeevanam'* that will act as a medium for intra-EDC communication as well as the PTR website are serving as important dissemination media targeting a larger audience.

Highlights

The project has meaningfully and successfully combined PA management and ecodevelopment in a manner supportive to both PA and the people. The major concerns of the park, *viz.* wildlife tourism and pilgrimage have been successfully transformed into opportunities benefiting the park and the people. Harnessed through innovative applications, these opportunities have become the *raison d'être* for ecotourism, which has emerged as an important and potent source of livelihood for the local communities and, simultaneously, for strengthening park protection. The local communities' dependence on forest resources has been successfully reduced while their stake in the effective protection and management of PTR has been enhanced. Along with traditional protection, the social fence created around the park has helped reduce poaching, Ganja cultivation and other illegal activities. Through massive awareness programmes and transparency a social capital for the long-term conservation of the park has been created. Self help groups and the motivated Vasanthsena are classic examples of women's empowerment.

MAJOR LESSONS FROM PROJECT IMPLEMENTATION

- Creation of awareness among park staff that conservation and local development are inevitably linked and call for participation from local communities in decision making is critical. The resulting positive change in the mindset of the staff then paves the way for the success of mutually supportive activities in these allied sectors.
- Careful selection and longer term tenures of lead officers is what can in turn ensure selection of and assigning responsibility to appropriate and sincere officials for different activities under PA management and allied ecodevelopment. This is essential for ensuring continuity of policy and staff sincerity at the field level, which are key factors for the success of ecodevelopment programme
- Apolitical and secular constitution and functioning of EDCs with poor and women on board strengthen social justice and gender empowerment.
- Debt trap set by moneylenders drives the poor into a vicious cycle, aggravating their poverty and exploitation. This denies the poor fair prices for their farm produce or NWFP collected from forests. Since poor cannot make investments to enhance farm outputs they are forced to over-exploit natural resources thereby fuelling degradation. Release from this debt trap must hence be addressed at the outset through the 'seed grant' to CDFs of EDCs. Small short-term credits from CDFs for this purpose will not only ensures release from debt trap but also ensure proper returns from farming and/or other IGAs. Timely loan repayment with interest allows CDFs to grow and enhance EDC capacity to help more and more members progressively.
- Ecotourism is a high potential tool for strengthening park protection while ensuring livelihoods to the local people, if discerningly and innovatively visualised. The role for local communities must be identified based on their strengths in field craft and knowledge of natural history and their capacity enhanced in communication skills. In planning ecotourism activities avoidance of disturbance and

damage to habitat and wildlife has to be an overriding consideration. With capacity enhancement and financial assistance local people have gainfully taken to providing fair quality boarding and lodging services to park visitors in PTR.

- Farm products with value addition yield much higher incomes to farmers.
- Building of social capital through awareness and transparency for conservation is an important tool for strengthening park protection and local development
- Politics is not a bad word. If after grassroots institutions like EDCs gain confidence and institutional strength, a link with political institutions *e.g.* Panchayats or eliciting help of politicians can enhance the width and success of such programmes.
- Community-based investments, rather than 'individual beneficiary' oriented investments yield far better and far reaching results.
- Sharing of power means becoming more powerful.
- Capacity building of staff and local communities gives a firm foundation to ecodevelopment programme
- Forest Department is a primary stakeholder and while capacity enhancement and self reliance among EDCs has to be fostered, its continued involvement is essential for guarding its own stake of effective park protection and management. Such continued involvement of course is necessary for nursing the park people relationship too. Besides, Forest department's role in facilitation and coordination of these programmes is still needed for long period.
- Building institutions to expected performance level needs perseverance.
- Social fencing can become a reality through proper and adequate awareness.

IV.2: Issues, Constraints and Imperatives for the Future

IV.2.1: Despite encouraging signs emerging from the implementation of IEDP hereto, there are gray areas of concern as well, which need addressing for sustaining positive trends.

- Full awareness among all EDC members of the ecodevelopment concept in an essential relationship with PA management yet remains to be achieved.
- Internalisation of ecodevelopment concept and strategy permeating all rungs of the Forest Department hierarchy is yet to be achieved, which compromises all round support from within the department and also causes delays.
- Cumbersome accounting procedures inescapable in a regular government department lead to delay in providing timely finances to EDCs.
- Infrequent meetings between the forest staff and the EDCs on the one hand and infrequent meetings of the general bodies of the EDCs are a constraint.
- Inadequacy of interest in building the programme at the level of Range Officers during the initial phase of the project emphasises the need of prior capacity building.
- Absence of a mechanism to link the programmes with district administration and lack of awareness among district administration and political groups about the ecodevelopment programme hampered sectoral integration.
- The programme has still not covered all the targeted EDCs. From the originally envisaged 105 EDCs, the park could complete microplanning for only 72 and thus a substantial group of stakeholders remain unattended to.
- Wildlife damage continues to be a cause for antipathy for wildlife among people.

In the light of the above, the following **key issues** are identified, which have **lessons for the future** and some on which further consolidation is needed in order to sustain the gains.

IV.2.2: Short Period of Implementation: The IEDP is under implementation for the past six years. However, the activities related to village ecodevelopment actually started only from 1998. Thus the effective implementation time has been just about five years. Such programmes of social change in a heterogeneous society influenced strongly by market forces require sustained inputs and time for producing tangible and lasting results. For acting as an instrument of change, forest officials also need to reorient themselves. This needs time for prolonged HRD inputs in the initial period during which not just 'microplanning' but also 'pilot activities' should be undertaken so as to give confidence to both the staff and the local communities.
Lesson: *This ordains a longer overall term and scheduling of activities in a manner so as to allow all round capacity building and pilot trials in the beginning. The pace of investments and, therefore, activities too should pick up after such a two-to-three year period dedicated to preparation.*

IV.2.3: Non-inclusion of certain areas: Since the project took off later than scheduled, the short time available compromised the full coverage causing some of the important fringe area groups (*Thelli* collectors, and a few villages on the western boundary) to be left out. Some recalcitrant groups require longer interaction for convincing and bringing them on board. Ecodevelopment measures have so far remained confined to the park fringe within Kerala. It is also necessary to provide ecodevelopment support to the deserving and PTR dependent estate workers and villagers on the Tamil Nadu side. In the context of PTR, it is something like guarding the fortress from the front with its rear wide open. This emphasises the need of issue and site focussed interstate coordination, calling for a strong role by the Central Government.
Lesson*: Flexibility is needed on course so as to allow later entry to communities needing longer trust building time. Also interstate issues must be addressed as a part of initial project plan with role for GOI.*

IV.2.4: Emergence of new threats and challenges: Due to unprecedented fall in agricultural prices over the last two years, the incomes of Neighbourhood EDC members have fallen substantially. Similarly, the fall in global tea prices have resulted in many tea estate worker EDC members being unpaid for the past several months. These factors may lead to resurfacing of the moneylenders and middlemen and once again put pressure on the forests. PA management cannot leave the neighbourhood communities in a lurch at this stage and has to work with them in order to devise some measures to address this reality.
Lesson*: A post-project contingency fund should be contemplated at the outset and should be raised by diverting 5 per cent of annual project costs and also 5per cent of all EDC annual profits.*

IV.2.5: Commitments and ownership: The ecodevelopment programme requires absolute commitment and ownership on the part of implementing staff and the

Department as a whole. There are indications that whereas the level of these attributes among the field functionaries is reasonable, it gets thinner along the ladder of hierarchy, perhaps due to other pressing commitments and distance from the site of action.
***Lesson**: The Park management should hold short dedicated onsite workshops during the last two years of the project term jointly with other key facilitators like the Wildlife Institute of India for attitude orientation of officers at the Conservator and higher levels.*

IV.2.6: Project Design – Low training inputs and high targets for staff: Considering the perceptive and innovative approach of ecodevelopment, intensive HRD inputs were needed for the park staff at the beginning. However, due to the high investment profile and stiff time bound targets, the implementation progressed along a 'learning by doing' trajectory. Still more time is needed for the concept of participatory management to be internalised among park staff enabling them to fully accept ecodevelopment as a sound backup tool of PA management. The investment rate in the project also proved to be higher than staff capacity.
***Lesson**: Longer planned project term.*

IV.2.7: Inadequate Documentation: As a pioneering social engineering experiment, the documentation of processes was all-important. However, the pace set for the project compromised proper documentation and dissemination of the processes and outcomes.
***Lesson**: Longer project term and tasked team for process documentation.*

IV.2.8: Cumbersome accounting system: The present accounting system in EDCs follows the government system, which is cumbersome for a grassroots village institution. As a result, money given to villagers by EDCs remains an advance from the government, unless it is by documents and vouchers properly accounted for to the disbursing officer. Only then a disbursing officer incorporates that sum as expenditure in his/her cashbook. It results in a variation in the audited cash balance and actual money that is available with the EDCs. A proper village level participatory auditing system and monitoring of work and accounts needs to be devised and introduced to substitute the prevailing system.
***Lesson**: A country level task force of park directors and a retired IA&AS officer set up by the GOI to evolve in six months an 'Accounting System for EDCs' and procedures for incorporation after visits to two IEDP and two other PAs implementing ecodevelopment.*

IV.2.9: Continuation of project specialist contract staff: At present, there is no clear picture regarding the future continuation of specialist contract staff who have put in tremendous effort in the field and in the process gained considerable experience about ecodevelopment and PTR. Withdrawing them at this stage would be suicidal to the process and an absolutely uncalled for loss of value added personnel to the Forest Department in general and PTR in particular.

***Lesson**: Project design must provide, subject to performance appraisal, such value-added individuals to be associated on a long-term basis with the PA.*

CHAPTER 2

NAGARAHOLE NATIONAL PARK[2]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Location and Terrain

Nagarhole National Park (NNP) derives its name from a stream of this name, the local meaning being a serpentine river. It straddles the terminal eastern slopes of the Western Ghats, which flatten out within the park into a number of mildly rolling plateaus, separated by a number of rivers. The terrain is gently undulating with just a few 'residual hills'. The average elevation is 825m with the highest hills being Masalbetta (959 m), Kolangere betta (915 m) and Kuntur Tittu (902 m). The lowest altitude is along the river Kabini (701m.). The tract is for the most part gently undulating and drained by the Lakshmanthirtha, Nagarhole (discharging outside the Park into Lakshmanteertha) and Kabini rivers, the general slope of the land being in their direction.

Lakshmanteertha drains the northern part, Nagarhole the central part and Kabini the southern part of the Park, with Kabini also forming its southern boundary. NNP lies in the rain shadow of the Western Ghats though it benefits from both southwest (SW) and northeastern (NE) monsoons. More rain comes in the SW monsoon (mid-June to mid-September) but NE monsoon (late October-November) moderates the severity and length of the dry season. There is a declining gradient in annual precipitation from west to east, the range being from 1350 mm to 800 mm. On the western fringe, close to the Western Ghats, the precipitation is higher, going up to 2,000 mm. It is mainly the gradient of precipitation, which decides the type of vegetation -- from semi-evergreen in the west to dry deciduous in the east through a wide belt of moist deciduous forests in the middle.

NNP lies partly in Kodagu district and partly in the Mysore district, the two respectively forming parts of the erstwhile Coorg and Mysore princely states. The tract has traditionally been a rich wildlife area and attracted both legal hunting and poaching. The Kakankote forest on the bank of Kabini was the main site for the famous *khedda* operations for elephant capture. Thanks to its wealth of wildlife and the increasing pressures felt on it by legal and illegal hunting, an area of 285 sq. km was declared as Nagarhole Sanctuary in 1955. Within a few years, this was enlarged to its present size of 571.55 sq. km. In 1975, it was given the status of a National Park. The total notified area of NNP is thus 571.55 sq. km and an additional 71.84 sq. km is awaiting final notification. The planned addition is already under the control of the Deputy Conservator of Forests (Wildlife), who is in charge of the NNP and is based at Hunsur, a nearby township. The NNP has recently been made a part of the Bandipur Tiger Reserve but it deserves to be an independent one with bright scope for further enlargement by over 200 sq. km. Nagarahole is a significant component of the 5,500 sq. km Niligiri Biosphere Reserve, one of the largest conservation areas in India and a central link in the seasonal movement of elephants to Bandipur National Park in the southeast and the Wynaad

[2] Dr. R. Raju, Deputy Conservator of Forests (Wildlife), Hunsur

Wildlife Sanctuary in Kerala in the southwest. It is nationally an important protected area being home to good populations of two flagship species, *viz* the tiger and the elephant and brings up a vital habitat segment for the biodiversity typical of the Western Ghats rain shadow.

Historically, Nagarahole has been inhabited by small groups of tribal hunter-gatherers and shifting cultivators. They have been living in modest hamlets right inside the forests called '*hadis'*, though their lifestyle has undergone change with the times. They, to some extent, took to settled agriculture in *hadlus* (open marshy grasslands), but their main livelihood until the formation of the NNP came from a variety of forestry operations, *e.g.* timber harvest, plantations and fire protection works. With the stoppage of forestry operations, they now face problems because wildlife management carries much lower wage employment opportunities. They are required to migrate to fringe villages outside, in Kodagu and Mysore districts, mainly for farm work. The east and south fringe villages exercise significant pressure on the park's bio-resources, particularly for livestock grazing and firewood. The latter is used both as domestic fuel and for curing tobacco widely cultivated on the eastern fringe.

Signs of previous cultivation (erstwhile *hadis*) are evident in the form of *hadlus*within the park, although some *hadlus* occupy natural marshes. The *hadlus* are year round high productivity habitats with a rich mix of grasses and forbes sustained by good soil moisture besides tree, shrub and bamboo growth in the moister fringe strips. As the water table is high in this area, dugout ponds are very successful here. The *hadlus* are biodiversity rich and a big draw for all animals, combining the benefit of forest-grassland 'edge habitat' often having water in dugout ponds.

Nagarahole is characterised by its many ponds and pools, some of which are man-made. The perennial ponds and streams are a great attraction for animals in summer. Within the tourism zone, the roads have been so laid as to pass close by these pools, enhancing visitor chances for wildlife viewing. Large animals such as the elephant and gaur commute freely between the Nagarahole, Bandipur and Wynaad reserves as a result of seasonal changes in forage availability through this extensive forest tract.

I.2: PA Values – Biodiversity

NNP cradles the rich biodiversity typical of the semi-evergreen, moist and dry deciduous forest ecosystems occupying the rain shadow of the Western Ghats. The *hadlus* and the sparse forests with grass undergrowth exemplify secondary ecosystems of age-old human influence. The most visible elements of this biodiversity are the large predator-prey assemblages besides the elephants and the wide spectrum of habitats used by all of them. Herd densities are amongst the highest in India here. The abundance of small carnivores and water birds, one of the highest in protected-area forests, is another notable feature of the NNP. As per ***biogeographic classification*** devised by Rodgers and Panwar (1988)-WII, NNP lies in Biogeographic Zone 6 'Deccan Peninsula' and within it in the 6A Deccan Plateau South Province

I.2.1: Flora

Forest Types: The forests of the Park can broadly be classified into southern tropical semi-evergreen forests (*2A/C3*), southern tropical moist deciduous forests (*3B/Cia*) and the southern tropical dry deciduous forests (*5A/C3*) as per Champion and Seth's classification (1968). Teak occurs all through in a natural mix with a host of tree species including rosewood (*Dalbergia latifolia), Pterocrpus marsupium,* a number of *Terminalias, Albizzias, Grewias* and *Kydia calycina* with both bamboo species, *viz Bambusa bambos* and *Dendrocalamus strictus.* In semi-evergreen patches *Alstonia scholaris, Syzygium spp, Artocarpus hirsutus* and *Mangifera indica* make their appearance. On the other hand, in dry deciduous forests the associates change to *Bombax ceiba, Lannea coramandalica, Randia dumetorum, Zyzyphus spp, etc.*

Summer fires have had a role in species composition, particularly in the dry and moist deciduous forests in both tree and shrub layers as well as in grass communities. Past human interference, including fires and livestock grazing, has also been responsible for extensive occupation of the forest floor by unpalatable weeds, *e.g. Lantana* and *Eupatorium.* Canopy openings in the course of forestry operations and the above mentioned human pressures have helped the weed proliferation.

Aquatic Flora**:** Lakes and ponds carry free floating and rooted forms of hydrophytes. While *Pistia stratiotes, Spirodela polyrhiza and Wolffia arrhiza* constitute the free floating taxa, *Aponogeton echinatus, Hydrilla verticellata, Lpomoea aquaticaand Nelumbo nucifera,* represent the rooting aquatics.

Plantations: Plantations raised during the last 100 years cover nearly 107.00 sq. km of the national park. Most of these are teak plantations (nearly 100 sq. km) and some eucalyptus. Even though teak is a native species, its preponderance in a monoculture form has resulted in drastic man-made changes in its natural habitat and concomitant biodiversity.

I.2.2: Fauna

The Park is endowed with a rich diversity and abundance of animal life. There are about 100 species of larger mammals, over 336 species of birds, and 50 species of reptiles, 20 species of amphibians and 15 species of fishes. They are listed in different schedules of the Wildlife Protection Act, indicating the threat levels faced. Though the insect fauna is rich as yet no checklist has been prepared. The park harbours high densities of large **herbivores**, which in turn support high densities of the three main **predators,** *viz,* tiger, leopard and wild dog (*dhole*). Jackals, civets, mongooses, and the common otter are the smaller **carnivores** found in good numbers.

The major **herbivorous mammals** in the park are elephant (*Elephas maximus*), gaur (*Bos gaurus*), chital or spotted deer (*Axis axis*), sambar (*Cervus unicolor*), four-horned antelope (*Tetracerus quadricornis*), barking deer (*Muntiacus muntjak*), wildboar (*Sus scrofa*) and mouse deer (*Tragulus meminna*). The main smaller mammals include the Indian giant squirrel, ground shrew, bats, bush rat, wood rat, Indian porcupine and black naped hare. Sloth bear (*Melursus ursinus*), an omnivore, is present in good numbers. The latest population estimates of major mammals suggest that the park shelters some 60 tigers, 30 leopards, 1,600 elephants, 1,100 gaur, 8,000 chital and 500 sambhar.

Avifauna: The bird life is rich in diversity and numbers in both woodland and wetland habitats. The Park and its surrounds provide the birds a rich and varied habitat, the Kabini and Taraka reservoirs with their backwaters providing the wetland complement. Waterfowl congregation in the latter is a bird watcher's delight.

Some colourful birds are peacock, gray jungle fowl, river tern, emerald dove, Alexandrine parakeet, woodpeckers, hoopoe, bee-eaters, Golden oriole and Paradise flycatcher. Crested hawk eagle, serpent eagleand several owls, including the fishing owl make up the birds of prey.

I.2.3: Water Sources

Natural: The Park is interspersed with several streams and rivers, which originate in the hills and flow through the plateaus inside the park. Streams like Hubbell, Valhalla, Nagarahole, Bale, Bavalihole, Taraka and Saratihole form the tributaries of two major rivers, Laxmanathirtha in the north and Kabini in the south. The reservoirs of Kabini in the south and Taraka in the east are major perennial sources of water at the periphery of the Park. Water from both these reservoirs is used for irrigation. In addition, there are a few perennial tanks like Bisilwadikere, Kantepura, Mathigodu, Kalhalla and a number of other smaller tanks and streams in the Park. In general, because of lifting of water for irrigation in the upper reaches outside the park, the water regime within has been adversely affected. As a result, streams now dry up earlier and even major perennial ones, *viz* Nagarhole and Lakshmanteertha, go dry in summer.

Artificial: In addition to the natural waterholes, there are more than 50 artificial waterholes spread over the entire range of the national park catering to the needs of the wildlife.

I.3: PA Values – Social and Cultural Values

The Park still has age-old habitations of tribal groups consisting mainly of the Jenu Kuruba, Betta Kuruba and Yerava, who live in small settlements. The total tribal population within the National Park area is about 10,000. In addition, 96 revenue villages within the 5-km ambit of the park boundary have a population of 1,00,000. The fringe area is inhabited mostly by agriculturists belonging to the Vokkaligas, Lingayaths, Odigas and Kodavas social groups.

The tribal population within the Park, before the constitution of the National Park, formed the main workforce for all departmental works of forest exploitation and raising plantations besides fire protection. In the 1960s, as an incentive to the tribals, bits of cultivable swamps (*hadlus*) were given for cultivation, in addition to the Kumri (taungya) cultivation of ragi in the regeneration areas. Now, with Nagarhole being given the status of a National Park, the tribals are not permitted to cultivate the swamps, though some areas such as in Madenur, Chenni hadlu, Golur and Maladadi are still being cultivated. Further, as a result of the forestry operations being abandoned after the National Park status was granted, the tribal inhabitants do not now get sufficient wage employment and are forced to seek work in neighbouring coffee plantations and agricultural fields.

Pilgrimage Centres: There are a number of temples within the Park, where annually villagers from within the Park and the surrounding tract congregate and perform pujas. **Masthigudi Mastiyamma** temple is an important one. The original temple having been submerged in the Kabini reservoir, a new one has been constructed near Balle on the Mysore-Manantavady Road for the Tree Goddess, an important deity for all villagers, particularly for the tribals. Earlier, as a pre-requisite to initiating forest exploitation and elephant-kheddas, pujas were performed to ward off wild animals and any other hazards. Annually, a festival held in Feb-March draws nearly 4,000-5,000 people. There are 10 other temples for different gods and goddesses in different parts of the Park, which draw pilgrims in somewhat lower numbers mostly between January and April.

The Khedda Site (for capturing elephants), biological monuments like the river Nagarahole, an old and majestic teak tree (height-15m, girth-6.30m), archeological monuments like the ancient Nagaraja Fort and ancient sculptures are also important landmarks of the park. The NNP also contributes a large number of elephants from its stable of domestic ones for the famous Mysore Dussehra festival.

I.4: Description of Threats – External and Local

I.4.1: Local Pressures on Biodiversity

As stated already, about 10,000 tribal people live within the park and nearly 1,00,000 in the 96 revenue villages within 5-km of the park boundary. The livestock population in the fringe area is about 65,000. A significant proportion of the fringe population comprises landless families depending on wage employment and livelihoods through collection of forest produce. Some artisans also depend on the forests for raw material. There is an abundance of wild animals in the park and some stray out, causing damage to crops and livestock, while at the same time a large human population exerts pressure on the park for bio-resources. This reciprocal and adverse relationship accounts for a high degree of conflict between the park and the people.

Farming in *hadis* is no longer possible as it is highly susceptible to wildlife damage as well as due to restrictions imposed with the National Park status. Apart from wildlife damage to crops and livestock, injuries to humans from elephants, on rare occasions even fatal, compound the problems. The main pressures on the bio-resources are for firewood (domestic use and curing tobacco), for timber and grazing as well as on account of NWFP collection (for domestic use and income supplementing), which are all inconsistent with the National Park status. Poaching of elephant for ivory and other animals, rising tourism and concomitant infrastructure are some of the other negative factors. Professional bird trapping nomads, called ‘Hakki Pikkaru’ indulge in some illegal trapping in the scrub forests around the Park. The tribal populace in and around the Park also kills and traps birds using snares and bows with stones.

Some amount of agricultural activities continue inside the park, impinging upon high potential hadlu habitat. About 5,000 head of cattle from 100 odd villages graze inside the park, mostly in the buffer zone, leading to habitat degradation and weed invasion. Considerable areas on the eastern fringe are heavily degraded due to these pressures. The ingress of livestock also exposes wild animals to livestock diseases.

The deciduous forests are highly prone to fire during the long dry season from February to May. Fires at times willfully caused by locals cause widespread habitat damage and severely impact the diversity and status of micro fauna and flora. In the coffee estates adjoining the Park on its west, heavy usage of insecticides impacts the bird and fish life, resulting in mortality or reduction in the reproductive rate.
Around 100 sq. km of the park has teak plantations and another 10 sq km or so has eucalyptus in a monoculture form, which has caused reduction in forage as well as in overall biodiversity.

Poaching, Illicit Felling, Grazing and Encroachments *vis-a-vis* **Paucity of Staff**: These problems call for effective enforcement, but the park is severely constrained by inadequacy of staff, though infrastructure and equipment support was greatly strengthened as a part of IEDP. A complementing measure is the ecodevelopment initiative in the fringe areas so as to benefit people by giving them alternative livelihoods and bio-resources. These problems have been tackled quite substantially using the inputs of IEDP, though paucity of staff remains a major problem in achieving full control.

I.4.2: External Threats – Development Projects

Irrigation Projects: There are two existing irrigation projects of great regional significance catering to the otherwise low rainfall parched section of the 'Carnatic Plateau' in Mysore district. One of these is on river Kabini forming the southern boundary of the NNP. Its submergence lies partly within the park and even though the valley habitat segment has been submerged, there have been benefits to wildlife too., both in terms of water availability as well as higher forage production traceable to better soil moisture regime. It must still be said that the submergence has drastically changed the habitat from a 'free river valley' to a reservoir given to severe fluctuation in the water spread, actuated by the need of irrigation and not wildlife. There has thus been an inevitable loss of natural biodiversity of the free river valley in return for accretion of an artificial wetland. Another addition to 'park values' has been in the form of created potential for 'ecotourism', which has been exploited commercially by the tourism industry in a manner lacking the flavour of 'ecotourism' (which also benefits the local stakeholders). An area of nearly 125 sq. km of the reservoir catchment lies within the NNP, and it is thanks to its status as a National Park that it is secure against erosion of which there is high propensity in this otherwise dry tract. This 'value' of the NNP is an issue for awareness promotion among local people and politicians so that their support for the park can be elicited. Finally, the existence of the reservoir is a permanent reality and needs to be contended with in planning and implementing park management and ecodevelopment.

Another project is the Taraka Reservoir on river Nagarhole, its entire catchment lying within the NNP. Though much smaller in size than the Kabini project, its benefits flow directly and mainly to the immediate vicinity of the park. There is potential to use this reservoir and a section of the Kabini reservoir for 'ecotourism' so as to benefit the local people including the tribal affected by the presence of NNP.

Highways: Three state highways pass through the park. One traverses the Kabini valley in the southern part of the park and links up Mysore with Manantavady in Kerala. The other two course through the plateau tops dividing the park into four sections and link up the Coorg region with the Mysore region. One runs from Hunsur to Kutta, (NE to SW), another from HD Kotte to Titimati (NW to E). They meet at the plateau top near Kolangere within the park. Certainly they impact the park as both their use and maintenance cause disturbance and damage to habitat besides raising chances of forest fire and traffic hazards for animals. These roads are longstanding means of public convenience and are bound to remain so with a potential for impact growth. The park management has to contend with them, appraise the impacts from time to time and provide against them.

Upstream Drawing and Use of Water: In the northern and central parts of the park streams enter from Coorg region where cultivation of coffee and other cash crops is widespread. Several of these are perennial in their upper reaches and their water is used for irrigation before they enter the park. This has undermined the water regime within the park and some major streams, *e.g.* Lakshamanteertha and Nagarhole, which were perennial earlier now run dry in summer. Here also the park management must work for aquifer recharge in the substantial segments of their catchment lying within the park. At strategic locations well within the park, the construction of small anicuts for post-monsoon storage of water will be helpful too.

I.5: Objectives of PA Management

The recently prepared management plan by a consultant under the IEDP is for a period of 10 years from 2000-2010. The management goal is to conserve, maintain and protect the Nagarahole ecosystem with its complement of remarkable biological diversity and genetic resource. The objectives set out for management are:

(i) To conserve and protect the floral and faunal diversity through improved protected area management, including involvement of stakeholders within and outside the Park.

(ii) To build the support of local stakeholders through ecodevelopment against negative impacts on biodiversity.

(iii) To restore degraded ecosystem segments by undertaking suitable soil and water conservation measures.

(iv) To eradicate obnoxious weeds like *Lantana* and *Eupatorium* and to salvage areas under plantations.

(v) To regulate ecotourism, promote environmental education and conservation awareness, for both the tourists as well as school children, through appropriate interpretation facilities.

(vi) To promote and encourage ecological and wildlife research in consonance with the management objectives.

Specific Objectives:

- Protection by boundary consolidation, evacuating encroachments, mitigating fire hazard, and controlling firewood collection, grazing, illicit felling and poaching.
- Habitat amelioration by the clearance of obnoxious weeds, soil working around bamboo clumps and sowing seeds of native species.
- Water Management by soil and moisture conservation works and creation of new tanks.
- Capacity building of PA management staff for more effective conservation of biodiversity.
- Increasing livelihood opportunities for local people and reducing the negative impact of the Park on the local people and *vice versa* through more effective and extensive ecodevelopment support.

I.6: Objectives of the India Eco-Development Project

- To improve the capacity of PA management for effective conservation of biodiversity
- To increase the opportunities for local people so as to reduce the negative impact of the Park on the local people and *vice versa*, and thus ensure more effective people support for the Park
- Meeting the daily needs of local people for bio-resources or their viable alternatives
- Increasing alternative livelihood opportunities for people
- Resolving human-wildlife conflict by preventing wild animals from straying out of the Park
- To elicit the local people's support in conserving the ecosystems and biodiversity
- To prepare future biodiversity projects

I.7: Relevance of Planned Measures to Perceived Threats

The measures planned in NNP are along the four-pronged strategy of the IEDP. Under the PA management component both protection and habitat management have been addressed. A dedicated consultation has led to the formulation of a regular management plan for the NNP for a period of 10 years from 2000 to 2010. Measures under the Village Ecodevelopment programme address the problem of resolution of interface conflicts through provisioning of alternatives for bio-resources and forest dependent livelihoods as well as by constructing and/or reviving barriers against movement of wild animals from the park to fringe villages. These barriers include both solar power fences and elephant proof trenches. The participatory micro planning at the village level and formulation and empowered functioning of the EDCs ensures that the genuine concerns of the local people are met. Concerted activities under awareness promotion are aimed at making the people aware of the value and benefits from the park to them and the country at large, and at the same time enable park staff to appreciate the legitimate concerns of the local people. Research and monitoring activities planned covered both the management and human aspects. On the PA management side, they have been aimed at yielding findings with a potential to enhance PA management efficacy. On the human side, they have been directed at acquiring a better understanding and quantification of the problems of the people so as to enhance the results of ecodevelopment measures.

Relevance to problems of Park protection: The planned PA management measures covered substantial additions to infrastructure and equipment in order to enhance communication and mobility in the form of wireless equipment and vehicles. This is directly relevant to improving staff efficacy in protection against poaching, forest fires and other illegal activities. The staff in these interior postings suffers from lack of medical and educational facilities for their families and children. While construction of staff quarters has reduced the accommodation problem, there's very little that is possible with regard to education and medical facilities for staff. The paucity of staff was addressed by the state government's assurance to fill up a large quantum of vacant posts. However, this merely remained an assurance on paper.

Relevance to problems of habitat management: Measures were aimed at weed suppression, improving water availability and ameliorating degraded habitats.

Relevance to problems faced by the People: The provisioning of alternatives for forest resources and forest dependent livelihoods is aimed at meeting the needs of the people and at the same time reducing their pressures on the park. Likewise, the construction of wildlife barriers is aimed at mitigating the damage to crops and livestock and injuries to humans. These, as a package, are directed at improving the relationship between the people and the park staff through a better understanding of each other's role and concerns.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1: Preparation of Plan Document and project launch:

The preparation for the India Eco-Development Project in Nagarahole National Park was initiated during 1993-94. Even though some positive steps were taken up, the eco-development project could not take off. The entire process was restarted again in 1995-96 and implementation of the project could begin only in 1997-98. The Government of Karnataka sanctioned IEDP implementation with financial assistance of Global Environment Facility (GEF) and International Development Agency (IDA.) at a cost of Rs 39.493 crore over a period of five financial years commencing from 1997-98 to 2001-02 in 1996-97. These funds were in addition to the ongoing funds coming from the state and the central governments. With the concurrence of the GOI and GOK, the World Bank approved the extension of the project up to 2002-03 on 20.06.2002. An empowered committee at the state level headed by the Additional Chief Secretary to the Government of Karnataka and two district level co-ordination committees headed by the Deputy Commissioners of Mysore and Kodagu were formed to co-ordinate the implementation of the project in 1997.

II.2: Implementation of the Project: Activities undertaken inside the park under IEDP

II.2.1: Protection works*:* The following are the various protection activities achieved under the India Project:

S.No.	Particulars of Works	Physical achievement
1.	Erection of solar fence	109 km
2.	Excavation of EPT	25 km
3.	Construction of Elephant Proof Walls	42
4.	EPT restoration	60 kms
5.	Fire protection	1,600 km of fire lines and 250 *mazdoors* per day during the fire seasons every year.
6.	Construction of field staff quarters	39 buildings
7.	Establishing antipoaching camps	21 Camps with 105 men force
8.	Road maintenance	890 km
9.	Watch towers	7
10.	Purchase of new vehicles for regular patrolling ◊ Two-Wheelers ◊ Four-Wheelers ◊ Mini Bus ◊ Boat	 12 6 3 5

II.2.2: Habitat Enrichment: The following are the habitat enrichment works implemented during the project period.

S.No.	Particulars of Works	Physical achievement
1.	Bamboo soil works	5,877 ha /11.75 lakh. clumps
2.	Soil conservation measures (Checkdam / Causeway / Culvert)	82.
3.	Tank desilting	76
4.	Obnoxious weed clearance	2,000 ha

II.2.3: Village Ecodevelopment:

The project was under implementation in 108 EDCs out which 80 EDCs are villages and 28 are *hadis*. The ecodevelopment project has benefited nearly 60,000 people from over 15,000 families. A total of Rs 1,304.42 lakh has been spent on Village Ecodevelopment.

Village Eco-Development Committees: The villages within 5-km radius of the park boundary were selected for the implementation of the project. However, out of about 120 villages within the 5-km of the park boundary, only 96 villages came forward and were selected. This was despite dissemination of information about the nature of the project and potential benefits to the people in all the villages. Many did not come forward because of lack of understanding of the project and lack of conviction that benefits would accrue. Three NGOs were contracted to prepare micro plans for each village in participation with stakeholders and to provide implementation support. The Eco-Development Committees were formed on the basis of GOK's orders issued on 14

March 1998. NGO BAIF, Tiptur completed 50 micro-plans, TARDO, Mysore completed 10 microplans and VIKASANA, Mandya completed 13 micro-plans. The Karnataka Forest Department itself completed seven micro-plans. The activities involved initial contact meetings to apprise the villagers about the ecodevelopment project, its objectives, potential benefits to them and the need for their co-operation and participation. Then EDCs were formed in each village followed by PRA exercises, household surveys and writing of micro plans indicating various activities in a village to reduce the pressure on nearby forests and provide alternatives to the people. The Forester/Forest Guard was the secretary of the EDC and operated the accounts jointly with the president.. In all 80 EDCs were formed in the fringe villages during 1998-2000.

Range of activities: The activities proposed in the micro plans conformed to PA concerns as well as intended to strengthen existing livelihoods and generate additional income to the member families. Fuel-saving devices such as pressure cooker, Astra-ole, and alternate energy sources such as gobar gas, LPG and solar lamps have been distributed. Housing material, de-silting of tanks, restoration of Elephant Proof Trench (EPT), erection of solar power fence along the boundaries of the PA, construction of community hall, repairing schools and other buildings are some of the other activities undertaken in the ecodevelopment programmes. Seedlings of fruit trees and appropriate forest species have been distributed to farmers to encourage agro-forestry so that the pressures on the forests are reduced.. Several youths were given training in vermiculture, poultry, tailoring, driving, etc., to divert them to alternative livelihoods not dependent on forests.

Hadi Eco-Development Committee: 28 Hadi Eco-Development Committees inside the park consisting of 35 *hadis* covering 1,698 families were formed. NGO TARDO completed six micro plans for nine *hadis*, MGT completed nine micro plans for 13 *hadis* and KFD has completed 13 micro plans. Activities directed at reducing pressures on the park and improving their living conditions included providing kerosene stoves and pressure cookers as fuel-saving devices. Some training in alternative income generating activities was provided. Woollen blankets, carpets, solar lights, cupboards and copper vessels were provided as help.

II.2.4: Tribal Relocation Programme:

The PA authorities have successfully implemented the relocation of 250 tribal families from the national park using the funds provided under Plan Budget. Under the India Eco-Development Project, the relocated tribals were provided with transitional support such as basic facilities, agricultural support for two years and other benefits similar to the EDC villages.

II.2.5: Environmental, Education and Awareness

The following environmental education and awareness activities were implemented under the project.

- Exposure trips/workshops for staff and EDC members – 800 trips covering 40,000 people.
- Conducting nature camps, treks, 70 camps.
- Agriculture training to the tribals.

- Construction of Information Centres – 2.
- Layout for new Ecotourism Zone at Kallahalla.
- Improvement of Murkal Tourist *cum* Information Complex.
- Signage boards/materials.
- Audiovisual equipment.
- Purchase of vans and boats.

II.2.6: Research and Monitoring Covering Conservation and Human Aspects

- NRSA (National Remote Sensing Agency) Mapping – Remote sensing information acquired helped in the preparation of Management plan, boundary demarcation and watershed identification.
    1. 22 research studies on bio-diversity, ecology and the socio-economic profiles of the tribes were taken up during the project period.

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

1. The consolidation of boundaries at NNP was carried out by constructing elephant proof trenches (EPT) all around the PA, except along its common boundary with the Bandipur National Park. The EPT has been further reinforced by solar power fences over a length of length 109 km. This has effectively controlled livestock grazing and also given protection against encroachment and poaching.
2. The Park situated as it is in the rain shadow of Western Ghats faces severe water scarcity during the end of the dry season. To combat this, many waterholes have been de-silted. Soil conservation measures such as check dams and gully checks have also helped. These measures enabled the PA management to combat the current severe drought already in its third year in the region.
3. The PA has fire lines of 1,763 km and 714 km of view lines. Successful management of these fire lines and view lines and using human resources at the optimum level to combat fires during the project period enabled the PA management to successfully overcome the fire seasons. This has resulted in rich humus formation on the ground, helping efficient cycling of nutrients.
4. The PA has about 60 sq km each of grassland and bamboo bearing areas, the efficient management of which during the project period has enabled the PA management to effectively conserve the biodiversity, including threatened species like tiger, elephant, leopard and gaur, which are dependent on these habitats.
5. This effective scientific management, which was helped by local communities sharing conservation responsibilities thanks to the benefits extended to them through ecodevelopment, has to a good extent helped ecological sustainability of the PA as the threats faced from local and external pressures have been overcome.

III. 2: Institutional Sustainability

Because of awareness promoted by the project and their established link with the Park staff, the communities are motivated by their reciprocal commitment to conserve biodiversity. The status of such commitment by way of involvement of people in conservation is reviewed in periodical meetings. Some fringe villages were left out leaving gaps. Their involvement may not be there and this is a constraint affecting sustainability. The solar fence erected to prevent animals crossing over to the farmlands are being monitored by the EDCs of the respective fringe villages, more so by those in the Kodagu district of Coorg region. The EDCs are participating actively in scaring elephants that cross over from park area to the farmers' lands and are forming patrolling groups with the help of the PA staff. There are many instances of EDC members giving intelligence about forest offences. This has evidenced a significant drop in fire occurrences and forest offences since the inception of the project. Study tours and training programmes were conducted for EDC members to develop decision-making, leadership development, financial and institutional sustainability, entrepreneurial skills and conflict resolution.

The PA is implementing activities funded by the Forest Development Agency (FDA) in 40 EDCs of the park for the next five years. The FDA's action plan has been approved for Rs 2.80 crore, which would certainly make these EDCs stronger and pave the way for better institutional sustainability. Lessons learned from the implementation of the IEDP will be used to redesign and shift the activities towards community-oriented SHGs and loan-based activities rather than those using 'individual beneficiary grant'.

The regional coordinating committee meetings are being held at regular intervals, with the involvement of the district administration. Till date, 12 regional coordination meetings and three park level meetings have been conducted. Steps have been taken for the effective functioning of the coordination committees to address regional concerns and to identify and access services and funds from other available development schemes and programmes. In coordination with the Zilla Panchayat, gobar gas was installed were done in some EDC villages. Computer training is conducted in coordination with the Information Technology department of the Government of Karnataka in all the three taluks bordering NNP. Government departments such as Health, Social welfare, Education, Animal husbandry nd Horticulture are actively involved in the welfare of tribes in the relocated area. Many EDCs are jointly functioning as "Watershed Organisations" with the watershed development department. Thanks to the sustained activities of various departments, the regional concerns are being addressed efficiently, which in turn supports PA management.

III.3: Social and Financial Sustainability

The project enabled the PA management to share the conservation responsibilities with local communities in order to improve the PA's chances of longtime survival. The project increased PA compatible livelihood opportunities for the local people and enabled them to participate in decision making for such activities. Before the project the participation of the local people in the PA management was almost nonexistent. One hundred and eight EDCs covering 80 fringe villages and 28 *hadis* inside the park

involved nearly one lakh people. Regular meetings of the EDCs ensured due participation of all the stakeholders. The involvement of women in the EDC processes and in decision-making enhanced sincerity and quality of implementation of the activities. Community assets such as community halls, tanks, library and agro-forestry plots and the accumulated CDF (Rs236 lakh for all the 108 EDCs) bind members together, thus making the EDCs more sustainable. Guidelines have been laid down to facilitate effective utilisation of village development fund through EDCs, to benefit the poor and marginal section of society.

The project has created all-round awareness, perceptible orientation of mindsets with respect to the values of the Park and the need for its conservation. This awareness created among the local people as well as the PA staff enabled to mitigate the problems of livelihood and bio-resource needs of the local people.

The project generated a lot of employment for local people especially tribals living inside the national park. The gender issue has been addressed by providing women oriented benefits like fuel-saving devices, tailoring trainingand computer training. Their membership in EDCs and their executive committees has empowered them to some extent in village society.

Impact of the abrupt withdrawal of the project:
The World Bank (WB) terminated the India Eco-Development Project at NNP when the implementation was at its peak, due to misapprehensions created. This created considerable negative impact and affected both social and financial sustainability.

People's retaliation: The abrupt withdrawal of the project shocked the local people as most of the remaining works in the project pertained to Village Ecodevelopment. This frustrated and shook their trust in the park management, the state and central governments and also the World Bank. This has also affected the social and financial sustainability gains made under the project.

Pressure on the park: Since park authorities were not warned and enabled to be ready to run management activities without the project fund, the following are the adverse activities witnessed in the park.

a. ***Water crisis:*** In the current severe drought, now in its third year, only 15 to 20 waterholes are viable out of the 100 odd in the park. The financial crunch due to the sudden closure of the project has undermined the Park's ability to combat this crisis.
b. ***Fire threat:*** The Park is under severe threat of fires due to the erratic and irregular rainfall for the last few years. The financial crisis resulted in stalling of important works and irregular payment to workers has anatgonised them. As a result, people have resorted to arson, which has affected about 800 ha.
c. ***Protection:*** The abrupt withdrawal of the project has paralysed the anti poaching camps due to the non-payment of wages and ration to the camp *mazdoors*. This has not only compromised protection but also led to dampening of the enthusiasm built up by the project among people and staff alike.

d. ***Relocation of tribals:*** The process of village relocation has ground to a halt because a number of amenities, which supplemented the GOI package could not be provided for want of funds. This has caused loss of confidence and trust among the tribes for the department.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: Beneficial Impact on Villagers

Even though those who could not make 25per cent contribution got left out, the project has helped the poor, particularly the tribals in the *hadis*, to uplift their living standards, thus helping the cause of social justice. In all 15,623 families from 108 villages and *hadis* were benefited. During the project period, 2.5 million man-days of employment was generated, though after the closure of the project it has come down substantially because of the Park's paucity of funds. People have added assets to their households in the form of fuel-saving devices, which has also helped reduce their dependence on the park besides reducing the drudgery of women (LPG-7,256, Cookers-7,432, Gobar Gas 366, Kerosene Stove-272 and Astra Ole-376).

People have been helped to augment their incomes through small business activities, *e.g.* petty shops, cloth shops, vegetable shops, barbar shops, bangle shops, driving training, loudspeakers, shamiyana, cable dish and so on. Other individual benefits supporting agricultural incomes were soil conservation in farmland and digging of farm ponds (800).

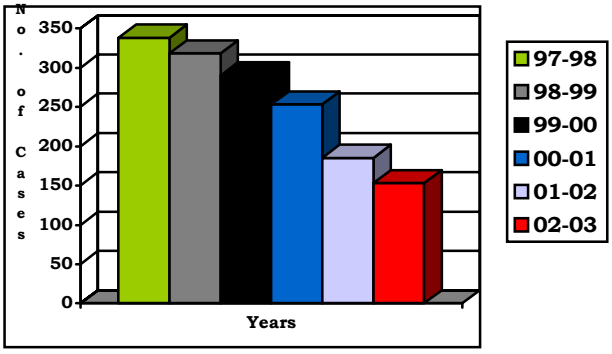
Individual benefits	Community benefits
LPG: 6,230 Gobar gas: 55 . Cooker: 6,500 . Solar light: 3,525 . Kerosene stove: 650 . Agricultural Implements, Training in Business and as Artisans	Community halls: 75. Tanks desilting: 6. Agro-forestry: 42.65 lakh plants Solar fence: 109 km Restoration of EPT: 60 km Farm ponds: About 800. Library, School furniture for village schools.

Reduced dependency on forest produce and reduction in forest offence: The project has created awareness about the importance of the Park among the EDC villages and *hadis*, helping development of mutual trust between PA staff and the people around. Facilitation of and support for alternative income-generating activities such petty shops, tailoring, poultry, piggery and equipping artisans, has reduced their dependency on the Park evidenced by the reduction in forest offences in the recent years as shown below.

Social conflicts: The condition of 'reciprocal contribution' against the offer of grant assistance to 'individual beneficiaries' (Rs 25 deposited in EDC-CDF against an asset worth Rs 100 from the project) under the project has created social conflicts in the EDC villages. The poor among the society such as daily wage and agricultural labour, who

could not contribute the 25per cent of grant were deprived of the project benefits. This caused deprivation of the poor, undermining social harmony.

Reduction in Grazing: Grazing of livestock from EDC villages in the park has been almost eliminated.

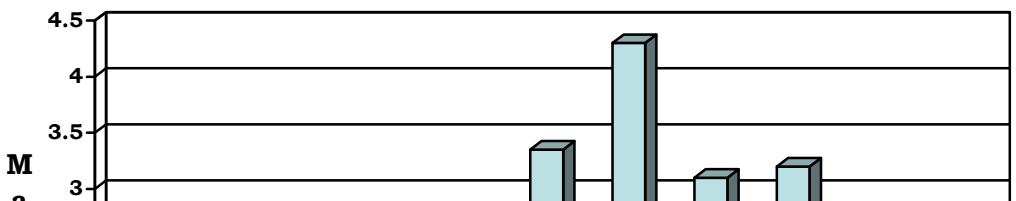


Women's empowerment: The inclusion of women members in the EDC committees was made compulsory. Further, the gender sensitive activities such as fuel-saving devices, kitchen gardens, tailoring and computer training encouraged women to help in the implementation. Each EDC has at least 2-3 SHGs of women and this has empowered village women.

Social fencing for park protection: Some of the EDC villages have formed village forest protection force (VPF), which supports the forest department in protecting the park against fire, illicit felling and poaching.

Reduction in human animal conflicts: The erection of solar power fence around the park to a length of about 109 km and the restoration of Elephant Proof Trench (EPT) of about 60 km has helped reduce the movement of wild animals across the park boundary to villages. At the same time, it has reduced crossing of domestic animals into the park. This has reduced the human animal conflicts to a considerable extent.

Employment generation: The project during its currency provided increased employment especially to the tribals in and around the park. The graph shows the number of mandays provided during the project period.

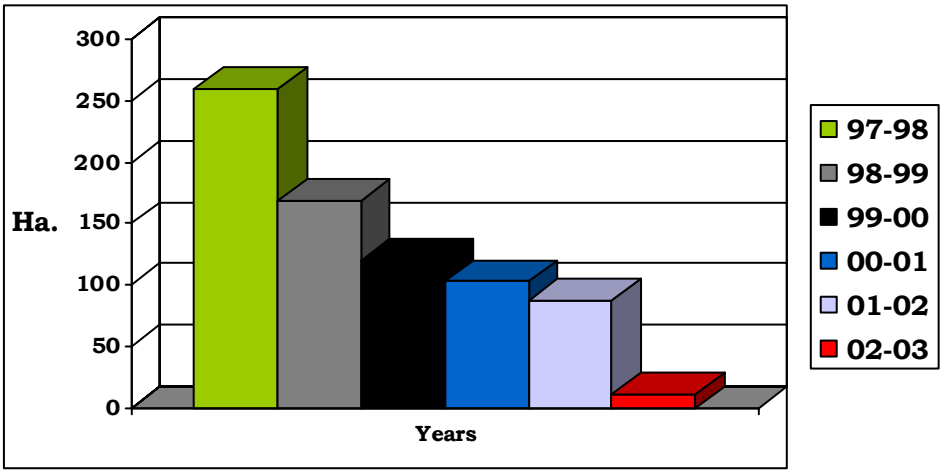


Contribution money: The Village Development Fund (VDF) existing in each village ranges from Rs 0.60 lakh to Rs 12 lakh and totals to about Rs. 250.00 lakhs in 80 EDC villages.

IV.1.2: Benefits to the Park/Bio-diversity Conservation

Benefits to the Park and its biodiversity have come in many ways. All-round awareness creation among local people, park visitors and staff promoted a better understanding and support for park protection and management (350 training events, 315 workshops, 485 exposure trips, and four overseas trips). Reduction in fire incidence (see figure below), boundary conflicts, forest and wildlife offences and in the people's dependence is clearly in evidence. Besides employment generation during the project period, strengthening of livelihoods and helping new income generating activities has effected a favourable change in the attitude of the people towards the Park. Payment against 'reciprocal contribution' made to the CDFs of EDCs now stands at Rs 2.5 crore. This holds the beneficiaries together and also establishes a link with the park management.

Figure: Fire Offences during 1997-98 to 2002-03



Synergic Alliance between the Park and People

A large number of people inhabit hamlets (54) inside and numerous villages (over 100) in the fringe area of Nagarhole National Park (NNP). The population dependent in varying degrees on the Park for resources and livelihoods is well over a lakh. Their pressures degrade habitats and undermine biodiversity, while they themselves suffered from extensive wildlife damage to crops and on rare occasions even to human life. Restrictions enforced by the Park staff added to the severity of the conflict and put the park-people relationship in a highly unfriendly frame. Both the Park and the people were at the receiving end of this adversity.

Naturally, the main plank of the India Ecodevelopment Project strategy in NNP was to mitigate this adversity and elicit peoples' help in better park management in a mutually beneficial manner. The implementation of IEDP in NNP accordingly worked towards enhancing farm productivity, supplementing livelihoods and providing alternate resources/devices, so as to reduce peoples' dependence on the Park. Ecodevelopment Committees (EDCs) were constituted in 80 fringe villages and 28 hamlets inside the park, which had a good number of women and some poor as members. The democratic and secular functioning of EDCs with inputs from women steered the course of planning and implementation through well considered decision making.

As a part of ecodevelopment support to village communities, six village tanks were desilted and revived and nearly 800 ponds in individual farmers' holdings were dug. Besides this, agro forestry activities were undertaken in which42.65 lakh plants of fodder, fruit and timber-bearing species were distributed to individual farmers with the aim of reducing their dependence on the park. Solar power fences (SPF) covering 109 km were erected and 60 km of elephant proof trenches revived to give protection to farms from depredations by elephants and other wild animals. Other community-oriented inputs included building 75 community halls, setting up of village libraries and equipping schools with furniture.

Financial and training support to start new livelihoods and strengthen existing ones included running petty shops, enabling artisans to make saleable artefacts, setting up small-scale poultry and piggery and undertaking tailoring activities. Use of alternative domestic energy sources (6,230 LPG connections, 55 cattle-dung-based gas plants and 650 kerosene stoves) was strongly facilitated. 3,525 solar lanterns and 6,500 pressure cookers were provided as fuel saving devices.

All these inputs reduced forest dependence and enhanced on-farm and off-farm incomes. The individual benefiting activities together with the broad-based community benefits enabled a positive change in peoples' attitudes towards the Park and its officials and strongly contributed to ameliorating the interface between the Park and the people. A kind of 'social fence' has come into existence wherein the fringe villagers join the park staff in anti-poaching patrols and fire protection errands. Many Village EDCs have taken over the upkeep of the power fences and they regularly patrol these, which helps in protection too. **These significant mutual benefits accruing to the park and the people signify a newfound synergy between them evidenced by a drop in forest-wildlife offences from over 300 in 1997-98 to under 150 in 2002-03.**

Relocation of Tribal Villages – Another Cardinal Activity for Park-People Benefit

While tribal habitation inside what now forms NNP is an age-old phenomenon, the political, demographic and land use changes that have occurred in the last couple of centuries have successively affected their lifestyle and sustenance in various ways. Tribal settlements in this region are called *hadis*. From hunting-gathering and some slash-and-burn farming in the remote past, they took to farming '*hadlus*' (marshy strip grasslands), gradually coming to depend more on forestry works (timber and plantation operations) as these gained momentum along the passage of the last century. Farming in these deep forest seated *hadlus* always remained exposed to wildlife damage, particularly from elephants and wild pigs. Forestry works, however, provided the mainstay, supplemented by wage employment in coffee farms in the Coorg region and tobacco and cotton- growing villages in Mysore district, the two respectively abutting on to NNP's west and south-east boundaries.

Nagarhole area was always famous for hunting 'big game', elephant and tiger included. Kakankote area on the Kabini bank was famous for '*khedda*' for elephant capture. As pressures of legal and illegal hunting increased throughout the country in early and middle parts of the 20th century, wildlife rich areas like what now forms NNP were brought under focussed conservation by declaring them as sanctuaries or national parks. NNP went through these processes too and became a Sanctuary in 1955 and an intended National Park in 1975, which came to be finally notified in 1983. Effective protection with enhancing legal status accelerated the growth of wild animal populations making successful farming well nigh impossible. Under a National Park status, the forestry-operations also came to be stopped and this substantially reduced the available employment because of the inherent lower scope in wildlife works. This has caused hardships to the tribal inhabitants.

Farming is almost impossible because of wildlife damage and is also illegal in a national park. This inherent incongruity of these settlements impelled the park management to persuade the tribal *hadis* settlers to relocate outside the NNP with full facilities including prepared farmland, new houses and other civic amenities. With both the central and state governments giving approvals for the allotment of land from reserved forests for such relocation and also some central government financial assistance, 250 tribal families were relocated under a very thoughtful and comprehensive rehabilitation package. With the state government providing land from Reserved Forest free of cost, a grant of Rs 1 lakh per family was used for preparing farmland, constructing houses and various other backup services. Elephant proof trenches give them protection against wildlife damage.

Support under IEDP was also extended to these re-settlers after the constitution of the EDCs in the new settlements. The inputs under a grant of Rs 10,000 per 'beneficiary-family' included help in livelihoods by way of petty shops, poultry, skill enhancement for self-employment besides providing fuel-saving devices, solar lanterns, utensils and blankets for home use. On the common amenities side, other state government agencies chipped in and set up schools, dug bore-wells and provided plants of fruit trees for kitchen garden, *e.g.* mango, sapota, coconut and lime.

Most of these families are well settled and are practising farming successfuly and are happy. They also have enough scope of wage employment to supplement incomes in this predominantly agricultural landscape outside the park growing cash crops like cotton, tobacco and chillies. Family incomes have improved. School dropouts have returned to complete their education and the literacy level is rapidly picking up. The health support index too is steadily going up. **A sure and encouraging sign of success is that relocated families are now motivating those still inside to relocate. It is in direct interest of the remaining hadi tribal settlers inside the park as well as of the NNP to carry forward this relocation programme to its logical conclusion.**

IV.2: Shortcomings, Issues and Constraints

IV.2.1: Problems encountered in Village Selection and Micro Plan preparation:

- ◊ Illiteracy and lack of awareness and understanding about the programme.

- ◊ Suspicion towards the programme and lack of trust on the Forest Department.
- ◊ Social conflicts because of heterogeneity of social and economic strata.
- ◊ Local political misunderstandings.

IV.2.2: Strategic flaws in the Village Eco-Development Programme:

1. *Ignoring the unwilling people:* Lack of trust building and the inability of the micro plan preparing agencies to convince people caused some families to be left out of the EDC membership in some villages and *hadis*. This led to their being deprived of the project benefits and created dissatisfaction among them resulting in social conflicts in the villages.
2. *Ignoring the unwilling villages:* Several unwilling villages/hadis within the 5-km radius of the park boundary were left out because of various social conflicts, local politics, lack of knowledge about the project, lack of spirit of involvement and awareness, shortage of time and work pressure. These left out villages continue to exert pressure on the park. These villages/hadis now need to be addressed.
3. *Unplanned pre-project activities*: Lack of proper understanding of the project resulted in unplanned pre-project activities, which undermined the project performance.

IV.2.3: Constraints/ Deficiencies and Possible Solutions

Constraints/Deficiencies	Possible Solutions
Poor skills and capacity of both NGOs and staff undermined the quality of the micro planning leading to sub-optimum participation of stakeholders. Several families (especially poor) and quite a few fringe villages got left out. Later, as EDC members received benefits, those left out felt aggrieved. This resulted in conflicts and confusion. Lack of clarity on project strategy and activity thrust compromised micro planning quality.	Prior capacity building of staff and NGOs involved is necessary for PRA exercise to be thorough and meaningful. There should also be full prior clarity on the project strategy and activity thrust. For example, in NNP none of those involved in microplanning were aware that the Village Ecodevelopment money could be straightaway used by the EDCs as a 'revolving fund' for giving short-term loans to individual members or to SHGs for income generating activities. As a result all assistance went to EDC members along 'individual beneficiary grant' mode. Even in this mode 100:25 ratio has been used for 'beneficiary' share in stead of 75:25.
Some of the villages/hadis got left out from coverage under IEDP though they were either within the park or within 5-km ambit of the park boundary.	There is need of better awareness creation at the outset among the people about the processes, benefits and reciprocal commitments as well as responsibilities towards participation in park protection and management. Left out villages and families need to be now covered by provisioning

	funds for 'village ecodevelopment'.
Poor flow of funds especially in the 1st quarter of the financial year compromised pace of activities and also the meeting of targets within fiscal year.	Government funds from both Centre and the State should go direct to the Forest Development Agency approved for the NNP.
Shortage of staff, especially field-staff.	Vacancies need to be filled up.
25per cent cash contribution by all, even the poor, proved to be an unreasonable condition.	Accept contribution in kind, *e.g.* labour and exempt people below poverty line.
Non-tackling of community and conservation reserves around the park.	Include adjacent RFs and local conservation areas as 'community reserves' for consolidation.
Interaction among the project implementing PA's started late and remained low.	Interaction among project PAs should happen from beginning and facilitated all through.
Interference in the functioning of EDCs.	More independence to EDCs
Too much of consultancy and NGO services, a majority of poor quality.	Exercise discretion based on PA need and NGO/ Consultant competence.
Administrative hassles *e.g.* frequent changes in office supervising the Park Director and frequent staff transfers.	Administrative arrangements must remain stable all through project, and staff transfers should be minimum and actuated only by park welfare.
Works are not prioritised.	Annual Plan of Operations must be thorough, made in consultation with field staff and prepared in time to elicit Central and State grants

LOOKING AHEAD: RECOMMENDATIONS FOR FUTURE PROJECTS

1. It is essential that there is prior and full awareness among the local people as well as all PA staff of the objectives, strategies, processes and activities envisaged under the project.
2. If an individual is the unit of assistance, some families 'more equal than others' can have several beneficiaries and 'others' none. The thrust must hence be on group activities through SHGs.
3. Special efforts are required to include the poor, land-less and the socially disadvantaged families. Benefits to them should flow *via* short-term loans from EDCs for economic activities undertaken as SHGs or as individuals with preference to women in either case.
4. Prior capacity building of EDCs, particularly executive committee members, as well as concerned park staff and NGOs is critical for focussed thrust, transparency and participatory collective decision making for favourable results conforming to the twin objective of benefits to the park and the people.

5. Awareness and informed acceptance of the essentiality of linkage between conservation and development in the context of the PA and the local people is a must. Local people must perceive development benefits coming to them from the PA as incentives for conservation, which also is their long-term interest.
6. Target driven outputs undermine participatory processes of collective decision making, which otherwise would favour the activities benefiting the majority, the poor and the more forest dependent families. It was also experienced that monitoring of theses targets did not measure social and economic impacts across the cross sections of society and excluded the poor and more dependent, who could not become EDC members, as they were not in a position to contribute 25% of the 'individual-benefit-grant' money.
7. Planned scientific management must address the problem of weeds and monoculture-plantations for ameliorating habitat for overall biodiversity as well as the threatened animal species. Another critical need is the systematic aquifer recharge as a means of surmounting the water scarcity during the pinch period, particularly in the recurrent drought years.
8. Villages within the 5-km ambit that got left out and the left-out families in the 'covered' villages must now be addressed on priority. Priority attention must be given to the poor and forest dependent families.
9. Likewise the relocation programme for the tribal *hadi* settlers must be continued and brought to logical conclusion. Besides the rehabilitation package, it must provide adequate and appropriate ecodevelopment support at the resettlement sites.
10. Buffer area around the park needs to be developed as conservation reserves and community reserves.
11. Improvement in tourism management is called for alongwith 'true ecotourism' strategy that involves local communities benfitting without undermining conservation concerns.

CHAPTER 3

RANTHAMBHORE TIGER RESERVE[3]

SECTION I: INTRODUCTION AND BACKGROUND

1.1.1: Location And Extent of the PA

The Ranthambhore Tiger Reserve (RTR) is situated in the southeastern districts of Sawai Madhopur and Karauli in the state of Rajasthan in India. The park is located on the left bank of the mighty river Chambal, which lies to the south of the RTR. The river Banas divides the RTR into two parts, the northeastern part being the Keladevi sanctuary.

The Government of India launched Project Tiger in 1973 to save the endangered Royal Bengal tiger from imminent extinction. Ranthambhore was one of the first nine wildlife areas selected under Project Tiger. Looking at the unique ecological significance of the area, it was notified as a National Park in 1980. In 1983 and 1984, adjoining areas were also elevated to the status of wildlife sanctuaries, whereby the Sawai Man Singh Sanctuary and the Keladevi Sanctuary were notified. The headquarters of the core division of the RTR are under the administrative and supervisory control of the Field Director and Conservator of Forests, Ranthambhore Tiger Reserve, with headquarters at Sawai Madhopur.

The Ranthambhore tiger reserve extends from the city of Sawai Madhopur to the town of Mandrail in Karauli district. The area lies to the left of the river Chambal. It stretches nearly 120 km in length and has a width of around 20 km. The total area of RTR is 1,394.47 sq. km, out of which 772.63 sq. km falls in district Sawai Madhopur, and the remaining 621.84 sq. km in district Karauli. RTR is split into two divisions, namely the core division and the buffer division (Karauli).

1.1.2: Legal Status

The Sawai Madhopur sanctuary was constituted under Section 5 of the Rajasthan Wildlife Animals and Birds Protection Act, 1951.[4] The forests of Sawai Madhopur wildlife sanctuary were declared as a Project Tiger reserve in 1973 and Ranthambhore National Park was constituted within the Project Tiger Reserve and notified under the Wildlife (Protection) Act, 1972.[5] The area of the National Park is 282.03 sq. km.

The Keladevi sanctuary, which has an area of 672.82-sq km, was notified under the Wildlife (Conservation) Act, 1972.[6] In 1992 it was also brought under the direct supervision and control of the Field Director, Tiger project, Ranthambhore. The areas adjoining the RTR in Sawai Madhopur were elevated to the status of a Sanctuary[7], which

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[3] GS Bharadwaj, Deputy Conservator of Forests; RN Meena, ACF and Ganesh Verma, ACF

[4] This was done by notification No F 39 (2) for /55 dated 07.11.55 and further amended vide notification No. F 39 (2) Rev. A/54 dated 05.08.1958.

[5] This was by the notification No. F 2 (26) Raj. 8/80 dated 01.11.1980.

[6] This was by notification No. F 11 (27) Rev. group-/8/83 dated 19.07.83

[7] vide notification NO.F (11) 28/ ENV/8/84 dated 30.11.84

also brought it under the direct supervision and control of Field Director, Tiger Project Ranthambhore, Sawai Madhopur.

The present legal status of the forest area included in the Tiger Reserve is as under:

- Reserve Forest: 703.03 sq. km.
- Protected Forest: 690.69 sq. km.
- Unclassed Forest: 0.75 sq. km.

1.1.3: Biodiversity Values and Cultural Values

The Reserve represents a rich biodiversity conservation area in the country. It serves as a link between a chain of PAs from Dholpur to Kota and is an important corridor. It is an area with unique features of "Great boundary fault" of India and a meeting point of the Aravalli and Vindhyan hill ranges, their geology, flora and fauna. Besides, it is an invaluable watershed for the surrounding area. The reserve is a catchment of many reservoirs of the area apart from the Chambal and Banas rivers. Further, it is an important biological research area with considerable scientific, educational, aesthetic and recreational value.

RTR is home to six species of cats, four species of the dog family (the wild dog is an occasional visitor), three species of mongoose, and the marsh crocodile. It has an estimated 38 species of mammals, 258 species of birds, 14 species of reptiles and 402 species of plants, which indicates the richness of the biodiversity at RTR.

The tiger is the flagship species of RTR. In 1973, when the RTR was declared a Project Tiger area there were only 14 tigers in the area, which has now gone up to 45. This tells the success story of RTR. The presence of Rudy mongoose, Rusty spotted cat and Red fox in the area indicates that this area is the meeting point between north and south Indian fauna possibly due to the meeting of the Vindhyan and Aravalli hill ranges. Three species of antelope -- Chinkara, Bluebell and Black buck (within 5 km of the RTR) are also present.

In the heart of the reserve, the famous fort of Ranthambhore - one of the oldest and strongest forts of Indian history -- from which the reserve derives its name is situated atop a Vindhyan hill. Apart from this historical monument, there are two famous temples in the Ranthambhore fort and also the Temple of Keladevi next to the Keladevi Sanctuary. Other temples worth mentioning are Soleshwar and Jheel ka Balaji in the core area and the temples of Ganteshwar Kurka and Karanpur in the buffer area. The remains of two *mathas* found in Keladevi Sanctuary indicate that a seat of Nath Sampradaya exists here. The confluence of the river Chambal and Banas is near RTR and is a place of religious and cultural interest to the local people. In the RTR area there is an amalgamation of Hindu and Muslim cultures reflected by various temples, mosques, Idgahs, etc.

Besides its natural, archaeological, geological and cultural significance, the RTR is of immense value in conserving water, and acts as a lifeline for the survival of the local people around. A few water reservoirs have been constructed in the past to harness the rainwater flowing out of the reserve. These reservoirs maintain the water table of the area

throughout the year and are also important sources of irrigation. A few such reservoirs are Padam talab, Rajbagh talab, Lahpur talab, Gilai Sagar Mansarovar, Devpura and Amarpura reservoirs.

1.1.4: Threats (Local as well as External)

Some 332 villages having a population of around 0.2 million and a cattle population of nearly 0.1 million surround RTR. It is virtually an ecological island burdened with heavy pressure of human and cattle population. The economy and livelihood of the local people depends to a larger extent on the resources of RTR.

The RTR is comparatively a small area of forest. The isolated wildlife population of RTR is vulnerable to the availability of food and water, health and genetic deformities due to inbreeding. Some of the major threats to wildlife are:

***Poaching**:* Ranthambhore Tiger Reserve attained notoriety for illegal poaching in 1992. In that year it was widely believed that many tigers were poached. Generally poaching is not a big threat in the park. Natural boundaries prevent the poachers to enter the park to a great extent. The method of poaching found to be more prevalent in the area is the poisoning of the carcass or by laying traps for the tiger. A well-organised effort to identify and control poaching is lacking. Unorganised poaching also goes unreported because of the poor communication with the villagers and lack of effective intelligence.

***Deterioration of the Ecosystem in Buffer areas**:* Illicit cutting and collection of fuel wood and timber is also taking its toll on the buffer areas. Mining is also disturbing the habitat in some areas of Keladevi Sanctuary and other areas. Building stone for cities like Sawai Madhopur and Karauli is brought from the forest either by surface collection or by mining. Some leases have also been given in the forest area. The noise, debris and vehicular disturbance is making the affected area unavailable to the wildlife, thereby reducing their habitat.

***Genetic Factors**:* For the smaller mammals, the space for migration is not very important because they can still migrate to other areas or live in revenue areas but for larger mammals like tigers, sambhars, chital, and chinkara, it's not possible to migrate to other areas. It has created a situation in which there is danger of inbreeding within the limited population. This can lead to genetic deformities and other adverse consequences.

***Domestic Livestock Grazing**:* There are 332 villages within the 5-km periphery of the Reserve. Grazing by the livestock has affected the regeneration. The quality of grasses has deteriorated in the buffer zone. This has affected the ungulate population and is not conducive to its growth. Due to heavy grazing pressure, it has not been possible to constitute core areas for Sawai Mansingh Sanctuary and Keladevi Sanctuary. The recurrent conflict with the villagers on the matter of grazing in Ranthambhore National Park has alienated the villagers from the department.

***Wild Fires**:* The incidence of wild fires is negligible in the area. During the hot weather, there is a possibility of wild fires but preventive measures are taken to avoid wild fires.

***Outbreak of disease due to heavy interaction with the domestic cattle**:* The continuous interaction coupled with comparatively small and isolated wild animal population may lead to an outbreak of fatal contagious diseases which could ultimately eliminate some of the wild species. Animals of small and uncertain population like Chinkara, Tiger, Caracal and Sambhar are especially vulnerable to this factor.

Habitat degradation due to loss of topsoil and silting of water holes: A unique feature of RTR is that there is no point of entry of water coming out of the RTR. All the water flows from RTR to the surrounding outer areas. This leads to a situation that whatever soil is washed away from the PA with run off is lost forever.

***Alienation of Local People**:* Throughout the process of evolution of RTR, the local people gradually became alienated. There were many villages situated within the park area. Twelve villages were shifted from the park to the outside area. The villagers' accessibility to the forest resources has been restricted through the Indian Forest Act and Wildlife Protection Act. There are restrictions on the collection of minor forest produce and grazing. Their mere entry to the park is restricted, whereas tourists enjoy all comforts and benefits. There is a growing feeling that the park has been created for foreign tourists. The park no more holds promises for the villagers. The wild animals cause damage to their crop and their domestic cattle.

***Tourism**:* Ranthambhore Tiger Reserve had Ranthambhore National Park as its identified core area. The whole of the tourism is run in the core area, there is no tourism in the Keladevi Sanctuary and the Sawai Man Singh Sanctuary. Out of the total PA area, an estimated 100 sq km is disturbed by tourist traffic, which is not a very desirable situation.

1.2 OBJECTIVES OF PA MANAGEMENT AND ECODEVELOPMENT:

1.2.1: The PA and local communities

There are 112 villages within a distance of 2 km from the PA boundary, which constitutes the ecozone, and 23 villages are located inside the PA. The major communities in the ecozone include the Meenas, the Gujjars, the Jats, the Baiwas and the Muslims. In addition, 64 families belonging to a hunting-dependent tribe called Moghiya have been identified in villages around the PA.

The main occupation of the people in villages around the Ranthambhore National Park is farming and cattle rearing. Households that do not have agricultural land or cattle work as labourers to earn their livelihoods. As a result, there is heavy interaction between the people and the PA, in the form of pressures like grazing of livestock, collection of fuel wood and timber, extraction of NTFP and poaching.

The notification of the PA and reduced access of people into the PA has resulted in a resource crunch for the hitherto forest dependent communities. As a result, there has historically been serious antagonism between the PA staff and the local communities, and this has had negative connotations for wildlife conservation within the PA.

Negative impact of people on the PA

To meet the demand of above needs, this zone puts maximum negative impact on the PA in following forms:

- Heavy grazing reduces the regeneration of forest and disturbs habitats.
- Illegal removal of green fuelwood reduces the forest cover and degrades the affected area.
- Poaching affect the populations of endangered wildlife species like Chinkara, Sambhar, etc.
- Removal of NTFP disturbs the habitat and the illegal presence of people in the P.A. creates biotic disturbance.
- The entry of livestock in the PA affects wildlife and creates health problems.

Negative impact of the PA on the people

- The presence of a protected area amongst them affects the lives of local people in various forms, which create a negative impact of the P.A. on the local people. The main issues are:
- An opinion among the people that development has stopped due to the presence of the PA, like construction of roads, dams, electric lines, etc. which are not allowed in the PA
- No major industry is allowed to develop in the area.
- Crop raiding by wild ungulates and livestock lifting by carnivore has resulted in financial losses.
- The restriction on entry into PA for grazing and for other needs has resulted in loss of earnings from the natural resources, and affected their life style.
- Local people are not allowed to visit their religious places freely by park staff.
- These negative impacts of the PA on the people, affect the very existence of the PA and it should be on the high priority that these are minimised in the area, particularly in the ecozone.

1.2.2: Management Objectives for the PA

The following objectives have been formulated around the set of values recognized and prioritized earlier:

1. To **protect and improve the ecosystem** of Ranthambhore Tiger Reserve.
2. To **maintain a viable number / population of tigers** for scientific, economic, aesthetic, cultural and ecological values through a total environmental conservation of the entire flora and fauna.
3. To develop e**cotourism** sites away from the designated Core area.
4. To **improve productivity** of grasses, fuelwood and other species in the buffer zone to reduce pressure on core zone.
5. To **reduce negative impacts** of people on protected area and vice versa through Eco-development initiatives in the impact zone and relocation of villages from the Project Tiger area.
6. To develop and maintain existing **corridors** to encourage proliferation of wildlife.
7. To promote socio-economic studies and ecological research in pursuance of the above objectives.
8. To **motivate the Mogiyas** and other nomadic tribes to change their hunting habits and rehabilitate them.
9. To **improve capacity of the staff** through appropriate training programmes and strengthening of infrastructure.

1.2.3: Constraints in achieving the objectives

The following constraints have been identified in achieving the objectives outlined above:

(i) The biotic pressure from villages situated inside and on the periphery of the park.
(ii) Inadequate intelligence information network, and poor legal assistance and protection to forest staff.
(iii) Multiple administrative control and poor integration with other departments.
(iv) Lack of proper demarcation of boundaries.
(v) Poor regeneration and inadequate information on techniques for habitat manipulation like de-weeding
(vi) Insufficient baseline data
(vii) Lack of political will regarding new recruitments and women forest staff
(viii) Lack of awareness about ecotourism concept, and insufficient interpretation facilities.
(ix) Higher age group and educational background of the staff with least training and technical manuals exposures.
(x) Changes in the existing land use in the vicinity of the park.

I.2.4: Objectives of Ecodevelopment

- To improve capacity of PA management to conserve biodiversity and increase opportunities for local participation in PA management activities and decisions.
- To reduce negative impact of local people on PA and also reduce negative impact of PAs on local people and increase collaboration of local people in conservation efforts.
- To develop more effective and extensive support for ecodevelopment

I.2.5: Specific Issues to be addressed through ecodevelopment

- Dependence of villagers on PA resources
- Sustainable use of the PA resources
- Alternative livelihood strategies
- Amelioration of living conditions
- Community development work
- Sharing income of PA
- Non-consumptive use of PA through ecotourism
- Specific investments in the key support sector of rural economy

I.2.6: Broad strategy for Ecodevelopment

The four components of the IEDP include

1. Improvement in PA management
2. Village Eco-development
3. Environmental Education and awareness
4. Project Research and monitoring

The main tasks involved in these components include

- Conduct participatory micro planning and provide implementation support for ecodevelopment
- Implement reciprocal commitments that foster alternative livelihood and resource use, conservation and protection of the protected area
- Provide finances for a village eco-development programme which specify measurable actions by local people to improve conservation
- To conduct special programmes to support additional Joint Forest Management in buffer areas in the immediate vicinity of the villages

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

The 5-year India Eco-development Project (IEDP) aided by the World Bank was initiated in RTR in 1996-97 and had an outlay of Rs 38.38 crore. The main activities undertaken during this project are described below:

II.1: PA Management

The main activities undertaken under this category include:

a) Office infrastructure enhancement (new headquarters in Sawai Madhopur, construction of 13 guard quarters, six quarters for foresters, one barrier chowki, repair and maintenance of 27 quarters for forest guards and foresters, construction of office building and forester's quarters at Kundera, forester's quarters and office at Rajbagh), purchase of laptop and desktop computers and peripherals, and purchase of three jeeps.
b) Construction works related to habitat improvement include drainage line treatment of the *Haudi Kho nala,* where a series of anicuts-cum-causeways are being constructed for soil and moisture conservation, as well as creation of patrolling tracks. Construction of four ponds and three anicuts, and repair of baori in Hindwar for water holes
c) Construction works related to improvement in communication (maintenance and repair of 39 roads inside the PA), and infrastructural improvement including creation of a wireless network
d) Eradication of *Proposis juliflora* in 177 hectares in the Khandar range
e) Channeling and fencing in silvipasture plantation in the 13 hectares in the Project range.
f) Survey, demarcation and fixing of the forest boundary pillars
g) Establishment of an effective wireless network for RTR, under which 87 fixed wireless sets and 140 handsets were purchased and are being used optimally
h) Training and motivation of the PA staff, where emphasis was laid on technical training and training on PRA and micro planning

II.2 Village Ecodevelopment

The main activities included:

- Construction of water harvesting structures to augment their crop production

- Construction of crop protection wall to reduce the man animal conflict
- Construction of roads
- Promotion of LPG as an alternate and eco-friendly source of energy

II.2.1: Micro-planning process and results

The PA staff carried out the process of micro planning in collaboration with the villages selected under the IEDP. Numerous meetings were held in each village prior to the formation of ecodevelopment committees (EDCs), and in addition to the Executive Committee of the EDCs, a committee of women (the Mahila Up-salahkar Samiti) was formed in each village in an advisory capacity to the EDCs. After conducting appropriate PRA exercises and collection of baseline data, the villagers were encouraged to organise themselves into EDCs, and the Executive Committee of each EDC was formed in accordance with the norms formulated by the state government of Rajasthan.

Each EDC then engaged in a series of meetings to formulate a micro plan for the village, with a focus on activities that simultaneously benefited the community as well as the PA. The villagers agreed upon a series of reciprocal commitments during the micro planning process, to enhance their active participation in conservation of the PA.

A total of 29 selected villages within 2 km of the boundary of the PA were covered under village ecodevelopment activities in the core zone. Of the total investment under the IEDP, 72 per cent was allocated to this component. At the beginning of the project, 70 villages had been selected for coverage, but later, as a result of the Mid-Term Review of the World Bank in May 2002, the number of villages to be covered was reduced to 29. A total of 32 executive committees were created for these 29 villages, and micro plans were prepared in consultation with and as per the requirements of the villagers. A sum of Rs 12,500 per family was fixed as the funding norm for activities proposed under the micro plans. In the buffer zone, out of a total of 42 villages inside the Keladevi sanctuary, 31 were organised into EDCs.

The IEDP has been very useful to these people in the light of natural calamities and extreme drought conditions that people have faced for the last three years. Erection of anicut and formation of ponds for water harvesting has resulted in a rise in water level in local wells and the agricultural land has remained relatively moist. The women folk in the villages benefited from provision of gas connections and they could also devote the time saved from collecting wood from forest to other developmental activities. During 2002-03 the Collector sanctioned a fodder depot from the revolving fund of EDC in Shampura, Uliana and Maekala villages, which will take effect from 2003-04. As per the government order dated 24/10/02, a sub-committee of women members of the EDC was to be formed to look into the developmental aspects of the women in the villages.

II.2.2 Utilisation of Ecodevelopment Funds

The Funds for Ecodevelopment has been utilised for the following activities in and around the RTR.

- 15 Anicuts, 32 ponds have been constructed to meet the water requirements of cattle as well as wild animals.

- Twenty crop protection walls (total length: around 30,000 running meters) have been erected for the protection of crops from wild animals and the protection of forests from the cattle.
- Other entry point activities include construction of boundary walls of schools, diversion wall / flood control wall, boundary walls for baoris
- Construction of retaining wall, community halls and chowkies (27 maintenance)
- Organization of nature camps
- Construction of approach roads, milk route (4), CC route, and village roads
- A total area over 550 hectares has been closed for fodder development in Gopalpura and Kailashpuri villages
- 8,696 LPG connections have been distributed to villagers for reducing their pressure on forests for fuel wood and 404 LPG connections have been proposed.
- Grant of 23 electric connection for irrigation in village Maikalan
- All these works have been completed with 25 per cent contribution from the villagers.

II.3: Environment Awareness and Education:

The environment education plan for RTR aimed at changing the mindset of the people dependent on the PA, so that conservation concerns start getting a higher priority in their calculations, which would then lead to an acceptance by them of benign alternatives. This then will become the goal of environmental education (EE) for the communities in and around RTR in particular and indeed most ecodevelopment sites in general. It was also envisaged that under IEDP, the emphasis would be on conservation education as well as on education and skills that will enhance the capacity of the local people to execute ecodevelopment activities in their own villages. The emphasis of such education will be on themes that would enable the people to make an informed choice with regard to, say, improved breed, stall-feeding, fodder development, biogas, agricultural practices, soil moisture conservation, and so on.

It was envisaged that a range of local institutions and influential individuals would be involved in the EE effort, and a variety of media would be used to drive home the message contained in the EE package. The Management Plan specifically stressed that ecoclubs would be formed in the villages surrounding the RTR, and the local NGOs would be expected to play an instrumental role in the implementation of the EE component. In addition to this, the Management Plan for RTR envisaged establishment of a modern and interactive Interpretation Centre at Mishradara Booking office, with exhibits and resource material for conservation education, targeting the local villagers as well as tourists who visit the PA.

Against these ambitious objectives, a relatively modest amount of work has been carried out in the field of EE. An interpretation centre has been constructed at the Jogi Mahal Gate under this component, and a tourist check-post has been constructed at the Sinhduar Gate. School children are regularly taken to the park as part of environmental education activities, and are involved in activities like *shramdaan* on cleaning water-harvesting structures, and drives to collect polythene waste from the PA.

The main activities undertaken under the EE component include:

- Workshops and meetings with the EDCs
- School children's involvement in environment related activities
- Tiger Mela involving school children
- Environmental competition programmes during the Wildlife Week celebration annually
- Organisation of a Padyatra: A Padyatra of around 300 staff and villagers was held as a campaign for conservation, from Keladevi to Ganesh temple from 14 September 2001 to 21 September 2001. On the way, a message of conservation was spread to all the villages that were falling on the Padayatra route.

However, the desired momentum and spread of EE activities envisaged in the Management Plan has not been achieved. The reasons for this include extremely high workload on the PA staff, low involvement of local NGOs, and low degree of mobilisation of the local community due to this being the initial stage of the ecodevelopment project.

II.4: Research and Monitoring Covering Conservation and Human Aspect:

Though research has been carried out by several state and national agencies both governmental and non-governmental during the recent years, focus has largely remained on socio- economic aspects. Research on biological aspects is yet to take off in a big way. Only preliminary studies in the form of preparation of the checklists, floristic surveys and description, ethanobotany have been carried out. A landuse and forest map has been prepared using satellite data. During the 1970s, the scope and need of wildlife research in various tiger reserves was considered and a comprehensive programme of vegetation and monitoring was prescribed, to be followed by local adaptation by all the tiger reserves. Unfortunately, vegetation and the animal monitoring programmes are yet to be initiated in RTR on the suggested guidelines. However, census of ungulates, tigers and leopards is conducted every year during the peak dry hot season at the water holes. Further, Supreme Court directed the RTR management authorities to carry out tiger and leopard census periodically as per the recommendations of the Expert Committee on Tiger and Leopard Census for Ranthambhore. In accordance with the court orders regular monitoring is done. In addition to this, vegetation is also routinely monitored in RTR.

Animal Monitoring*:* The monitoring of tiger and other ungulates was done through annual census of tigers. The census only gives a trend and cannot give definite figures. The count will depend on the quality of census and precautions taken in eliminating double count. A system of monitoring the movement of tigers is being employed in the RNP, through wireless network. The report of sighting, pugmarks and kills, etc., is recorded everyday at the headquarters. The system needs to be further improved and the whole area needs to be monitored. The PA management is now conducting an analysis of the recorded information for deriving some useful conclusion.

Vegetation Monitoring*:* A record about the density of trees from year to year or every 5 years gives an indication about the growth and development of forest. However, in the case of Ranthambhore, no record has been maintained about the density of crops right

from the beginning. One cannot say as to whether the density has increased/ decreased or remained stable because no previous record is available.

In 1988, a study regarding habitat characterisation was done using remote sensing and geographical Information System carried out by the Indian Institute of Remote Sensing, Dehradun. The report gives an insight into the density, cover quality, canopy closure, risk zones, etc.

Research Infrastructure*:* In terms of the research infrastructure even basic facilities, viz. accommodation (research base and field sites), field equipment, laboratory, museum, communication, vehicle, library, computer, etc., are virtually non-existent. Further, there is apparent restriction of movement inside the National Park area. In such a situation, it is very difficult to initiate field research and therefore, appropriate steps will have to be taken urgently to develop requisite facilities and create an enabling research environment.

Research Funding*:* A substantial funding was envisaged under the India Ecodevelopment Project. These funds were to be utilised in (a) strengthening research infrastructure (b) and monitoring and (c) meeting research coordination cost. However, the state government did not provide sanction for this research funding.

Water hole monitoring: Different water holes in various parts of the core division are being checked and monitored by the field staff daily. The staff gives in reports to the HQ daily by wireless. This whole process is known as water tracking. The HQ, on learning of water shortage in any area, despatches departmental canters to provide water to these areas during the peak summer period. Data from these daily reports are compiled on a monthly basis by the PA management.

Some of the important areas which requires further research study are:

- Population Structure and Population dynamics of major species in Ranthambhore National Park
- Inventory of identifiable details of individual tigers.
- Study of behavioral changes in tigers
- Study of the dispersal and movement of animals in different seasons within the park and to the adjoining sanctuaries.
- Study of damage caused by the wild animals to the agriculture crops and domestic cattle in the peripheral villages.

II.5: Village relocation

It may also be noted here that the funds from the IEDP (around Rs 30 lakh) were used under the land development head, for eradication of *Propopis juliflora* weed at the relocation site for village Padra.

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

III.1.1: Improved habitat protection

Owing to better infrastructure availability with PA management on account of IEDP investment, the degree of habitat protection has improved significantly. Also, over the past few years, there has been a shift in the attitude of the community, so that they have started believing that the rights over the PA are not just theirs but also those of wildlife. However, unless livelihood security of the community is guaranteed to an extent that factors like continuation of project funds cease to be relevant, there is a probability that in periods of economic distress, the community will try and revert to using PA resources to meet their basic needs.

III.1.2: Improved ecosystem services: enhanced effectiveness of the water regime

One of the most notable achievements of the IEDP is the water management activity being undertaken by the PA management inside the park, as well as in surrounding villages. These activities combine benefits to the community in terms of wages, natural resource regeneration and improved ground water availability, with benefits to the PA in terms of habitat regeneration and improved availability of water for wildlife.

However, the PA will require much greater investment and frontline expertise in water conservation, which can to be obtained from a host of resource persons and agencies. Formulation of a detailed water conservation plan for the region will help to channel funds in the most optimal manner for future water management endeavours.

III.1.3: Research inputs

Concrete research inputs need to be made available to the PA management to work out the sustainability of the biodiversity in the PA, its carrying capacity and management activities like weed eradication, and to track changes in the above. This will help to focus PA management activities in a scientific manner.

III.2: Institutional Sustainability

III.2.1: Effectiveness of the micro planning process

The micro planning process and implementation has resulted in a number of tangible and intangible benefits to the community, and has also improved tremendously the relationship between the PA management and the community. Barring a few exceptions, the villages targeted under micro planning have responded very well to the initiatives of the PA management under the IEDP. Reciprocal commitments from the community are now comparatively easier to demand and implement, because of this improvement in relationships. The community has also started exercising more restraint over use of PA resources due to investments made under the IEDP through the EDCs.

However, an important gap is that many villages that are moderately to heavily dependent on the PA have been left out of the IEDP and continue to create pressures on the PA. Also, the connection between the beneficiaries of micro plans and the people who are

forest dependent and thus exert maximum pressure on the PA is not always clearly established. As a result of internal dynamics of villages, many activities undertaken by EDCs were of a general nature (serving as entry point or confidence building measures), and not designed to substitute dependence on PA resources by alternative income earning opportunities. Although the micro planning process used Participatory Rural Appraisal (PRA) techniques, in future more efforts would be needed to enable the less vocal members of the village to participate fully in village level planning and implementation. The general level of awareness among ordinary villagers who do not belong to the executive committee of the EDC, especially women, needs to be improved through special efforts.

III.2.2 Inter-departmental Linkages and Linkages with Panchayats

Another area that needs more efforts in future is interdepartmental linkages and linkages with Panchayati raj institutions. While there are cases where members of EDCs also hold posts with the panchayat too, further thought needs to go into how such linkages can be strengthened and institutionalised. Overlap in areas of operation between EDCs and panchayats is another important concern. For instance, the biggest issue that EDCs around RTR have been raising pertains to access to drinking water, which is actually the responsibility of the panchayat. Forging of linkages between EDCs and panchayats will ensure that EDC funds are used for activities that have a direct bearing on the conservation of the PA, instead of being used for general rural development activities.

III.3: Financial Sustainability

III.3.1: Community contribution

The clause under the IEDP that requires 25 per cent contribution by the community for all ecodevelopment investments has been a major problem, since contributions in cash, kind or labour have not been forthcoming from most villages due to the poverty of the community members. As a result, many proposals in the micro plans have remained pending in the absence of the required community contribution.

III.3.2: The Village Development Fund (VDF)

Use of the VDF has also been problematic, since required directions from the World Bank have not been received so far on its utilisation. The PA management feels that for sustainability of the VDF, it is important that money from the VDF should be given to villages in the form of productive loans to self help groups, so that the money continues to revolve among the villagers and also grows over time through interest earnings.

III.3.3: Dovetailing with other State schemes

So far, the desired coordination between the forest department and other agencies like the line departments of the district, as well as the Panchayats, has been minimal. Consequently, there is often an overlap between the activities undertaken by the EDCs and those falling under the purview of the other agencies. For instance, EDC funds have been used for construction or repair of roads, provision of drinking water, and emergency relief during drought. However, by and large, the EDC members seem to have absorbed

the fact that EDC funds must be used for activities that have a direct or indirect bearing on the conservation of the PA.

III.4: Social Sustainability

III.4.1: Gender concerns

The formation of women based self-help groups, and greater inclusion and participation of women in the EDCs are vital to address gender concerns. The PA management has now started organising women into SHGs in some project villages, so that concerted efforts can be made to target women as part of the PA management's efforts at conserving the park. Crucial inputs in training and capacity building need to be provided over a period of time, so that true empowerment of women can be achieved.

III.4.2: Equity concerns

There is resentment among the villagers that their access to the PA resources has been curtailed with much strictness, even as affluent and influential outsiders manage to set up prosperous tourism related business around the PA. This issue needs to be addressed at the state level urgently, so that the obvious bias against the poor can be eliminated.

Another important equity issue relates to the contribution of 25 per cent funds to the EDCs by the villagers. This is also loaded against the poorest members of the community, since they tend to get left out of EDC activities while affluent persons within the village corner the benefits.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes

The success of the ecodevelopment initiative in the RTR can best be seen as benefits arising out of it both to the Park and to the People. These benefits are separately shown below:

IV.1.1: Benefits to the Park / Biodiversity Conservation

- There has been substantial degree of control over illegal grazing. The personal field observations of the PA staff support this view. There has been sale of cattle by villagers after advice from the PA management and this is done through the EDCs. This has been followed up by adoption of better cattle breeds and stall-feeding practices by villagers.
- There has been a definite control of poaching, made possible due to better infrastructure and improved facilities, which have improved the effectiveness of patrolling.
- There has been significant habitat improvement. This has manifested in a definitive enhancement in prey base, especially in the buffer area. In turn, this has resulted in a rise in the tiger population, as can be seen from tiger census figures and from the prey-predator relationship figures mentioned in the unpublished study by the DCF.

Tiger Census

The clearest indicator of the improving health of RTR is that the number of tigers has gone up consistently over the past few years:

Year	1995	1997	1999	2001	2002	2003

- There is now control over illicit felling of trees for fuelwood. This has been achieved due to improved monitoring and distribution of LPG units. The reduction in illicit feeling is evidenced by reduced head loads and reduced frequency of visits by villagers to PA.
- Apart from fuel wood, there is an overall reduction in illegal extraction of NTFP (grass, tendu leaves, *Butea monosperma* leaves and gum, gum from *Boswellia serata*) from the RTR. This has been observed through field visits by the PA management and staff
- There has been a reduction in encroachment in the RTR. This is largely due to construction of walls and consolidation of boundaries through boundary pillars

Old is Gold: Revival of Traditional Water Sources in RTR

The whole of Rajasthan had been facing severe drought for the last few years as there was very less rainfall. The straying of wild animals to outside villages in search of water was a great concern for the Park managers. There was an urgent need for seeking other sources of water supply as the digging of certain borewells within or adjacent to the Park was stayed by the Munsif Court. At this time, the possibility of reviving various traditional water sources was explored. In fact it was the revival of Hindwar Baori (traditional water source) by the eco-development committee, Hindwar under the GEF project that led to the idea of revival of *baoris* inside the National Park as well as the adjoining areas of the RNP. Subsequently under a water management plan, existing water sources were identified, new water sources were created, the sources were monitored regularly, water holes were constructed in different areas and water transported from the source to these water holes. The activities undertaken were undoubtedly innovative and resulted not only in the revival of water and, thereby, habitat improvement but also in preservation of valuable culture and history of the area. Apart from these traditional water sources, there are a number of other wells and *baories*, which were once used by the villagers and were essential water points for supply of water to other areas. The activities included cleaning of talabs, revival of *baories*, digging of bore wells, construction of different water holes for the wild animals. The new indigenous approach of water tracking again helped in daily monitoring of the different waterholes on one hand and simultaneously keeping away the poachers from the water holes. Further, the revived *kunds* are a great source of attraction as they are a symbol of cultural heritage. It is only the timely and effective planning that resulted in winning over the drought.

- There is now a virtual elimination in fires in the core and buffer areas due to the increased involvement of the community. This is borne out by some clear indicators including lower number of wireless messages regarding fire, greater participation by the community in reporting fire cases and helping to control fires.

- Last but not the least, the availability of water in the PA has been enhanced significantly, due to revival of traditional water sources. A number of waterholes has been created for carnivores, and this has also provided a ready source of water to the PA management for refilling watering places of wild herbivores

IV.1.2: Benefits to the People / Social Justice

- There was creation of wage employment, especially during the critical drought years of 2001-02 and 2002-03**.** The increased availability of LPG has reduced drudgery for women**.**
- There has been an improvement in living conditions through improved infrastructure facilities like construction of cemented roads, drinking water facilities, causeways, school boundaries, community halls, temple construction at Kailashpuri, amongst others.
- There is improved water availability through drainage line treatment and enhanced groundwater recharge. This has improved water availability for cattle and agriculture.
- There is reduced crop damage due to construction of crop protection walls
- A number of veterinary camps have been organised to address cattle health issues. As a result of a thaw in relationships between the Forest Department and the people, there has been a reduction in conflicts involving the forest department.

IV.2: Issues

1. There is heavy pressure of tourism in the PA, with a lot of time of the staff going into making arrangements for the visiting dignitaries and VIPs. In fact, in the span of just last six years, the number of visitors to the PA has increased two-fold as is obvious from the table below:

Year	Visitors In Ranthambhore National Park
1998-99	43,714
1990-2000	55,999
2000-2001	75,694
2001-2002	71,918
2002-2003	67,981
2003-2004 *(up to Jan 2004)*	67,000 *May cross up to **90000** March 31, 2004*

   Thus, there is less '*ecological tourism'* and more '*economic tourism'* in the Park. The ecodevelopment strategy needs to take this aspect into account while (a) devising means to reduce the pressure on the PA, and (b) ensuring that advantages of tourism percolate to the local poor.
2. The need for enhanced staff strength for the PA is being strongly felt. For example, there is just one Forest Guard for almost every five EDCs, and this renders it virtually impossible to identify proper needs, do micro planning or implementing. It is suggested that the regular forest protection staff, the staff that manages tourism and the staff that is engaged in ecodevelopment activities should ideally be separately identified and trained according to their mandate.

3. The research and monitoring component of IEDP has also not received much attention, although proposals for research were prepared and forwarded by the PA management. Between the state government and the World Bank, all these proposals were shelved, and it is only recently that the PA management has received permission to go ahead with the construction of a research station in RTR.
4. Relocation of village Padra is an area that needs priority attention, to avoid mistakes made in other regions and to provide adequate inputs to the resettlers to develop sustainable livelihood practices at the new site. There is an urgent need for an external agency (an NGO) to assist the PA management in delivering resettlement benefits to the relocated families in a smooth and hassle-free mannner, to curb discontent and win a constituency of sympathisers of the PA, rather than creating an antagonistic population in the vicinity of the PA.
5. Work on the environment education and awareness component of IEDP has progressed at an extremely slow pace during the project period. The absence of involvement from any active local NGOs has also contributed to the low rate of progress on this front. Even, in general, the level of awareness among villagers about the need to conserve the PA and their own role in this process is fairly limited. This, too, is a function of the low degree of mobilisation of the community, the formation of EDCs notwithstanding.
6. The Management Plan for RTR stresses the importance of training and capacity building for different cadres of wildlife management and other disciplines. The staff posted in the wildlife wing – largely the old staff of the Forest Department – are now being asked to digest the most advanced sciences and complex principles like "biodiversity conservation", "genepool", "ecosystem", "population dynamics" and "estimation of population". It has become increasingly difficult to entrust them with tasks requiring certain level of training and education. The probability of error in execution of a task is very high. Apart from this, additional pressure of communication with the village to enlist their participation in protecting PA has been put on the staff. The staff also lacks regular training required to keep them prepared for action against poachers and other miscreants. There is inadequacy of training at all levels. Specialised training should be conducted and seems an imperative requirement. Some of the topics on which training should be conducted for the staff are:
    - Field Botany
    - Avifauna
    - Population
    - Major ungulate population variations
    - Regeneration of various species
    - Wildlife Laws
    - Forestry laws
    - Nature Interpretation

IV.3: Constraints

The constraints identified through the experience of ecodevelopment in RTR can be summarised as follows:

1) For want of sanction from the state government, no work under the project could be carried out between September 1996 and March 1997, although the project had been sanctioned in September 1996.
2) The state government neither provided sanction to the project during 1997-98 nor issued any guidelines for the implementation of the IEDP. The state government has not sanctioned any consultancy under the project till date. As a result, various project activities including the formation of EDCs, survey and collection of socio economic data for the preparation of micro plan remained pending.
3) At present, the available staff at the Park has prepared the micro plans. The state government has not sanctioned any additional staff to the park nor provided any training to the existing staff for the implementation of IEDP. As the park staff remains constantly busy with protection activities and management of tourism the activities under the project have suffered.
4) Complicated procedures as detailed by the World Bank have also delayed the implementation of the project.
5) The elections in 1999-2000 delayed the formation of EDCs and the state government employees went on strike in January 2000, which also adversely impacted the progress of the project.
6) During 2000-01, many difficulties were faced during the formation of the EDCs. Often only about 30 per cent of the villagers could participate in meetings, there were complaints against the EDC presidents and then it took time to elect a new president. The president's tenure of just one year has been found to be inadequate as this does not give the president enough time to fully familiarise himself with the task at hand and get the work done as per the micro plans. It has been experienced that by the time the president comes to terms with his responsibility his tenure is almost over.
7) The elections of EDC presidents often get politicised and as a result, the executive committees are unable to execute various tasks.
8) Often, the members of the executive committees do not participate in various meetings and then tend to obstruct the ongoing works on the plea of being unaware about them.
9) One of the main reasons for lack of progress under the project has been continuous drought of four years during the project, which has also resulted in lack of contributions (25 per cent) from the beneficiaries.
10) As there were no technically competent people available, various activities implemented by the EDCs could not be provided appropriate technical advice, which has adversely impacted the quality of the work.
11) At present, the Member-Secretary of the EDC is a Forester, who is in-charge of 3-5 EDCs and hence is unable to handle the affairs of all in the most appropriate manner. Few foresters being themselves illiterate are unable to provide the right kind of assistance to the EDCs.
12) Finally, only such villages were to be selected under the project that were either entirely or partially dependent on the forest and only such households were to be made members who were poor and dependent on the forests.

CHAPTER 4

PALAMAU TIGER RESERVE[8]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Location and extent

Palamau Tiger Reserve (PTR), constituted in June 1974, is located in the district of Latehar and situated in Chotanagpur plateau, between latitudes 23^0 25' and 23^0 55' N and longitudes 83^0 50' and 84^0 36'E in the state of Jharkhand. It has an area of 1,026 sq. km, including some areas of Garhwa and Gumla districts. The core area is 213 sq. km and buffer zone is 813 sq km. At present, an area of 53.78 sq. km is demarcated as tourism zone (see map), which extends in Betla and Saidupe compartments. The PA is divided into two administrative divisions – the northern half is called the Project Tiger Division, while the southern part of the reserve is the Daltonganj South Division.

I.2: Legal information

An area of 979.27 sq. km was initially notified as Wildlife Sanctuary in 1976 and final notification is under progress. In 1996, 226.32 sq. km of the Wildlife Sanctuary was finally notified as Betla National Park. The balance area of the tiger reserve, i.e. 47 sq. km, has the legal status of reserve forest (RF).

I.3: Biodiversity values

The forest type varies from shrub to moist peninsular sal, which serves as an ideal habitat for a variety of wildlife. Palamau is known as the land of Palas and Mahua trees. It is famous for its varied flora and fauna. Commonly found faunal species are Asian elephant, spotted deer, bison, sambhar, tiger, leopard, wild boar, nilgai, wild dog, peafowl, hare, barking deer, chosingha, sloth bear, wolf, langur, rhesus monkey, porcupine, giant squirrel and large variety of birds, such as jungle fowls, quails, partridges. Snakes such as python, rat snake, krait and king cobra are also found. The tiger and leopard population is very well distributed over the reserve. The park is home to 47 species of mammals, 174 species of birds and 970 floral species including 56 types of medicinal plants. The reserve forms a catchment of three important rivers – Koel, Burha and Auranga.

1.4: Cultural values

Scheduled tribes like the Oraon, Chero, Munda, Birjia, Korwa, Kherwar, Asur and Birhor dominate the population. About 59% of the total population of the district is tribal. Dominant religions are Hinduism, Christianity and Islam. Tribal customs are dominant, and the people worship scared groves (*Sarnapuja*). *Karma puja*, which is worship of the tree God *Karam*, is performed every year. Worship of animals like elephants, tortoise, snakes, etc., is also prevalent.

1.5: Threats (Local as well as external)

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- One of the biggest threats that the PA faces is the presence of extremists and varied armed gangs who virtually rule the roost and make it extremely difficult for the forest department staff to operate. The presence of such miscreants has severely undermined the ability of the state apparatus to operate and this has been reflected in the performance of the IEDP as well. Whereas the militant groups owe allegiance to primarily two Naxalite groups, the People's War Group and the Maoist Communist Centre, as a result of the atmosphere of insecurity a number of gangs of local thugs have also become active. Such gangs often indulge in robbery and dacoity on the many roads that traverse the reserve.
- Cumulatively, these groups have had a debilitating impact on the conservation potential of the reserve. The forest department staff has often been assaulted resulting in the perpetration of an atmosphere of fear among them. The accompanying impact that this would have on the ability of the staff to operate within the reserve is apparent. Further, the presence of miscreant groups has spawned a variety of timber smugglers from whom the miscreants charge levies. The problem of illicit felling is particularly acute to Betla compartment and affects species like teak. Such illegally felled timber is sold in the neighbouring townships of Barwadih, Latehar and Daltonganj.
- The problem is further compounded by a railway line, which passes through the heart of the park. This is often used to transport illegal timber. This practice is leading to declining population of selected tree species. Further, mature trees of *Acacia catechu* (locally called *Khair*) are felled illegally for making "Katha". This has led to almost total obliteration of Khair species from the reserve.
- There has, however, been no known involvement of such groups in poaching of fauna.
- Other external threats include the presence of railway lines inside the reserve. There are approximately 40 km of railway lines traversing through the park. Apart from the disturbance that these cause, elephants and other animals are also occasionally run over by speeding trains. Between 1980 and 2003, about a dozen elephants were killed as a result of being run over by trains at a particular point between Chhipadohar and Hehegara stations where the track bends sharply.
- Electric transmission lines: Death of elephants due to electrocution from sagging electric transmission line is not uncommon in Betla compartment.
- Apart from the above-described external threats, the forests of Palamau also face a variety of pressures of local origin. 188 villages comprising 12,421 families (population - 1,00,000) inhabit the tiger reserve. The livelihood needs of these people exert considerable pressure on the reserve in the ways described below:

a. Firewood Collection: Moderate population pressure zones of reserve show no negative impact on forest. However, in the northern part of the PTR, the population pressure being high, firewood collection is crossing the carrying capacity limit of the nearby forests. The first stage of degradation has set in the forests adjoining Barwadih and Betla region.

b. Grazing: the reserve faces tremendous pressure from cattle. Excessive grazing has lead to growth of weeds and unpalatable grasses. Weeds have also infested the grasslands, which served as forage ground for herbivores, resulting in shortage of food for wildlife. Moreover, there is competition between the cattle and wildlife for forage.
c. Illegal removal of bamboo and poles from the forests near thickly populated areas in the past has caused some degradation in the northern part of PTR and also invasion of weeds like lantana.
d. Collection of Medicinal plants: Impact of medicinal plant removal has not yet been systematically studied in this reserve. However, some illegal collection and removal of medicinal plants like *Myrobolan*, C*hiraita*, *Medhchaal*, *Rori*, *Bel* and *Patal Kohra* does occur which the local agents purchase and sell outside Jharkhand. The method of collection causes damage to trees. Small trees of *Amla* and *Bel* are felled for collection. This kind of destruction may lead to the extinction of certain species from the reserve.
e. Kendu Leaves Collection: Kendu leaf collection is a major source of employment to the people of the reserve. They are engaged in leaf collection and bundling. During this season, the forest floor also gets trampled by the labour, affecting the new shoots.
f. Mahua Collection: This activity is one of the most harmful for the PA. For collection of flowers, people clean the forest floor by burning the dry leaves under the Mahua trees. The fire often spreads in the forest and burns extensive areas of the forest causing damage to wildlife.
g. The Betla compartment faces exacting problems vis-à-vis human-elephant conflict. This is primarily in the form of crop depredation and damage to property by elephants, although other animals too come into conflict with local villagers in a variety of ways. Human-animal conflict is regarded as a serious threat to all parks, but Palamau, except for limited areas of Betla, has not witnessed many problems on this account.

I.6: Objectives of PA Management

According to the management plan prepared in 2001-02, the objectives of the management of the reserve are:

1. To protect and conserve the ecosystem of the reserve and maintain the bio-diversity by improved PA management through people's active participation.
2. To maintain potentially viable population of tiger and other wildlife.
3. To reduce the negative impacts of people on biodiversity and vice-versa, active and increased participation of the people for conservation of biodiversity envisaged through appropriate and suitable eco-development programmes and to preserve the culture and tradition of tribals.
4. To improve and restore the ecosystem, to increase the productivity of the reserve and to enable the local people to use the resources in an environmentally sustainable manner.
5. To incorporate PA concerns into regional planning through identification and assessment of existing and proposed activities outside the scope of the project that

might potentially undermine effective biodiversity conservation of the PA or undermine implementation of the ecodevelopment strategy.

6. To develop ecotourism, environmental education and awareness among communities through appropriate interpretation programmes.
7. To encourage and develop research and ecological studies on wildlife biology and ecological aspects.

Ecodevelopment activities under the IEDP in Palamau were designed to achieve these objectives.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1. PA Management

1. The project assisted in the writing of a management plan for the reserve. As compared to previous plans, the focus of the current management plan has been broadened to include PA-related concerns of the local people and strategies for relevant mitigation programmes. The plan also includes the findings of some of the short-term studies carried out under the project.
2. Regarding impact of activities taking place in the wider landscape surrounding the PA, the project made a provision for forming a regional committee under the leadership of the district collector that would steer all decisions regarding activities that are likely to impact the PA. The government of Jharkhand has through a Government Resolution dated 11 June 2002 constituted such a regional committee. The committee is mandated to appraise the government on the protection of flora and fauna, their development, maintenance of law and order under the project and to coordinate different development works being executed or to be executed within the Project Tiger area. One of the most serious issues – the accidental death of about a dozen elephants near Jawa bridge in Chipadohar – Hehegarha section – has been resolved recently (in February 2004) through this committee. The Railways have responded positively by introducing a speed limit of 25 km per hour for all trains, continuous hooting and replacement of two filament powerful headlights in locos. This action is likely to prevent future accidents. Also the threat of elephant death by electrocution in Betla Compartment has been successfully resolved through the committee. Although the term of the committee is to expire in July 2004, the Government of Jharkhand (GOJ) has been moved to make it a permanent Committee with the Railways and the Jharkhand State Electricity Board as additional members. The committee has held three meetings so far.
3. Project funds were utilised for routine habitat management and enrichment activities in accordance with the management plan's prescriptions. Weed eradication, access tract improvement and digging elephant control trenches were undertaken. 18.85 sq. km of weed removal was carried out between 1997-98 and 2003-2004. Other prescriptions of the approved plan (soil/moisture conservation, fire control etc.) were also implemented.

Successive bank mission suggested that the utility and efficacy of water harvesting structures should be monitored before undertaking further such structures.

4. Funds from the project and elsewhere have been utilised for constructing staff quarters and water facilities. This has been an ongoing agenda of the PA management in order to improve facilities for the frontline staff and consequently improve morale of the staff. Facilities created for the field staff are enumerated below:

a. Construction of a Range Officer's quarters
b. Provision of 22 drinking water facilities
c. Field Equipment sets for 120 forest guards, 24 foresters and 8 range officers
d. Purchase of four new vehicles to facilitate the movement of forest staff

II.2. Village ecodevelopment

1. Initially, during the project preparation phase (1995-97), micro planning was carried out in three villages – Muru, Harnamar and Ramseli. The forest department and the Nature Conservation Society, an NGO based in Daltonganj, jointly prepared these micro plans. The plans had a thorough assessment of the impacts of the PA upon the people and the people upon the PA. A variety of mitigation strategies for both sorts of impacts had been worked out in close consultation with the local communities and on the basis of their feasibility depending upon availability of inputs and market access. Apart from reducing the people's dependence upon forests, the activities were also designed to add to the income of the people. This micro planning process was meant to serve as an ideal to be followed in the rest of the villages in the reserve once the project commenced. It was also envisaged that the micro plan implementation would be initiated and would be considerably advanced prior to the planning process commencing in other villages so that the trust and confidence of the people could be capitalised upon when activities began in other villages.
2. However, due to problems in flow of funds, the implementation could not take place in the immediate aftermath of micro planning in these three villages. This did lead to some erosion of confidence among people in the early stages.
3. Non-availability of funds meant that the micro planning facilitation assistance from the Nature Conservation Society could not be continued beyond 1997-98. Subsequently, the frontline staff along with the executive members of the EDCs made the remaining 57 micro plans on their own. A total of 65 micro plans were prepared under the project, out of which eight were with NGO facilitation. Attempts were made to build in special provisions for women and Special Needs Groups such as landless, marginal farmers, cattle camp keepers and bird trappers.
4. As far as activities are concerned, **land development** is the principal activity articulated in the plans followed by storage and harvest of water for **irrigation** purposes. Palamau is an area that faces intermittent droughts and as agriculture is the mainstay of a majority of the people,

agriculture improvement is a strongly articulated need of almost all the landowners. The agricultural landscape is undulating and hinders moisture retention. Further, most agriculture is rain fed and yields are meagre. Thus people have to turn to the forests to supplement their scanty income. Collection of a variety of forest products remains the only viable option available to people in the face of basic agriculture and absence of any other source of income. A significant proportion of ecodevelopment inputs were, therefore, devoted towards improving the quality of agricultural land. This involved land levelling and provision of irrigation. In villages such as Kerh, Kuchila, Kechki West, Kechki East, Luhurtanr, Goindi and Ramandag, the impact of irrigation is visible in terms of the farmers being able to harvest two crops a year and improve productivity.

5. About 200 wells have been sunk and 120 hand pumps installed to meet the drinking water needs of villagers.
6. In addition, the following assets were also provided to various families as mentioned in the micro plans of respective villages:

- Fuel saving devices: Kerosene stoves, solar lanterns, LPG units, pressure cookers
- Income enhancing assets: sewing machines, cattle stalls, thrasher machines, wheat mills, bee-keeping units, piggery and poultry, pisciculture, fruit plants and vegetable cultivation. About 300 households have been involved in non-agriculture based income generating activities.
- Agriculture improvement assets: paddle pumps, excavation of approximately 122 ponds, construction of water harvesting structures like Ahars, construction of 112 check dams, weirs; irrigation mechanisms like lift irrigation systems and diesel pumps to irrigate about1,000 hectares.

7. The initial criterion for selecting villages for ecodevelopment was all villages (188) situated within a 2-km periphery of the reserve, including villages inside the reserve. By the time the Mid Term Review took place in April 2000, 65 micro plans were ready and it was decided to devote the rest of the project period in consolidating activities in these 65 villages, instead of diluting the effort by making new plans. The 65 micro plans include 5,321 households.
8. Palamau made specific attempts towards addressing **gender issues** through the appointment of a Women's Coordinator and selecting women facilitators from among local women members who had shown leadership qualities. The women's coordinator was entrusted with the task of mobilising women in selected villages to undertake income-enhancing programmes. The initial focus was simply on ensuring that women come together as a group, articulate and discuss their problems and come up with workable solutions. Such groups were encouraged to save small sums of money so that they could use the corpus for lending among members. Currently, there are 28 such self-help groups in operation in the project villages.
9. In order to reduce crop raiding by elephants, 40 km of elephant-proof trench has been constructed.

II.3. Environment education and awareness

1. The Nature Interpretation Centre at Betla was renovated and some new exhibits were added.
2. Earlier in 2000, the park has started an environment education programme on its own initiative. A dedicated schoolteacher was helping generate awareness among school children. The PA management had provided a few facilities like schoolbags.

II.4: Research and monitoring

The PTR management has, since 2000, commissioned eight research studies that were meant to feed into PA management practices:

a. Process documentation research
b. Ecological consequences of weed eradication in PTR
c. Socio-anthropological consequences on NTFP in PTR
d. Socio-anthropological consequences on grazing in PTR
e. Socio-anthropological consequences on timber smuggling in PTR
f. Socio-anthropological consequences of firewood collection in PTR
g. Socio-anthropological consequences on fire control in PTR
h. Ecological consequences on water harvesting in PTR

It was found, as pointed out by the WB supervision mission in October 2002 that though the reports pertaining to fire control and moisture conservation/harvesting structures and those dealing with the documentation of PA impact on village ecodevelopment processes and activities (Timber smuggling, Green firewood collection, grazing, NTFP collection) presented considerable academic narration, these lacked empirical data that could be used tangibly by the PA management in any form.

In the context of research studies, it has been singularly difficult to interest competent individuals/organisations to work in Palamau Tiger Reserve. It took considerable time and effort on the part of the PA authorities to mobilise consultants for the research studies that were finally carried out.

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

Despite the fact that Palamau faces multiplicity of threats, which may not reduce drastically in the near future, there are favourable indicators for the long-term sustainability of the PA-

- More than 80 per cent of the forests of the park have 40 per cent crown density;
- There is little perceptible encroachment in the PA;
- The park is not being fragmented due to new developmental activities;
- The presence of healthy buffer and continuity in the form of rich forests of surrounding forest divisions;
- Increase of elephant population from 22 in 1974 to 215 in 2003 has not resulted in serious man-animal conflict unlike in other parts of Jharkhand;

- Illicit felling is confined to Betla compartment only and that too for teak;
- Fire damage over the years has reduced considerably;
- Poaching is almost absent

Whereas all these point to a healthy future for the PA, the large livestock population is a source of worry as far as the long-term future of the PA is concerned.

III.2 Institutional sustainability

As far as EDCs are concerned, institutional issues are likely to be adequately taken care of in homogenous villages. Such villages have demonstrated significant cohesiveness in decision-making and in undertaking activities. The participation of weaker sections among the community has been healthier than in heterogeneous villages. Baring the early stages of the project, when the assistance of a local NGO was available, facilitation for most part of the project was handled by frontline personnel - foresters and forest guards. Again, apart from exceptional individuals, for the most part such frontline personnel may not have the necessary motivation and the skills to be able to engineer complex social processes that play themselves out in village situations. Consequently, in a number of cases in Palamau, EDCs face fractures that may undermine their long-term viability. This is particularly the case in villages that have populations of economically and/or socially disadvantaged sections. In such cases, it has been observed that the active participants in EDC activities have been the so-called creamy layer. Such EDCs in the long run, particularly in the absence of continued injection of funds, may disintegrate or remain the preserve of the creamy layer.

III.3 Financial sustainability

1. The stipulation of 25 per cent contribution from local people towards all the activities carried out by their respective EDCs has resulted in the accumulation of corpus funds with each EDC. Such a corpus has been called the Village Development Fund or VDF. The purpose of the VDF has been to ensure availability of funds so that the EDC can continue to undertake activities after the project finishes. So far Rs 109 lakh has been collected in the VDFs of 65 EDCs. The forest department has finalised guidelines for the use of the VDF so as to ensure that the amount continues to grow even while group members can avail of loans to undertake a variety of income earning activities. Training programmes for EDCs have been organised in order to enhance the ability of EDC members to manage the VDFs. Some homogenous villages like Ramandag, a forest village comprising of tribals, have begun to use the VDF amount to give out small loans to individuals.
2. Subsequent to the creation of the state of Jharkhand, the park has been able to leverage to leverage a large amount of funds primarily from the state government and also from other sources such as Project Tiger, the FDA window created by the MoEF/GoI, and the World Food Programme. These funds would permit the continuation of a number of activities that have been initiated under the IEDP.
3. Five new EDCs in each of the two divisions are being taken up for micro planning under the state plan scheme in the current financial year (2004-2005). Village development programme will be taken up based on these micro plans in subsequent years. Out of 65 EDCs covered by IEDP, 50 (25 in each division) are being supported

by funds from the state plan in the current financial year for continuity of activities that have been initiated under the IEDP.

4. Another 18 villages (EDCs) have been taken up through the newly constituted mechanism of the Forest Development Agency (FDA). The MoEF has released funds under this mechanism and Rs 22.57 lakh and Rs 19.4 lakh has been sanctioned for the Project Tiger division and Daltonganj (South) Forest Division respectively for 2003-04. Entry point activities constitute an important component of the mechanism and the PA management is making concerted efforts to bring on board the learnings from the IEDP to improve performance under this new mechanism.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: Beneficial Impact on the PA

1. Due to the absence of baseline data, it is difficult to establish a direct cause-effect relationship between ecodevelopment activities and benefits accruing to the park. However, some trends are reflective of the ripple effects of ecodevelopment activities. For instance, in village Luhurtanr, the grazing pressure in the nearby forests is very low; no illicit felling and poaching is reported from the nearby forests; and relative to other villages, the people share information about poachers quite readily. Of late, the EDC has organised joint patrolling with forest staff on 24 occasions.
2. Similarly, villagers of Kechki East, in the year 2003 assisted the forest department in effecting two major seizures of illegally felled timber.
3. The most significant contribution of the project has perhaps been the fashioning of an interface between the local people and the frontline forest staff. Historically, these groups have shared an antagonistic relationship that had negative connotations for both conservation as well as peoples' livelihood. The nature of activities of the project and the mode in which these were to be accomplished has ensured that the traditional antagonism has had to take a back seat. Such an interface has improved the climate between the local people and the forest department and this had had significant intangible benefits. There have also been instances, as described in the previous point, where such an interface has had a demonstrable positive impact on conservation.

IV.1.2 Benefits to the People / Social Justice

1. Ecodevelopment activities have resulted in considerable improvements in the living conditions of at least some of the families who were a part of the programme. Particularly, investments made in agricultural improvement have made it possible for a number of farmers to take a second crop. Also it has become possible to initiate multi cropping during the same agricultural cycle thus enhancing the total quantum of income accruing from agriculture. However, precise comparative (before-after) figures are not available.
2. Women's Self Help Groups (SHGs) formed over the last 18 months of the project are beginning to gain strength through the facilitation provided by the women's coordinator and the village-based women facilitators. They have been able to

generate a degree of momentum and the women of the area have, perhaps for the first time, had the opportunity to organise themselves into groups and undertake activities independent of their men folk, thus helping them take the first steps towards economic self sufficiency.

3. It has been strongly felt that even if an ICDP such as the IEDP can lead to a significant improvement in the socio-economic condition of the local people, it should be deemed to have served its purpose sufficiently, since reduced impact on the park is implicit in an environment where the living conditions of the people have improved. Thus, though reciprocal commitments are a welcome addition, a discernable improvement in the socio economic status of the local people or an enhancement in non forest dependent income earning opportunities also typify significant success in reducing the negative impact of the people upon the park and *vice versa*.

IV.2: Issues, Constraints and Lessons

1. Palamau tiger reserve faced what was a severely extremely intransigent state government for the first 3 years of the project implementation period (1997-98 to 1999-2000). The chief handicap that a difficult government created was with regard to the release of project funds to the reserve. According to the system of budgeting followed in India, all external grants (or credits) are disbursed via the federal governments coffers. From the federal governments, the funds are transferred to state government treasuries, which in turn are supposed to make the money available to respective parks.
2. Fund flow problems plagued the reserve even during the project preparation phase (1995-96 and 1996-97). During this period, model micro plans were prepared for three villages - Ramseli, Harnamanr and Maromar. There was a provision for the implementation of plans in these villages as well. However, the lack of resources meant that plan implementation had to be considerably delayed. This led to a significant loss in confidence among the villagers and made the task of implementing the project in rest of the 60 odd villages that much more difficult. In 1995-96 and 1996-97, as against the GoI sanctioned amounts of Rs 28.755 lakh and Rs28.755 lakh respectively, only Rs.1.245 lakh and Rs.6.110 lakh were made available to the reserve by the state government of Bihar (GOB).

3. Palamau was one of the few parks that attempted channelling funds through EDC accounts for implementation of project activities as far as possible. Though it was not possible to follow this process in all cases, a conscious attempt was made to engineer greater participation on part of EDC members by adopting such a methodology. It has been found that this is perhaps the most effective mechanism for engendering a system of cross checks, on the one hand upon forest department personnel and on the other upon EDC leaders. To describe the mechanism briefly – depending upon the amount sanctioned to a particular EDC, the amount is withdrawn by the concerned Range Officer and deposited in his i.e. the range officer’s account. Subsequently the range officer transfers the amount to the bank

account of the EDC. Money from the EDC account can only be withdrawn jointly by the EDC president and the Member Secretary of the EDC (usually a forester or a forest guard) for making payments for work undertaken. Attempts have been made to build further safeguards into this system by initiating a mechanism of annual public reviews whereby the EDC accounts and activities are made public in a general body meeting of the EDC. However, the rigour required in facilitating such a public review was considerably constrained as a consequence of the precarious security situation.

4. Though this is not a fool proof system in itself, it is at least a step forward from the previously prevalent regime where all works were executed by the range officer and payments made by him. Having said this, there is a significant lesson emerging out of the experience of Palamau in following this system- it is imperative to make available administrative assistance to EDC presidents for maintaining accounts and administering the funds. In the absence of such assistance, the burden of this work falls upon the member secretary and results in the delay of submission of accounts and other trickle down delays. Just as the project had provision for contractual staff for other sectors, the availability of similar contractual staff for assisting EDCs in administering funds is imperative. The contractual staff should also be required to train EDC members/presidents in administration. Such assistance could be phased out once the members/presidents are adequately trained. EDCs that are able to undertake successful income generating activities could even hire administrative staff out of the revenue that they generate.
5. As described earlier in the write up, the most debilitating threat faced by PTR is the presence of militants and other armed gangs in the area. In addition to flow of funds, this factor has been the other incapacitating constraint that Palamau has had to encounter. Forest department staff have been regularly threatened and attacked, thus making it virtually impossible for them to operate within the area. For an initiative such as the IEDP that requires intensive interaction with local people, the unstable security environment ensured that facilitation levels remained much below desired. Thus the quality of micro plans and the levels of people's involvement in implementation of project activities remained below optimal.
6. An outcome of prevailing security climate has been that the frontline staff of Palamau has to a large extent carried the project on their shoulders. With the meagre expertise at their command, foresters and forest guards of Palamau have attempted to facilitate the intercourse with local communities. Though fundamentally unequipped in terms of skills for such activities, the frontline personnel have provided exemplary stewardship in an extremely hostile environment.
7. Considering that NGO facilitation was not available and given the nature of the IEDP, essentially a process oriented project, the task of social mobilisation fell squarely on the shoulders of the frontline staff. This included delicate social engineering processes such as acting as a voice for the less vocal sections of the community, upholding interests of marginal groups such as landless, small farmers, economically backward and socially marginalized. As is obvious such social engineering requires considerable skill and professional experience. With

easing of the funds flow crunch somewhat after the bifurcation of the state of Jharkhand in November 2001, it became possible to arrange some capacity building assistance for the staff and EDC members.

8. However, considering that the project had been in operation since 1997, project activities obviously suffered as a consequence of inadequately trained personnel. In situations like these, it becomes imperative that capacity building is undertaken well in advance of commencement of project activities. Though some degree of capacity building will be ongoing throughout the life of the project, personnel of the project executing agency need to be very well versed with basics of the project and details about specialised tasks that they would be required to carry out. Further, the project design needs to ensure that staff turnover is factored in while developing capacity building schedules. It would be over optimistic to expect new staff to suo moto pick up skills and techniques from existing staff. All new staff need specific capacity building, some of which can be done in house by existing staff, for which provisions need to be made in the project design.
9. Ecodevelopment activities undertaken in Palamau were skewed in favour of landholders and agriculturists, partly due to the numerical domination of agricultural households in the 65 villages where ecodevelopment was undertaken. It however remains a fact that the project was not able to devote the sort of attention that Special Needs Groups (landless, marginal farmers, non agriculturists, women headed households) deserved. This needs to be seen in light of the conditions under which the project has operated in Palamau. The lack of professional facilitation, inadequate training inputs and the inability of senior staff to provide requisite stewardship combined to ensure that complex social processed took a back seat. This is a shortcoming that the PA management recognises. A concerted attempt is being made to learn from the IEDP experience in the 19 additional villages where ecodevelopment has been initiated with non-IEDP funds. Great emphasis has been placed on robust micro planning as a precursor to any implementation activity. Also the frontline staff now is far better oriented towards the requirements of ecodevelopment. It is, therefore, envisaged that the considerable learning that has emerged out of the implementation of IEDP in Palamau will facilitate future engagement of the park with the ICDP mode of conservation.

CHAPTER 5

GIR NATIONAL PARK[9]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Background

The Gir Protected Area is known world over as the home for the last surviving population of the Asiatic Lion *Panthera leo persica.* It is located between the latitudes of 20^{o} 20'N and 21^{o} 50' N and longitudes 70^{o} 50'E and 71^{o} 50'E. The core area of about 258.72 sq.km. is notified as a National Park and Gir and Paniya Sanctuaries together account for about 1,193 sq.km. Further, on 7 February, 2004, Mithiyala, an 18.22 sq.km. tract of forest on the eastern fringe of Gir was also notified as a wildlife sanctuary. In addition to the Gir PA system of National Park and Sanctuaries [Gir National Park, Gir Sanctuary, Paniya Sanctuary and Mitiyala Sanctuary], adjoining forests and grasslands covering an area of about 413 sq.km. also provide safe habitat for the wildlife of southern Saurashtra.

The Gir PA system being the largest and the only compact dry deciduous forest ecosystem in the Saurashtra region of Gujarat supports rich biodiversity including more than 500 flowering plants, 38 species of mammals, 37 species of reptiles and about 300 species of avifauna. The Gir PA system also serves as a catchment for important rivers of Saurashtra like Shetrunji, Ozat, Madhuvanti, Hiran, Shingauda, Machchhundri, Raval, Jamari, and Malan. Because of the semi arid climate of this region these rivers are seasonal. Besides being catchments of various rivers, the Gir PA system also acts as a major water recharge zone of the region. According to recent scientific estimation of the Gir PA system, the landscape generates direct and indirect economic benefits worth Rs 2,000 crore every year.

I.2: PA Values

1. Largest compact tract of dry deciduous forests in semi-arid western India
2. Last home of free ranging Asiatic lion (*Panthera leo persica*) in the world
3. Rich biodiversity area supporting a large number of species comprising more than 500 plant species, 37 species of wild mammals, 38 species of reptiles, about 310 species of birds and more than 2,000 species of insects, including several endangered species
4. High concentration of top carnivores -- over 500 lions and leopards, and about 800 marsh crocodiles
5. Catchment area of seven important regional rivers, which sustain economic prosperity of this drought prone region
6. Important area for biological research and tourism, with considerable scientific, educational, inspirational, aesthetic and recreation values
7. Mother of cultural and religious evolution in Saurashtra

I.3: Conservation History

[9] Bharat Pathak, Field Director; Ramkumar, DCF; Amitkumar, DCF; PP Raval, DCF, Gir PA

The people of Saurashtra have revered this natural entity as a God given gift and lived in harmony with nature. They have experienced-based knowledge of the benefits accruing from Gir to them. The local culture based on the self-acquired knowledge and the spiritual faith, therefore, is conservation oriented. Gir itself has had a very sparse, resident, pastoral human population, who were nomadic and recently turned to semi nomadic and more recently to sedentary habits.

Asiatic lion conservation was initiated in the early 20th century when the then ruler of the princely state Junagadh imposed hunting regulations. Systematic forest management was initiated with the first Forest Working Plan in the year 1915. During the post Indian independence period the conservation efforts have been continued and strengthened by adopting the Protected Area strategy, which notified Gir as a Sanctuary in 1965.

With the passage of time, more scientific information was gathered, socio-economic scenarios altered and new challenges emerged. The Gir PA system management kept pace with changes and positively responded to emerging scenarios and challenges, always keeping the objectives of conservation in sharp focus. Consolidation of the PA system during the 1970s, including notifying the core area as a National Park was one such positive response. In yet another successful instance of a positive response based on the strategy of keeping the conservation interest of the local people alive, the Gir PA management adopted the programme of 'Nature and Environment Education' from the late 1970s and this still is one of the important management practices. Meanwhile supporting scientific studies by the Gir PA management and reputed research institutions such as the Bombay Natural History Society, Wildlife Institute of India, Universities, etc. were also encouraged. In spite of such continued efforts, certain threats particularly the anthropogenic pressures such as overgrazing, woodcutting for fuel, etc, continued. In the 1980s and early 1990s, the Gir PA management initiated efforts to provide alternate resources to local people to reduce their dependence on the forests for genuine needs. Such efforts included the resettlement of pastoral residents outside the Gir PA by giving adequate agricultural land and other facilities, providing solar batteries for streetlights, biogas plants, development help to people of the Forest Settlement Villages, etc.

In the early 1990s, the Gir PA was selected and invited to participate in the planning for the Ecodevelopment project by the Ministry of Environment and Forests, Government of India (GOI). It is now one of the seven PA sites covered under the India Ecodevelopment Project of the Government of India funded by the Global Environmental Facility and International Development Agency through the World Bank.

The current management of the Gir PA system is as per the approved Management Plan for the Gir Sanctuary and National Park by Shri H.S.Singh and his colleagues (January, 1996) as well as the approved Supplementary Management Plan for the Gir and Paniya Sanctuary, Gir National Park and the peripheral forests by Bharat Pathak and his colleagues (October, 1992).

I.4: Main Threats

A fresh look was given to persisting and emergent threats and a threat analysis was done while preparing the Supplementary Management Plan, October 2002. Also, for these

persistent and emergent threats, strategies were suggested. Based on discussions, personal experience and scientific data, the following threats and corresponding strategies have been listed out by the Gir PA management:

S. No.	Threat to Biodiversity and Wildlife Conservation in the Gir PA	Proposed Strategy
(i)	Encroachment	Proper revised survey and demarcation Law enforcement for removal of encroachments.
(ii)	Grazing	Enforcement of Law for livestock from outside. Village Ecodevelopment / pastures development for adjoining villages. Voluntary relocation of Gir Maldharis along with their livestock to outside the Gir PA through an acceptable relocation package. Rationalised grazing regulations for Gir Maldharis who are not willing to shift to outside the Gir PA.
(iii)	Fuel wood extraction	Law enforcement for illegitimate wood cutting. Alternate fuel through village ecodevelopment works. Fuelwood plantations outside the Gir PA.
(iv)	Poaching	Wildlife and wood poaching is negligible in and around the Gir PA. Law enforcement. Environment, Ecological and Wildlife Education.
(v)	Exploitative Tourism/ Pilgrimage	This will be managed on the principles of Eco-tourism. Tourism regulations, laws and rules will minimise negative impacts of exploitative tourism. Environment, Ecological and Wildlife Education.
(vi)	Exploitative Collection of NTFP	By providing alternate livelihood through village Ecodevelopment. Nature and wildlife education among villagers of adjoining areas. Enforcement of law and rules.
(vii)	Forest Fire	Through proper education of local people, prevention of forest fires. Preventive management actions such as

S. No.	Threat to Biodiversity and Wildlife Conservation in the Gir PA	Proposed Strategy
		fire lines, etc. Early detection and early response for putting off accidental fires.
(viii)	Natural Calamities	Water management during drought and scarcity years. Disease prevention measures such as cattle immunis ation, preventing outside livestock, etc., are to be continued. Cyclone damage cannot be prevented when cyclone hits the Gir PA forest. Cyclone damage control and mitigation measures to be carried out through contingency plan.

I.5: The objectives of the current management plan

5. Protect and conserve the Gir forest in a manner that is consistent with the ultimate and perpetual conservation of the Asiatic Lion and all other forms and systems that together constitute this unique ecosystem
6. Improve health of the forests, their ecological functions and productivity, including fodder, firewood, small timber and other forest produce, to their optimum level in consonance and consistent with the above objective
7. Enlist people's participation in biodiversity conservation through imparting nature education and promoting wildlife tourism
8. Reduce negative impacts on biodiversity through appropriate ecodevelopment programmes

Promote ecological studies and ecological research in pursuance of the above objectives

I.6: IEDP at Gir

I.6.1: The concept of ecodevelopment for the India Ecodevelopment Project and the project itself were developed through a broad based consultative process between 1992-96 and the project document was finally prepared and agreed to in September 1996. The process involved the participation of the Government of India, the state governments, the World Bank, PA field directors, reputed institutions and Non Government Organisations and individual experts..

I.6.2: The IEDP is being implemented by the Ministry of Environment and Forests, GOI and various State Forest Departments, including the Gujarat Forest Department [GFD] for the Gir PA. The project beneficiaries are the globally important protected areas and people in and around these areas. The Project is categorised as a programme of targeted interventions for globally significant biodiversity.

I.6.3: As per the project document, the aim of the ecodevelopment strategy is " to conserve biodiversity by addressing both the impact of the local people on the protected areas and the impact of protected areas on local people and it has two main thrusts, viz. (a) improvement of the PA management and (b) involvement of the local people." The objectives of IEDP are as under:
'The project would conserve biodiversity by implementing the ecodevelopment strategy in and around seven protected areas (including the Gir PA) and would also include support for future biodiversity projects.'

The main objectives of IEDP at Gir are:

- To improve capacity of PA management to conserve biodiversity and increase opportunities for local participation in PA management activities and decisions
- To reduce negative impacts of local people on biodiversity, reduce negative impacts of PAs on local people, and increase collaboration of local people in the conservation efforts
- To develop more effective and extensive support for ecodevelopment
- To ensure effective management of this project, and
- To prepare future biodiversity projects.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1: Coverage:

The IEDP-Gir PA covers the Gir PA including the Gir National Park and Sanctuary, Paniya Sanctuary and adjoining villages. Mitiyala was not notified as a PA when the project was launched, and, hence, the Mityala Sanctuary is not covered by it. There are 98 villages within a 2 km. radius of the Gir PA, including Paniya sanctuary; but excluding the Mitiyala sanctuary. Out of these 98 villages, 58 villages have been covered under the IEDP. Besides the villages located outside the Gir PA, 14 forest settlement villages and 45 Nesses [Maldhari hamlets] located inside Gir have been covered under the project. Details of the project coverage and socio-economic profile of the households covered are as under:

S.No.	Category of human settlement	Number of settlement covered under the project		Number of Eco-development committees	Number of Household [HH] beneficiaries	
		As per the project	Actual covered as per micro plan		As per the project [1981 census]	Actual covered as per micro plan [2001 census] (%)
1	Revenue village	48	58	58	10,800	13,856 (88.8)
2	Forest Settlement village	14	14	13	756	1,227 (7.7)
3	Nesses	54	45	38	432	516 (3.3)
Total		116	117	109	11,988	15,599 (100)

Table: Socio-economic profile of the households covered under the project

S. No.	Category of the settlement	Tribal		Scheduled caste		Woman headed		Landless		Other		Total
		No.	%	No.	%	No.	%	No.	%	No.	%	
1	Revenue village	128	0.92	809	5.84	761	5.49	4,175	30.13	7,983	57.61	1,3856
2	Forest Settlement village	85	6.93	59	4.81	89	7.25	474	38.63	520	42.38	1227
3	Nesses	462	89.53	0	0.00	28	5.43	0	0.00	26	5.04	516
Total		**675**	**4.33**	**868**	**5.56**	**878**	**5.63**	**4649**	**29.80**	**8529**	**54.68**	**15599**

II.2: Institutional arrangements

The Government of Gujarat's Department of Forests and Environment has vide its resolution (WLP-2096-1641-G) dated June 4, 1997 provided for the constitution of the village Eco-development Committee [EDCs] and defined its functions, duties and responsibilities.. The members elect the president of the committee whereas a nominated forest official [Forester or Forest Guard] acts as the secretary. The Gujarat Forest Department, through its organisational set up and EDCs, implement the project activities. For the Gir PA the Chief Wildlife Warden of the Gujarat state, the Conservator of Forests and the Field Director of the Gir PA and three Deputy Conservator of Forests heading

two territorial wildlife divisions and an overlapping wildlife division represent the GFD. For the project purpose, the territorial wildlife divisions are assigned mainly the tasks of the improved PA management and village ecodevelopment. The overlapping wildlife division is mainly assigned the tasks of environment education and awareness, eco-tourism, wildlife health and rescue, and monitoring and research.

II.3: Project Activities

II.3.1: Improved PA Management

The activities under this component are planned and carried out as per the approved management plan of the Gir PA. The major categories of the improved PA management activities under the project are as under:

PA consolidation including the survey and demarcation, boundary pillars, signboards, encroachment eviction, strengthening check posts, etc.

Ecosystem management, including providing water to wild animals, forest fire prevention, management and maintenance of patrolling roads, cross drainage or cause way for better all season communication, etc.

Habitat improvement and restoration, including eradication of the invasive alien species, soil and water conservation works, grassland improvement works, etc.

Infrastructure development, including wireless communication, watchtowers, vehicles, wild animals' hospital, strengthening wild animal rescue facilities, improving laboratory, purchase of equipments for field works such as GPS, office equipment such as photocopier, computers, etc.

Monitoring and planning including revising management plan, ecological monitoring of the habitat and biodiversity by an ecologist and field staff, socio-economic monitoring by a sociologist, base line mapping, purchase of remote sensing data, etc.

Staff amenities including staff residential facility, office improvement and staff equipment

Project contractual staff to handle additional project tasks

Operations and maintenance activities.

II.3.2: Village Ecodevelopment

The first few steps for the implementation of the village ecodevelopment component of the project were (i) to carry out a survey of the dependency of local people on the PA (ii) to carry out the socio-economic surveys of the villages to be covered under the project, (iii) communicate the project concepts to the villagers and motivate them to participate in the project activities (iv) constitute Village Ecodevelopment Committees and (v) prepare micro plans for the Village Ecodevelopment activities. These tasks were initiated immediately at the launch of the project implementation. Local NGOs were engaged to carry out socio-economic surveys while the Indian Institute of Rural Management, Anand was engaged as consultant to communicate the project provisions, prepare Village Ecodevelopment micro plans and assist in implementation. Three model micro plans were prepared, one each for revenue village, forest settlement village and Ness and submitted to the World Bank for approval. The approved model micro plans were used for further village micro planning. Due to a variety of reasons the micro plan preparation was slow and precious project time was being lost without implementation. In order to complete the plans within the stipulated time, a team of trained local individuals was

engaged on a contract basis and assigned the task of micro plan preparation under the supervision and direction of the officers of the Gujarat Forest Department. The delay in micro plan preparation in the initial period resulted in the late initiation of the village ecodevelopment activities. This delay was inevitable, as the project design did not allow separate advance period for micro plan preparation. However, the extended project period compensated for this shortcoming and provided adequate time to carry out the village Ecodevelopment works as planned.

The village ecodevelopment activities under the project are categorised as under:

A. Household activities, including

- Agriculture equipment.
- Agriculture irrigation facility.
- Agriculture land improvement.
- Alternate fuel facility [LPG/Bio Gas].
- Animal husbandry
- Non wood housing facility
- Horticulture
- Self employment

B. Community activities, including

- Community income generation.
- Community building facility.
- Community water harvesting
- Protection wall / fencing
- Road repairing.
- School/Education.
- Drinking water facility.
- Other community works.

The village EDC's executive committees meet regularly to plan, implement and monitor its activities. The general body of the EDC also meets frequently. A system of monitoring the reciprocal commitment has also been established. Besides the activities listed above, other activities aimed at capacity building of the EDCs and their members, such as training programmes, workshops and meetings, exposure visits, were also carried out under this component of the project.

II.3.3: Environment Education and Awareness [EE&A]

As discussed earlier, the Gir PA has a strong environment education and awareness programme under the State Plan scheme. This scheme provides for activities such as Nature Education Camps for various target groups, orientation centres, forest awareness centres, interpretation services, tours, programmes for important environment and conservation related days and weeks, etc. The GFD carefully plans the target group to build local partnerships in conservation and to maintain a desirable balance between the local and visitors' groups. During the project implementation these activities were further strengthened. The Centre for Environment Education [CEE], Ahmedabad was engaged as the consultant to develop the conceptual framework for further strengthening the EE&A

activities in Gir. The CEE was further engaged to implement the Gir Environment Education activities in and around the Gir PA. The CEE implemented the following activities:

Activities for the communities around Gir PA: These include

- Mobile exhibition -- preparing the exhibition and taking the exhibition to villages along with a slide show
- Celebratory programmes on Environment-related days including the World Forestry Day, the World Environment Day and the World Biodiversity Day
- Production of an audio cassette of folk songs narrating the importance of Gir PA and its biodiversity
- Production of booklet on Gir Ecology
- Production of an ecodevelopment manual
- Two workshops **for the resident Maldharis** on their socio economic conditions, impact of grazing on biodiversity and Gir conservation values

Activities for the Gir PA management staff: These include
- Workshop on ecotourism
- Production of manual on EE activities
- Production of a field guide on birds and mammals of the Gir PA

Activities for tourists: These include
- Training for guides
- Production of "My profile" form for tourists
- Production of "Oath Sheet" for the tourists

Activities for Pilgrims: These include
- Hoardings at temple sites
- Production of a booklet for pilgrims
- Production of picture post cards for pilgrims
- Production of a pamphlet on conservation values as depicted in the Holy Scriptures

Activities for schools near Gir PA: These include
- Training of teachers
- Voluntary examination of students on the subject of Environment
- Production of teachers' manual
- Production of nature education manual

Besides the activities jointly implemented by the GFD and the consultant organisation (CEE Ahmedabad), the GFD carried out other EE&A activities, like establishment of the Gir Conservation and Environment Education Centres (GCEECs) in eight schools, one each in the eight talukas [sub-district] adjoining Gir. The GCEECs are also networking with other schools in their respective talukas as well as with the state-level organisations such as the Gujarat Ecological Education and Research Foundation, the CEE, etc. The GFD also continues to implement its regular programmes of nature education, orientation

exhibition and interpretation service for tourists, supporting eco-clubs and National Green Corps in schools, etc. under the State Plan funded activities. Upgradation of the Devaliya orientation centre is planned under the IEDP.

II.3.4: Impact monitoring and Research

As part of the GFD administration, the Wildlife Division headquartered at Sasan is assigned the responsibility of research and monitoring in the Gir PA. Therefore, under the project also, the task of coordinating the research, monitoring and studies is assigned to the Wildlife Division, Sasan. A committee chaired by the Chief Wildlife Warden, with CF, Wildlife Circle and the Field Director, Gir PA as well as three Deputy Conservator of Forests as members, organise and supervise the monitoring and research activities under the project.

The following research and monitoring activities have been carried out under the project:

S.No	Name of consultant / agency	Name of project
1	Dr. S.P.Sinha	Study on impact of tourism in Gir PA
2	Dr. S.P.Sinha	Study on man-animal conflict in and around the Gir PA
3	M.S.Uni., Vadodara Dr.(miss) P.H.Parikh	Study on lesser known fauna of Gir, particularly with reference to invertebrate
4	Saurashtra Uni. Rajkot Dr. V.C.Soni	Study on satellite population of Asiatic lion
5	IIFM-Bhopal, Dr. D. Debnath.	Assessment of people's attitude towards park resources
6	. M.S.Uni., Vadodara Dr. A.V.RAmchandran	Assessment of water quality in major streams rivers, ground water charge in the Gir PA and siltation rate in four major reservoirs
7	M.S.Uni., Vadodara, Dr. G.P.Senan	Inventory and conservation status of major plant taxa of Gir PA
8	. M.S.Uni., Vadodara Dr. A.V.RAmchandran	Impact of economic development with particular reference to industrial/mining activities on lion habitat of the Gir eco system
9	The WII, Dehradun Dr. S. K. Mukharjee, Dr. Y.V. Jhala,	Ecological monitoring

	.	
10	Ecologist Sh,. B.S.Mehra,	Ecological study in Gir PA
11	ISRO, SAC–Ahmedabad	Baseline mapping of Gir PA
12	IRMA – Anand	Sociological study in Gir PA
13	Dr. H.R. Pandya, GAU, Junagadh	Quantification of the environmental economic benefits of conserving the Gir eco system
14	GIDR, Ahemadabad	Process Documentation Research of VED component
15	Wildlife Circle, Junagadh Shri B. J. Pathak, IFS Shri B.P. Patti, IFS Dr. C.N. Bhuva	Sero-epidemiological survey of viral dieses of big cat in Gir PA
16	Shri Divyesh Bhatt,	Documentation of case studies in villages eco-development component under IEDP Gir

In addition to the above listed research / study projects, the GFD also carried out several departmental short term studies listed as under:

- Impact of livelihood practices of Maldharis on wildlife habitat in Gir Protected Area
- Impact of changing cropping pattern on man-animal conflict in and around Gir Protected Area with specific reference to Talala taluka
- Status of Sambar *(Cervus unicolor)* in Gir National Park & Sanctuary, Gujarat, India. Habitat, Distribution, Density, Herd Structure, Sex Ratio and Diet
- Cub mortality in Asiatic Lions *(Panthera leo persica)* in Gir National Park & Sanctuary, Gujarat, India: A cause for population stabilization?
- Ratel *(Mellivora capensis indica)* in Gir Protected Area. Habitat, Preference and Food
- Lion and Ungulate Census in Gir Protected Area. A way to determine habitat preference of Asiatic Lions *(Panthera leo persica)*
- Changes in season of fire line preparation in Gir. Affects on wildfire spread and wildlife
- Biotic pressures on wildlife habitat of Gir Protected Area. A comparative study on regeneration status and herbaceous biomass
- Impact of drought on population and distribution of marsh crocodiles in and around Gir Protected Area
- Factors affecting wildlife tourism in Gir Protected Area
- Impact of grazing on rangelands / eco system – A literature survey
- Rescue and Health status of big carnivores in and around Gir Protected Area
- Observations on Darter *(Anhinga rufa)* nesting in Gir Protected Area
- Habitat amelioration of relocated Maldhari ness sites: Comparison of wildlife use and vegetation pattern of abandoned Maldhari nesses to that of present ness sites in Gir PA
- Black Storks *(Ciconia nigra)* in Gir Forest, Gujarat
- Reproductive behaviour of lioness nursing young cubs
- Rescue and treatment of lioness *(Panthera leo persica)* with suspected organo-phosphate poisoning in Gir National Park & Sanctuary (GNPS)

II.4: Project expenditure (Rs/ lakh)

Project cost table No.	**Project component**	**Final revised cost Feb. 2004**	**Percentage share of the component 2004**	**Expenditure up to March 31,2004**	**% Share of exp.**
102	Improved PA management	888.41	24.84	859.33	26.34
202	Village Ecodevelopment	2455.60	68.65	2182.11	66.89
302	Environment Education and Awareness campaigns	59.68	1.67	57.67	1.77
402	Improved impact monitoring and research	173.40	4.85	163.30	5.00
Total		**3577.09**	**100**	**3262.41**	**100**

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

The wealth of traditional and scientific knowledge today indicates that the Gir ecosystem is the foundation for the ecological, environmental and economic security of the region of southern Saurashtra. Since the Gir ecosystem is influencing the security of the region, the local culture has evolved around the theme of nature and Gir. For the security of this region and its culture, the Gir ecosystem needs to be sustained with its natural characteristics. The fundamental ecosystems of Gir are forest and grassland ecosystems with a rich biodiversity. The Protected Area approach has yielded positive results for the ecological sustainability in the last 38 years or so and this approach will be sustained.

Besides the Gir PA, the ecosystems outside the Gir PA need ecological sustenance. Also, as it is learnt from experience, all the communities in the neighborhood of the Gir PA should participate in the strategy, otherwise non participating communities, individuals continue to exert pressure on the PA which acts as a disincentive for participating people who comply with reciprocal commitment. Besides, for finding suitable alternatives too, a larger canvas is necessary as the smaller units provide limited options or no options. From the viewpoint of ecological sustainability too, a regional approach is required as the adjoining ecosystems are ecologically linked and influence each other.

Action taken: The Government of Gujarat (GOG) has constituted a high level committee under the chairmanship of the Principal Secretary, Forests and Environment Department,

Government of Gujarat for the regional planning of the Gir PA. Senior officers including secretaries, commissioners and directors of other related departments are members of the committee. It is envisaged that the committee would facilitate the preparation of a regional plan for the Gir PA in two years. It is also envisaged that such a regional plan would help in the convergence of various schemes and plans of the other departments towards the ecodevelopment goals, in the region.

In the first positive step in this direction, and as a partial success of this approach, the Mitiyala Reserve Forest located about 5 km from the boundary of the existing Gir PA has been notified as a Sanctuary (PA) by the GOG on February 7, 2004. The Gir PA system now includes the Gir National Park, the Gir Sanctuary, the Paniya Sanctuary and the Mitiyala Sanctuary. The proposal for eco-fragile areas/ eco-sensitive areas in the Gir region is under the consideration of the GOG.

III.1: Institutional Sustainability

The Gujarat Forest Department is the main agency entrusted with the long-term conservation responsibility of the Gir PA. For addressing the social issues, people's institutions are required. Therefore, for effective ecodevelopment, both the government as well as people's institutions are required. These institutions, wherever existing, need further strengthening and orientation towards new challenges and approach. Where such institutions are not there or not found to be suitable for ecodevelopment strategy, building new and appropriate institutions such as Village Ecodevelopment Committees is required.

Action taken: The Government of Gujarat has resolved (vide its resolution of Forests and Environment Department) to constitute Village Ecodevelopment Committees. The GOG has also clarified that such committees could exist beyond the current IEDP tenure, thereby giving long-term institutional sustainability to the ecodevelopment strategy for the Gir PA. The Village EDCs have been registered as trusts to give a better institutional framework for long-term sustainability.

As the ecodevelopment strategy is an integrated strategy, professional personnel from various disciplines with different kinds of skills are required to sustain such institutions. The Gujarat Forest Department is fulfilling this requirement by engaging personnel on contract basis. Apart from the regular staff, personnel engaged on contract basis have attended to specialist jobs very efficiently. For the sustained ecodevelopment approach by the GFD, specialists engaged on contract basis such as ecologists, sociologists, education facilitators, research fellows, accountants, a team of ecodevelopment field assistants, a lady field assistant taking care of gender issues, computer officers/assistants (information technology and data processing), etc. are useful and essential for the Government institution, in this case GFD. In September 2001, it was already proposed that such personnel should continue.

III.3: Social sustainability

One of the important elements of the ecodevelopment strategy is to address the social issues and needs. For this, the core agency, the Gujarat Forest Department, and local

people should orient themselves towards common goals and try and reduce conflicting issues between conservation and development. Such requirements call for responsive attitude to both conservation and development issues.
Action taken: The ecodevelopment strategy provides for such participation of stakeholders and also capacity building programmes. For generating appropriate alternatives, the capacity building training programmes provide for training in convergence of development schemes of different departments so as to gain socio-economic benefits. The EDC platform provides for long-term community action for community benefits without adversely impacting the Gir ecosystem. Such collective community actions in the long term, if not politicised; is likely to bring more cohesiveness in the society adding tosocial development. Such indications have already been observed in some of the ecodevelopment villages.

For a collective community response to the cause of conservation, a more than two decade all nature and conservation education programme and adequate ecotourism facilities have built up a social capital which was already existing due to the cultural ethos of the local people. The Government of Gujarat has accepted the nature and conservation education programme as a long term strategy and is providing for it in the Five-Year State Plans. It is envisaged that this activity will be continued with gradual improvements and with additional education inputs.

Local people know the benefits of conservation. However, to further strengthen the support of people for the Gir PA's conservation, the findings of recent research and studies which present the benefits of nature conservation in a more scientific and articulate manner – such as the Gujarat Agriculture University's study on the economic benefits of Gir – will be disseminated through education and awareness programmes.

III.4: Financial sustainability

Adequate finance for investments and maintenance are required for long-term basis. It is envisaged that the non-plan and plan-budgets of the state government and plan budget of the Government of India will continue on a sustained basis. However, additional finance for ecodevelopment activities, which is available for the current phase of the IEDP – Gir should also be sustained. Besides, communities, which could not participate in the current phase, will have to be covered during the implementation of future phases of ecodevelopment, calling for additional finance requirement.

The following sources could be considered for raising additional finance:

- International funding agencies interested in biodiversity and natural resource conservation, or funding agencies interested in climate projects
- Raising funds through fees and cess for the services provided by the PA
- State funding towards the fulfillment of constitutional duty of conservation

Action taken: In the 10^{th} five-year plan, the state share has been allocated for conservation efforts in the Gir PA. Non-plan budget is likely to continue during next five years at more or less the same level.

The Gujarat Forests Department has prepared a draft Gujarat Forestry Development Project wherein budget provision is proposed for the ecodevelopment of the Gir PA. However, this is only a draft plan and the same is required to be presented to various funding agencies. The draft plan indicates the acceptance and will for the continuation of the ecodevelopment strategy in the Gir PA.

The National Consultant appointed by the PTO, MOEF, GOI for the financial sustainability study has completed its study for the Gir PA and prepared a report. Besides state funding and funding by international donor agencies, the consultants have suggested some innovative schemes for generating local level finance, such as cess to be levied on people getting benefited by the eco-services of Gir, imposing fees for certain benefits enjoyed, increasing grazing fee, etc. Such proposals are to be considered by the government at higher levels before finally deciding on the same. However, the present revenue generated from ecotourism could be returned back to the PA level authority to be used for ecodevelopment activities for the people, as is done by some other Indian states.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: General successes

- For biodiversity conservation, the Gir PA had already adopted the approach of the Integrated Conservation and Development (ICD) of the local communities. Such an approach, however, was constrained by inadequate funds. Besides the fund constraints, the ICD activities were implemented as schemes of the government budget that interrupted activities. The IEDP facilitated implementation of the ICD activities in a concentrated and uninterrupted manner due to the project approach.
- The project processes such as (i) improving the PA management plan (ii) linking PA management activities with approved PA management plan (iii) providing credibility fund to establish or improve rapport with the local communities (iv) adequate discretionary fund providing required flexibility (v) institution building, i.e., EDCs for institutional approach to the development component of the ICD approach (vi) participatory micro planning for the village ecodevelopment (vii) introducing the element of reciprocal commitment/responsibility from the beneficiary of the development activities and its monitoring (viii) comprehensive environment and ecology education and awareness (ix) research and monitoring in project mode (x) PA management evaluation system, etc have been found very useful in the ICD approach. These processes have been initiated and streamlined at the Gir PA under the project.
- The Gir PA already had an approved management plan when the project was initiated. However, it was due for reviewing and supplementing. These tasks were accomplished during the project period. Priority improved PA management activities have resulted in (i) better consolidation of the PA (ii) better clarity about the PA boundary and legal status among the local communities (iii) wildlife habitat improvement (iv) better wildlife health, wildlife rescue capabilities and better capabilities to address the man-wild animal conflict issues (v) better eco service flow such as improved ground water recharge (vi) improved amenities to the staff (vii) improved infrastructure and field as well as office equipments (viii) better baseline data for future planning and management, etc.

IV.1.2: Benefits to the Community

- Under the village ecodevelopment component, the project has addressed the entire resident human population of Gir, including the Maldharis and forest village settlers. From within the 2 km wide zone at the border of the Gir PA, a little over 50 per cent of the villages has been covered under the project and 109 EDCs have been institutionalised. Many of them have been registered as trusts and the remaining few are pursuing the process of registration.
- The government resolution of constituting EDCs and its process of registration has facilitated the institutional sustainability of the EDCs. The institutional arrangement of the EDCs has also facilitated the community participation with the ICD approach to biodiversity conservation. The institution of the EDC also provided opportunity to villagers to revive

cohesiveness of the community and compassionate concern for the poor and disadvantaged villagers among the community.

- The project provided EDCs ample opportunity to interact with other institutions, experts of specialized disciplines, villagers in other parts of the country, etc, to get acquainted with various development processes at different locations and to get trained by reputed institutions such as NIRD, Gujarat State Institute for Rural Development, etc for capacity building and different developmental processes. Such opportunities have helped them realise that development that does not damage ecosystems and biodiversity is not possible without self improvement [knowledge and capabilities], concerted [collective or co-operational] approach, community concerns and fulfilling the responsibilities.
- The village ecodevelopment investment under the project of about Rs 218.21 million has provided household and community assets in about 4-5 priority areas such as agriculture and horticulture improvement including irrigation, drinking water, livestock improvement, house [shelter] improvement, non wood fuel, community income generation, self employment, etc.
- The investment norm of only Rs12,500 per household once in three to five years (once during the project) with the norm of 25 per cent contribution towards the village development fund by the beneficiary, which does not match with other rural development schemes available in the same region at the same time, may look non-encouraging to rural development approach. However, due to the Ecodevelopment approach and encouraging project processes, the EDCs have responded to the project with enthusiasm. Though the norm of 25 per cent contribution by the beneficiary towards the village development fund was difficult for the economically poor beneficiaries, it has helped in building additional resources for the village ecodevelopment through the Village Development Fund [VDF] of Rs 43.12 million (averaging Rs. 0.40 million per EDC). The VDF is mainly utilised for community development works. Thus, the system of contribution from the beneficiary of the project fund has yielded overall good result. At the Gir PA, guidelines for the utilisation of the VDF has been prepared in such a manner that it does not get consumed in a short period, thereby facilitating the financial sustainability of the VDF and EDC activities.

IV.1.3: Benefits to the PA

- Though the livelihood, economic and commercial interests do not allow expected attitudinal changes among the villagers towards the ecosystem and biodiversity, the communities have started understanding and realising the importance of these environmental elements for collective ecological security. The project has also helped them realise that an option of collective wellbeing and development without damaging ecosystems and environment is possible through ecodevelopment.
- Yet another outcome of the project is the increased understanding between the GFD staff and village communities. During the project they have worked, travelled and participated in various activities together. Such interactions have

provided them ample opportunities to understand each other's viewpoint in a much better way than a third party trying to interpret the behaviour and attitude of these two groups. Such direct communications and participatory implementation of activities have improved the working relation of the GFD staff and the local people. This process, however was, not as simple as it sounds. Those, from among the staff and local people, who could not appreciate the spirit of ecodevelopment in the initial stages did not to do well and did not avail the opportunity to improve relations. It is also observed that such processes are not free from village level politics. However, by and large, the working relations have improved as is observed from voluntary co-operation from villagers in the eviction of unauthorised encroachments in some of the villages, better information flow of conservation or protection-related matters, etc.

- A major outcome of the Environment Education and Awareness activities include the strengthening of the ecological and environmental values of Gir among the local people. The establishment of the Gir Conservation and Environment Education Centre (GCEECs) and facilitating the institutional and financial sustainability to them is yet another major outcome of the project. The Nature and Environment education activities carried out by the GFD through the state funds further strengthened the project.

GIR CONSERVATION AND ENVIRONMENT EDUCATION CENTRES

In keeping with the Gir protected area's historic involvement with environment education that dates back to the 1970s, the concept of Gir Conservation and Environment Education Centre (GCEEC) has been instituted at the Gir PA . As part of this initiative, eight schools on the periphery of the PA were identified to serve as GCEE centres. MoUs were entered into with these schools and basic assistance was provided to each school. This included some basic furniture and storage space, resource material such as booklets, charts, audio and videocassettes, and interactive educational games. On its part, each school has devoted some space (either a classroom or some space within a class room) for the centre. Further each such school has set up an ecoclub with the specific mandate of undertaking environment education activities.

Each such centre plans a programme of activities at the beginning of each year in consultation with the DCF (wildlife). Range officers of respective areas coordinate on a regular basis with the centres and help in organising specific events such as Wildlife Week, Earth Day, World Environment Day and so on. Apart from organising programmes for its own children, each GCEE centre is also supposed to network with other schools in its vicinity to undertake EE activities or to serve as a resource centre. It is envisaged that each centre will liaise with at least 10 other schools in its area. The schools that have been designated as GCEE centres have been strategically selected in order to ensure uniform coverage throughout the periphery of the PA. As part of the IEDP it has been possible to provide some financial assistance to the schools for organising various activities in the final year of the project. However, the centres have been conceptualised in a manner that they will not require sustained injection of inputs from the PA management for their operation. This has been ensured by making basic assets available as part of the project funds. It is envisaged that these centres would continue to function even after the project is over.

1. The research division of Gir has been strengthened considerably under the project, and has organised several research seminars, which provided ample opportunities for serious scientific interactions among the researchers, consultants and managers from different subject disciplines. This has led to the emergence of a general consensus on several conservation and managerial issues. At the time of preparing the supplementary management plan research seminars and management plans review meetings as well as many of the research and study activities were completed. Findings of these research and studies as well as the recommendations of the management plan review meetings have been used for the management planning.
2. The monitoring component has been improved significantly during the project period.

IV.2: Main Learnings

Any change in strategy, particularly at a large landscape level involving heterogeneous society is expected to be a gradual process. Similarly, the IEDP has been recognised as the process project. Through the implementation of the IEDP-Gir from 1997-98 to 2003-04 and through its monitoring and feedback mechanism by independent agencies such as Intensive Project Performance Review (IPPR) by the national consultant JPS Associates, Process Documentation Research (PDR) by the Gujarat Institute of Development Research, ecological monitoring by the park ecologist and the WII, monitoring by the project implementation agency (the GFD), etc., the project experiences have been documented and many lessons have been learned. The following are the salient experiences to be considered for future strategy:

1. As the relationship of man and natural resources of the PA are very close, particularly at the Man-PA interface, the strategy will have to address social issues. Such a relationship is dynamic and therefore, the strategy will have to be flexible to respond to the changing relationships.
2. The important element of quid-pro-quo arrangement in the ecodevelopment programme, which helps the strategy to integrate conservation and development, making it an Integrated Conservation and Development Strategy (ICDS), distinguishes ecodevelopment from other development projects. Such arrangement allows responsible participation and involvement of local people.
3. By addressing the social issues, the PA authorities are able to reduce the conflict and improve the cooperation for conservation and legitimate development needs.
4. One of the important benefits of the ecodevelopment strategy is that it provides an institutional framework for collective community actions. The hitherto heterogeneous society shows signs of cohesiveness as well as improved participation of women in many ecodevelopment villages. Such social development process or building of social capital is essential for long-term social support to the cause of conservation.
5. As the village ecodevelopment component is based on community participation, the role of community leadership is very important. The state of community leadership is a function of political awareness and homogeneity or heterogeneity of the community. The caste and economic class-ridden communities in Indian society create particular political situations, affecting the project activities. It is observed that the project was well received by villages having a homogeneous community with a good political leadership. It was also observed that the EDC members want project activities to remain free from petty politics and till today demand participation of the FD as a member of the EDC. The project has, therefore, a responsibility to keep project activities non- (party) political.
6. The strategy aims at providing alternatives so as to reduce pressures on the PA. Such alternatives should be compatible to the overall goals and objectives of the management and acceptable to the people to whom these alternatives are being offered. This is one of the most difficult aspects of the strategy; as it requires genuine innovations, change in attitudes, capacity building for accepting and using alternative means of livelihood and development. This component of the strategy requires more time as it expects social attitudinal changes and capacity building. In the absence of such gradual but sustained process the ecodevelopment strategy tends to revert back to usual rural development strategy. The participatory micro planning process in the Gir PA in the initial time could not communicate the spirit of the project properly and therefore, resulted in the selection of activities which are more like rural development activities and subsidy for the household for one-time benefits. Subsequently, as the process created better understanding, activities that reduce pressure on the Gir PA were selected.
7. The project components viz. improved PA management, environment education and studies/researches on important issues have yielded better results. The improved PA management directly aims at the main goal of the management, i.e. biodiversity conservation. Local people also appreciate it because through an

awareness and education programme of more than two decades in the Gir PA, a general awareness prevails regarding direct and indirect eco-services and benefits of conservation flowing to human communities in and around the Gir PA. Ecological and environmental education further strengthens the understanding and awareness of the people. Scientific studies and research yield valid information to be used for education and awareness programmes as well as for improving/amending management practices.

8. As is observed in an article[10] the Ecodevelopment project also is constrained by the time factor. It was experienced that due to the time factor communication of the project to participating parties, capacity building before participation, micro planning etc. were negatively impacted.
9. The project covenant of people's contribution either in terms of cash or labour, in the village ecodevelopment efforts is found to be essential for active involvement of people. However, the uniform rate of 25per cent contribution for an economically heterogeneous community was a constraint for poor and landless people. When the micro plan activities are less labour intensive, the difficulty compounds, as the poor people are also required to contribute in cash. It is perceived that the communities are not very cohesive when it comes to deciding volunatarily on a differential rate of contribution, i.e. rich people shouldering the responsibility of contribution on behalf of poor people. Such uniform rate of contribution resulted in directing ecodevelopment efforts towards comparatively well to do households having capacity to pay 25 per cent contribution. In order to address the issue of social justice and economic equity, there is a need to have a differential rate system for the contribution to the VDF. If the sense of compassion and philanthropy of rich and powerful people in the village is appealed to properly, it is possible to introduce the acceptance of differential norms of contribution to the VDF. However, the militant or extreme activist approach of challenging the rich and powerful in the village on the issue of differential norm of contribution is likely to receive stiff resistance from them.
10. The lack of adequate concept clarification among field staff and participating communities, and lack of strict implementation of quid pro quo arrangement due to performance pressure, and the compliance of reciprocal commitment was not as expected.
11. Unless the larger part of community is covered under the project, the left out villages and individuals will not participate in reciprocal commitment and continue to exert pressure on the PA. They also act as a disincentive for participating people, and cause drag on the strategy. Projects like IEDP generally have limitations in terms of coverage. As it is true for the time scale that projects of the ICDS nature should be long-term projects, the same is true for the geographical coverage. It would be disastrous to believe that people from only the 2 km radius of the PA boundary cause impact on the PA. It is therefore, necessary to identify a region on well-considered ecological, economic and social parameters. The IEDP would be more effective if it is upgraded to the regional scale in space and to the period of 15 to 20 years in time.

[10] Craig Leisher , 2001. "Long and Short of ICDPs". UNDP (*Tiger paper Vol. 28 No. 1 Jan.-Mar. 2001*)

12. Such upgradation may not necessarily result in the upscaling of the fund requirement per village as the same scale of funding could be used for a longer project period.
13. It is observed that the FD is not the only one addressing the developmental needs of local people in revenue villages. It is observed that sometimes similar schemes are implemented in one area under different projects and schemes of different departments with various norms. Therefore, there is a need to have regional approach with participation of different departments. The project may have to build components and incentives for other departments. However, utmost care shall be exercised to prevent dilution of ultimate goal of biodiversity conservation.
14. Whatever may be the geographical scale of the project; there is a need to categorise villages as the communities are categorised in a village. Villages may be categorised on parameters of (a) Developmental status, (b) Natural benefits of eco-services flowing from the PA to village, (c) Dependency of the village on the PA and (d) homogeneous or heterogeneous nature of the village. As differential norms are recommended for the people of different classes in the village, there should be different norms of investments and interventions for different categories of villages.
15. Village ecodevelopment interventions in its present form or in an evolved form are a very heavy and responsible additional work for the PA. At the Gir PA adequate additional staff was not provided and the existing staff had to carry out such additional duties under stressful conditions. It is extremely essential to provide adequate staff for the ecodevelopment project, particularly for the village ecodevelopment component.
16. Various components of ecodevelopment are skill specific and the staff and villagers are required to be trained for such skills in advance before launching the actual project tasks.
17. The ecodevelopment processes and implementation mode has been found to be very useful. The project mode approach to the issues of biodiversity conservation and sustainable development, or ICD, is very useful, as it remains highly focused about its objectives. The system of the World Bank supervision mission and IPPR are also found to be very useful. Each supervision mission was like a review of six monthly works and at the same time it afforded an opportunity for focusing and finding solutions for ground level problems. They were a means of experience sharing and provided timely guidance to the PA management. However, frequent visits by different consultants with different documentation needs proved to be an extra burden on the PA management and consumed precious time. It would be useful to synchronise the supervision mission, IPPR and other consultancies, all at one time. Between two visits of such synchronised supervision and consultancy tasks, the PA management may be allowed to carry out agreed actions without the extra burden of assisting consultants. It should be borne in mind while designing the project that the PA management has to implement such projects in addition to its normal duties as an agency/department of state and central governments.

18. The project prescriptions and processes with respect to conceptual approach, capacity building, communication of the project details, development of participatory micro planning, etc have been found to be useful for the project implementation. Looking at the nature of the project and its prime objective of biodiversity conservation, the processes and prescriptions of the project are appropriate. While working with communities and different role players having different perceptions, varied capacities and motives, the project has to be prescriptive lest it starts drifting to non-project objectives.
19. Biodiversity conservation is the constitutional goal of India that is fulfilled through the government policies, necessary legal framework and government institutional arrangements. Different categories of communities, both local and those located at distant places, have stakes of different kinds and the state/government institutions can address them. Therefore, the state has an important role to play in biodiversity conservation programmes or projects and the present system of fund flow through the GOI, GOG and the GFD by their budget process is useful and essential. The Gir PA had faced some problems of fund flow intermittently. However, timely actions were taken by the respective governments to overcome such problems. The component of discretionary fund is also found to be useful and the process of preparing the annual sub plan of the discretionary fund and obtaining prior approval from the competent authority, i.e. the funding organisation or the empowered committee is also useful. However, this system may be further improved by keeping a small grant component at the discretion of the field director of the PA for timely handling of unforeseen urgent tasks.
20. At the Gir PA a system of quarterly progress report (QPR) is adopted and QPRs along with the meetings of EDC presidents and village level meetings help in monitoring the progress and quality. It is also observed that such meetings yield results only if a project functionary of a certain seniority convenes such meetings. This is not as simple a task as it looks on paper and requires sustained efforts calling for additional staff at adequately senior positions such as Assistant Conservator of Forests.
21. At the Gir PA, environment and ecological education as well as research and monitoring activities are well-established. Implemented through a dedicated division. the research and monitoring was co-coordinated by a research committee headed by the Chief Wildlife Warden. Though it was evolved as a response to a constraint of non availability of a reputed organizations, which could not undertake research coordination during the project period due to lack of time, the FD research committee functioned very well keeping the focus on identified research priorities, timely implementation of the research projects, providing inputs of the PA managers, involvement of PA managers giving concurrent opportunities to understand issues under research, organising research seminars in project mode and ensuring participation PA managers and consultants in such seminars, etc.
22. Generally the landless unemployed individuals directly depend on PA resources for their livelihood. This may take the shape of illegal commercial activity such as wood and wildlife poaching. Due to the initial project stance of household

benefits and 25 per cent contribution norm such unemployed individuals could not be provided adequate support for non-PA based income generation. The objective of facilitating non-PA based sustained income generation activities by landless unemployed individuals calls for capacity building (vocational training) and adequate fund for capital investment for them.

23. Maldharis are occupational resident communities who keep and graze their livestock in the Gir PA. Their increasing population and livestock impact the PA negatively. The management strategy is to offer a relocation package to them so that they voluntarily move outside the PA. The project could not offer funds for such a relocation package and the ecodevelopment fund for Maldharis had a constraint of not being able to provide land-based activities as it would have proved to be counter productive to the IEDP objective, National Policy and Legal provisions. The Maldhari ecodevelopment activities were mainly non land-based; addressing issues such as drinking water, house repairing, animal husbandry, system of group purchase of provisions through VDF for reducing their exploitation from the profiteering of traders, etc. The future project has to separately address the Gir Maldhari issue and provide adequate funds to meet the needs of a relocation package that would help them resettle outside the Gir PA with an adequately improved earning capacity and ability to take the benefits of development processes outside the PA.
24. Gender issues have been adequately addressed to without interfering in the cultural ethos of the local people. Women SHGs have been facilitated and several capacity building and income generation training workshops were organised. The process is slow but is progressing in a positive direction. The process requires further support in the second phase of the ecodevelopment project by mainstreaming it with rural development schemes.

CHAPTER 6

BUXA TIGER RESERVE[11]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Location, Constitution and Extent

Buxa Tiger Reserve (BTR) is situated in Alipurduar Sub-division of Jalpaiguri District, West Bengal, India, between latitudes 26°30′ N & 26°55′ N and longitudes 89°20′ E & 89°55′ E. It stretches over a length of 50 km from west to east and 35 km from north to south. The total area of the Reserve is 760.87 sq. km of which 385.02 sq. km has been constituted as Buxa Sanctuary & National Park (Core zone of the Buxa Tiger Reserve). The remaining 375.85 sq. km area is treated as buffer zone. This buffer zone has the status of a reserve forest.

[11] By Ravikant Sinha, Field Director, Buxa Tiger Reserve

I.2: Legal Status

Buxa Tiger Reserve was constituted in 1983[12] and became the 15th tiger reserve of the country. The legal status was reserve forest, protected forest and un-classed state forest, the first reservation being made in the year 1879. The forest settlement officer inquired into the rights during the years 1890 to 1896. The first sanctuary notification was made over an area of 314.52 sq.km declaring[13] that no rights existed in the sanctuary area. In 1990 an additional area of 54.47 sq.km has been added. It is pertinent to mention that an area of 117.10 sq.km of the sanctuary was preliminarily declared as national park[14]. It was finally constituted as Buxa National Park in 1997.

I.3: Biodiversity Values

Buxa Tiger Reserve is biologically very rich. It is located in the confluence of 3 major Bio-geographic zones, viz. Lower Gangetic plains (7B), Central Himalayas (2C), & Brahamaputra valley (8A), according to the bio-geographic classification of Rodgers and Panwar. The project site supports vital populations of tiger (*Panthera tigris*), the national animal. BTR represents several elements of bio-diversity of north-east India, one of the richest regions in India in terms of species diversity. Most of the floral species endemic to north-east India (about 60%) are encountered in BTR. The endemic Indo-Malayan species like Chinese pangolin (*Manis crassicaudata*) and reticulated python (*Python reticulatus*) have been reported in Buxa Tiger Reserve. The rare clouded leopard (*Neofelis nebulosa*), marbled cat (*Pardofelis marmorata*), black-necked crane (*Grus nigriocollis)*, species endemic to the north-east are present in B.T.R. The mountain ranges intercept rain laden clouds and recharges ground water. It protects the catchments of several rivers and streams and, thereby, reduces soil erosion and maintains the water regime. It sustains the economic prosperity of the region through downstream irrigation.

The significance of Buxa Tiger Reserve in the international context lies in the fact that it provides shelter and protection to various wildlife species included in the Red Data Book (R.D.B.) of the IUCN (The World Conservation Union) and appendices of CITES (Convention on International Trade in Endangered Species of Wild Fauna & Flora). Besides, Phipsu Wildlife Sanctuary of Bhutan is situated contiguous to the northern boundary of BTR. This is a corridor for elephant migration.

More than 50% of the plant species of India are represented in north-east India. Of these 60% are endemic. BTR has many of those characteristics, including 352 species of trees, 133 species of shrubs, 189 species of herbs, 108 species of climbers, 144 species of orchids, 46 species of grass and reeds, 6 species of cane and 4 species of bamboo. In addition to its floral diversity, the reserve has a wide range of faunal diversity. There are 68 species of mammals, 41 species of reptiles, 246 species of birds, 4 species of amphibians, 33 species of fishes identified within the reserve. A study on entomofauna of B.T.R. listed 500 species of insects belonging to 13 orders, 65 families and 229 genera.

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[12] Vide Govt. of India's notification No. J-11025/18/B/FRY (PT) dated, 16th February 1983

[13] Vide his memo No. 346(10)/ LR-C dated, 15th May 1989

[14] Under section 35(1) (2) of Wildlife protection Act (1972) vide notification No.85-For/11B-42/91 dt.06-01-92

I.4 Cultural values and demography

A substantial proportion of the population comprises tribes such as Rava, Garo, Mechia, Oraon, Madesia (Santhal), Rajbanshi, Nepali, and Bhutia. The people till their own land or work as labourers in other farms and tea gardens. The Rava, Mechia, Oraon, Rajbanshi and Madesia reside on the southern part of the PA, Dukpas live in extreme northern hilly areas bordering Bhutan,Nepalese are scattered all over.

There are 595 villages and 15 towns including 3 municipalities in Jalpaiguri district with a density of almost 450 persons/sq.km. Migration from adjoining Bangladesh and Nepal has led to a steady increase in population in the district. Out of 6,24,500 Ha of land, 37,409 Ha is under irrigation, mainly through shallow tube wells, ponds and dug wells. The areas bordering the reserve are either agricultural land or tea estates. As a result the bulk of the population consists of either cultivators or tea estate labourers. Due to the extension of the township of Alipurduar towards the reserve forest areas, a semi-urban population has also come into existence in the neighbourhood of the reserve forest. The chief requirements of the local inhabitants are wood for fuel, house posts, agricultural implements, thatch and other minor forest produce. The more sophisticated section of the urban population also requires some quantities of timber for construction of houses and for furniture.

In 1894 cultivators were first allowed to settle in the forest in connection with the scheme of taungya sowings.From 1904 onwards, a large number of forest villages came into existence as a result of an expansion of forestry operations. These forest villages were meant to supply the labour necessary for work in the forest. Initially, the forest department did not exercise significant control over the amount of land that could be cultivated and number of cattle that could be reared by forest villagers. In 1912 the forest department formulated rules for limiting the cultivation and homestead land to 1 Ha in plains and 0.6 Ha in hills per family. Each household was allowed to keep not more than 2 plough cattle, 2 milch cows and 4 calves. 2 goats/ sheep could also be kept provided that they were stall fed.

The reserve is fringed by 34 tea gardens and 46 revenue villages on its western and southern periphery (within 2 km from the reserve boundary) and also 37 forest villages and 4 fixed demand holdings. Cumulatively, these consist of 2,948 families, with a fairly high representation of scheduled castes and schedule tribes.

I.5: Threats to the PA

The PA faces a variety of threats, as described below:

(i) *Pressures from communities living around the PA*: As with most protected areas in India, local communities residing in the vicinity of Buxa, too, face extreme poverty that engenders significant dependence upon the protected area in order to meet their livelihood needs. Agriculture is the mainstay for most people as non-farm based sources of income are extremely limited. The only significant industry in the area is tea, which has its own set of problems discussed elsewhere in the text. Agricultural output is constrained by traditional practices and is scantily supplemented by primitive animal husbandry. In the past considerable income was available from a variety of forestry

operations. This, too, has declined over the years as conservation objectives have taken precedence over commercial ones and forestry operations have declined. As a consequence of these factors, communities have become dependent on the protected area for the a number of sustenance activities –

- Illegal felling of timber has been a major threat in BTR. As recently as 1998-99 more than 2,800 offences of illegal felling were observed and over 2,300 cubic meters of timber was seized.
- Another threat is grazing. An estimate made in 1994-95 suggested that there were approximately 105,000 heads of cattle dependent upon the PA for grazing;
- The third threat is firewood collection. There is large-scale removal of firewood by about 100,000 tea garden labourers and over 10,000 families living in peripheral villages.

(ii) Pressures from external commercial sources: There are 37 sawmills, including 5 veneer mills in the PA vicinity. A number of PWD roads and a national highway pass through BTR. Road traffic is increasing on the existing roads coursing through the forests of Bhutanghat, which is a part of the core area. A metre gauge railway line from Damanpur to Hasimara passes through BTR. In 1996, one elephant died in a collision with a train.

(iii) Tea gardens: Pressures from tea gardens have escalated in recent years with the decline in the tea industry. Traditionally, each tea estate has been able to provide all the needs of their labourers. Hence, in addition to their wages, the estate management would also arrange for the schooling of their children, medical facilities, provision of rations, energy sources (fuel wood and kerosene). With the decline in the tea industry, the estates have found it increasingly difficult to provide for all the needs of their labourers. Additionally, the estates are unable to provide adequate person days of employment, making it necessary for the labourers to look for opportunities of boosting their income. It is essentially this situation that has increased pressure on the PA from the tea gardens. There are 34 tea gardens on the fringes of the tiger reserve, with each garden having a labour force of 500-2,000 persons. Numerous labourers from the tea gardens are associated with illegal removal of timber and firewood, NTFP and hunting of small game.

(iv) Human-animal conflict: Human-animal conflict is increasing gradually due to increased human settlement, changes in agriculture and the tea industry. Many areas outside the control of the forest department that were earlier available to wild animals have now gradually been shifted to other forms of land use. Animals like the elephant and gaur occasionally came out of the forests and cause damage to human life and property.

(v) External pressures – international boundary and related Issues: The PA has a common border with Bhutan in the north and the state of Assam in the east. This proximity has resulted in some of the neighbours' problems spilling over to the area. Extremist and separatist movements of Assam have an effect as the perpetuators find a safe passage through the PA to their camps in Bhutan. The border is quite porous and is also used frequently for all sorts of smuggling, including wildlife articles. Though these activities

have not impacted the flora and fauna of the PA directly, the potential danger of the situation deteriorating is perpetual. Land use in Bhutan also impacts the river systems of the PA. In recent years, a lot of silt and rubble wash is coming down all the rivers, raising the riverbeds considerably. There is also a danger of changing river courses in the future, which would result in habitat loss in the PA

(vi) External threat - Multipurpose Sankosh Project: The Ministry of Water Resources, Government of India, is planning an ambitious multipurpose project on the river Sankosh for irrigation and hydropower. The Sankosh originates in Bhutan and flows into India through the BTR. Major dams and power stations are to be constructed within Bhutan and the distribution canals and transmission lines will pass through West Bengal. The area of Buxa likely to be affected by this project is extremely rich in wildlife – it contains some of the best natural salt licks, which are used by elephants, gaur and other wild animals. The natural corridors are likely to be disturbed as a consequence of this project, which will have a detrimental effect on wildlife in general.

I.6: Objectives of Management - Conflict To Collaboration

The history of attempting to enhance the local people's involvement in conservation in Buxa predates the India Ecodevelopment Project (IEDP). Beginning in 1991, the park authorities initiated efforts towards collaborative management with active participation of the fringe population. Trust-building exercises were carried out through regular meetings with villagers. Some tangible activities were initiated with funding from the state plan and Centrally sponsored schemes. These early ecodevelopment activities included crop protection measures, land improvement, fuel wood plantations, energy conservation efforts and education programmes. Taking into consideration the biotic pressures, increasing conflict and decrease in employment opportunities with the Forest Department, the feasibility and appropriateness of alternative income generation strategies, especially for the landless, tribal and women dependent on the reserve, required considerable attention. Prior to the IEDP, 16 ecodevelopment committees were established in various villages. Some eligible villages were also brought under the JFM umbrella. Hence, even before the project began, there were already 16 ecodevelopment committees (EDCs) and a number of Forest Protection Committees (FPCs) in operation. A lot of the work that has gone on in BTR as part of IEDP has benefitted from the foundation laid by the early steps taken towards invoking peoples participation.

I.7: The India Ecodevelopment Project – Objectives and Contents

The main objectives of the IEDP were:

1. To improve the capacity of park management to conserve and increase biodiversity
2. To reduce negative impacts of the local people on biodiversity, reduce negative impacts of PAs on the local people, and increase collaboration of the local people in conservation efforts.
3. To develop more effective and extensive support for ecodevelopment.
4. To ensure effective management of this project and, use the lessons in other protected areas and forest areas.

The project had four distinct components specifically designed to address the constraints faced by the reserve as described in the table below. In this project, eco-development of fringe villages was envisaged through a contributory and participatory process. The villagers contributed 25% of the total capital outlay of their microplans. Emphasis was given on research needs of the reserve and participatory monitoring of the project programmes. Integration of the bio-diversity conservation value of the reserve into the ethical and moral mores of the fringe dwelling community was envisaged through extension and education. Furthermore, PA concerns were sought to be incorporated into regional planning.

Table: Project Components of IEDP in BTR (1996-97 to 2003-04)

S.No	Component	Nature of Works	Allocation (million Rs.)	%
A	Improved PA Management	Civil Works, Transportation, Equipment, Planning. Habitat Improvement, Management Development, Performance Review, management Support, Salaries, Operation and Maintenance	151.00	44.9%
B	Village Development	Programme management, Micro planning, Implementation Support and Supervision, Village Eco-development Programme, Operation and Maintenance.	155.50	46.3%
C	Environmental Education and Awareness Campaign, Impact Monitoring and Research,		6.50	1.9%
D	Impact Monitoring and Research		22.00	6.5%
E	Information Technology, Equipment		1.00	0.4%
	Total		**336.00**	**100%**

During the project period (1997-98 to 2003-04), 41 forest protection committees (FPCs) and 20 ecodevelopment committees (EDCs), including the earlier 16 EDCs were recognised. Micro plans for 58 villages in the project area were prepared and approved in 1998-99.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

Activities undertaken under IEDP were designed to address at least some of the threats identified earlier. These are described in terms of the four broad categories that the project was divided into.

II.1 Improved PA Management

One of the major works completed with the help of the project was the upgradation of the management plan. Buxa as a tiger reserve came into being in 1985 but the present buffer area was brought under the Reserve only in 1995. The management plan thus is the first for the complete PA. The plan has been divided into two volumes – one dealing with production forestry and the second dealing with conservation. The concepts of

conservation override the production aspects, where the multiple use habitats are to be manipulated in such a way as to increase the biomass and cover for wildlife.

Civil engineering activities undertaken were construction of staff quarters, consolidation of roads and boundary surveys and demarcation. All-weather bridges connected at least three locations that remained cut off during the prolonged monsoons. Remote locations were provided deep tubewells for drinking water. Wireless communication was augmented with construction of towers and purchase of new sets. These works went a long way in improving the morale of the staff posted in remote areas. The terrain of Buxa is such that during the rainy season most of the areas are not accessible directly and during dry seasons drinking water is not easily available. To tackle both these problems a substantial sum of money was required, which was not available through normal budget provisions.

Under the project some key personnel – ecologists, sociologists and computer operators were contracted to support the PA management. Also, studies such as process documentation, stress management and a documentation of the ecological history of the area helped in fine tuning the management of the PA. Habitat management works as per the management plan like canopy opening in monocultures, multipurpose plantations in fringe areas and others were undertaken. The contracted personnel helped develop formats for regular monitoring, the major one being reciprocal monitoring of commitments between the FPCs/EDCs and the forest department.

II.2 Village Ecodevelopment

II.2.1: Microplanning

The nature of planned ecodevelopment activities raised a number of key social issues that were necessary to be addressed prior to the implementation of the project. The project aimed to conserve bio-diversity by reducing unregulated exploitation through a process of PA-people participatory planning, implementation and monitoring of activities – both on forest and non-forest lands. The first step in this direction was to build local institution of forest protection committees (FPC) and eco-development committees (EDC) in the fringe villages, involving them in joint forest protection efforts, tounderstand the resources and needs through informal PRA and in participatory planning and implementation of all forest departments activities through a structured microplanning process. Teams comprising of forest staff, NGOs, local villagers, ecologists, sociologists and other technical experts undertook the microplanning exercise. Though efforts were made to involve NGOs intensively in the micro planning process, the experience with one of the groups contracted for the purpose was very unsatisfactory and, as a result, forest department staff had to undertake microplanning on its own in a few villages. The microplanning teams conducted detailed surveys of villages using a variety of participatory techniques. The local villagers and members of the FPC/EDC were involved in the formulation of microplans after proper training. A total of 58 microplans were prepared through this process. Villagers themselves identified and prioritised the various ecodevelopment works to be implemented in the villages. Feasibility analysis was conducted from the angle of ecological and socio-economic aspects for each eco activity so that it did not have an adverse impact on the PA and the

people. A memorandum of understanding was also signed between the FPC/EDC and the forest department for proper implementation of the ecodevelopment works and mutual agreement regarding conservation of forest and biodiversity of the area.

II.2.2: Microplan implementation

The implementation of microplans is under progress in 58 FPCs/EDCs in BTR. The villages undertake the work with the forest officials as per priority specified in the microplan. The works are undertaken only when the FPC/EDC members have contributed 25% of the total outlay for a specific activity. Attempts are also being made to maintain transparency on the part of the forest officials and the executive committee of the FPC/EDC while implementing the programme. Broadly, the activities undertaken to achieve the objectives were:

1. Improvement in current agriculture practices, including
    a. Introducing improved seeds
    b. Introducing mechanical farming – tractors, threshers etc.
    c. Multiple cropping on all lands.
2. Improving minor irrigation facilities
3. Alternate energy, fuel saving- encouraging and motivating people to use bio-gas, coal, coal briquettes, cooking gas and fuel saving *chullahs*.
4. Animal husbandry, including
    a. Increasing the scope of fodder cultivation in private/ panchayat lands and encouraging stall feeding to reduce grazing pressure on PA.
    b. Motivating people for cattle improvement by artificial insemination of cows and castration of bulls, thereby reducing the surrounding cattle number.
    c. Increasing the availability of firewood and small timber to villagers through farm forestry/ social forestry.
5. Augmenting income for landless through
    a. Encouraging people to undertake non-forest dependent activities like apiculture, sericulture, pisciculture, poultry, handlooms and handicrafts, grocery, bicycle-repairing, betel nut business, vegetable vendoring.
    b. Training programmes for self employment.
6. Creation of community assets:
    a. Increasing the scope of healthcare and primary education among villagers, particularly in forest villages.
    b. Improving the drinking water facilities in villages through tube wells, ring wells or deep bore wells.
    c. Trying to reduce man-animal conflict through people's awareness and education and erecting electric fencing where feasible.
    d. Increasing the scope of work in the park through improved park management activities like canopy opening, plantation in degraded areas, maintenance of roads and fire lines, thinning of older plantations outside wilderness zone.
    e. Repairs to roads, school buildings, etc.
7. Voluntary relocation of some of the forest villagers, which are in the interior and occupying key habitats.
8. Extension activities, including
    a. Awareness generation through education and publicity.

b. Training and orientation of forest department staff regarding the ecodevelopment project.
c. Integration with other government departments and NGOs for smooth implementation of ecodevelopment activities.
d. Evolving iterative process of interaction with the participating groups with involvement of elected panchayat members for implementation and monitoring of the programmes.
e. Involving women at all levels of participation and decision-making

II.3: Environment Education and Awareness

The activities included upgradation of the interpretation centre, funding of camps for children of fringe villages run by NGOs, and construction of an education centre for training programmes. A number of contact meetings in the villages, lecture programmes and film shows were organised. The local cable networks in the towns were tapped for running programmes about the PA and biodiversity conservation.

II.4: Research and Monitoring

An ecologist and a sociologist were contracted as part of the project. The ecologist worked for about three years and left for a permanent job elsewhere. No new person could be appointed for the short term as qualified persons were not willing to work for the duration. The sociologist also left towards the end of 2003 for a permanent job. However, for the period that they worked, some topics which normally would not have been looked at by the PA management were studied in detail and in a professional manner. Erosion issues, silt load in the rivers, fire incidences, effect of grazing, utilisation of assets by the individual beneficiaries, monitoring of reciprocal commitments, changes in income due to ecodevelopment activities are some indicative topics covered. These posts were found to be very effective in various training programmes, designing formats and the state cadre should be encouraged.

Reputed institutes were selected through open competition for research into topics selected by the PA. These topics are study of the behaviour and migratory pattern of elephants in the area, process documentation of the microplanning, study of avifauna and its use as indicators, study of the fish fauna and ecological history of the area. Consultancies were also awarded for stress management of staff, design of formats for monitoring and accountancy and financial management.

As part of monitoring of the project, a system has been put into place through which commitments made by the PA management and villagers can be monitored. The following monitoring formats have been developed: (i) Quarterly monitoring on degree of fulfilment of commitments by forest department on 12 items on a scale of 3; (ii) Quarterly monitoring on degree of fulfilment of reciprocal commitments by FPCs/EDCs on 15 items on a scale of 3; (iii) monthly performance monitoring on EDC/FPC functioning and actual work done with results in respect of PA protection.

A major gap in the monitoring effort has arisen from the absence of baseline data. It was therefore not possible to effectively monitor project progress in the absence of such baseline information.

SECTION III: SUSTAINABILITY

III.1: Financial Sustainability

A fundamental issue that merits consideration pertains to the efficacy of these institutions in the absence of the sort of funding that the project was able to offer. The issue here is that the level of expenditure that was possible to incur during the duration of the project may not be possible from regular funds. This would result in lesser contact opportunities between the forest department and the villagers and the rapport built up now would slowly degenerate. How soon this would happen would depend to a large extent on the motivation and commitment of the staff and village leaders. Some level of ecodevelopment activities need to be funded to give the opportunity of contact. To this end, projects were submitted to other departments for continuing various works in the villages. At the time of writing, a three-year project funded through the Rural Infrastructure Development Fund (RIDF) of NABARD has been sanctioned for the fringe villages. Also, some funds have become available from the Tribal Welfare Department for the year 2003-2004. These funds are likely to continue to be available in the future as well. Similar proposals have been given to other departments as well and are under consideration.

Guidelines for the utilisation of the fund created from the beneficiary contribution have been finalised. This was done over three workshops with the FPC/EDC members, where their ideas were discussed and put to paper. The FPC/EDCs were then asked to adopt the guidelines in their annual general meeting. The members have decided to call this the "Village and Forest Fund" (VFF). In some FPC/EDCs, contribution of small amounts by the members from the earnings arising out of eco-development activities has also started. The next step is to add to this fund from schemes of other departments also. Incidentally, this idea of 25% contribution has also started in the neighbouring Jaldapara Wildlife Sanctuary. Activities of self help groups (SHGs) may also be financed from this fund. The process of financing the SHGs from district schemes and other credit organisations is being taken forward. Constitution of SHG federations and representation of SHG leaders in EDCs/FPCs are also issues now coming up in discussions with the villagers.

III.2: Institutional sustainability

Government orders issued in 1991 and 1996 formed the basis for the constitution of FPC/EDCs in Buxa. This will ensure that the village-based committees will continue to function even after the project ends.

To strengthen the elements of people's participation, a confederation of FPCs/EDCs has been formed at the beat level. This will be converged upwards to a representative body at the range level and the division level. The main purpose of this body will be to resolve

conflicts, share experiences and co-ordinate larger works. No financial powers are presently vested in this body at the beat level as it was felt by the FPCs that this would supersede their own powers. The forest department ensures that regular annual general body meetings are held and election of executive committee members takes place. The department, however, hopes that it can phase itself out of such a policing role and that the institutions will themselves ensure these measures. Representation of women and economically weaker sections of society in each executive committee is being encouraged. The government order relating to FPCs has been proposed for modification based on the experiences of the project.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: Beneficial Impact on Park / Biodiversity Conservation

1. *Active participation in action against timber theft*: One major reciprocal commitment required from the FPC/EDCs was a patrolling roster for the areas they were assigned. Of the 58 FPC/EDCs, about 40 undertook this activity in earnest while 2 showed no interest at all. The rest were active only when exhorted to by the departmental staff. All of them faced an initial resistance from vested interests in the village. There were many instances of the more active members being assaulted, threatened and abused. In an extreme case in the Panialguri FPC, the persons involved in timber and firewood theft brought out a procession in protest against the FPC, complete with placards and slogans. However, now, six years later, there are many in the village that, though not FPC/EDC members, are participating in patrolling as a gesture of sincerity in the hope of being inducted into the FPC/EDC. FPC/EDC members augment the strength of the forest staff by accompanying them in various seizures in trains and in village. Moreover, they have so far helped the forest staff in seizing trucks carrying illegal forest produce and arresting forest offenders. They have now started demanding statutory and legal powers for the committees to book offences. It is also observed that motivation of field staff has increased as a result of these interventions undertaken under the IEDP.
2. *Protection of wildlife*: A number of times the FPC members have rescued wild animals that stray out of the forest and have handed them over to the forest staff. Moreover, FPC member have helped the staff in arresting poachers and acted as an authentic source of information against potential threats so that pre-emptive and deterrent measures are possible. There has been no poaching of any major fauna in the PA since 1998. In one instance, one of the tusks of an elephant that died due to natural causes was found missing in the year 2001. No clue could be found of this tusk despite prolonged efforts by the department. In 2003, one of the FPC members informed us that another villager was trying to sell some ivory clandestinely into Bhutan. Acting on the tipoff, the person was interrogated and that very tusk was recovered from a pit in the forest. It transpired that this person found the elephant carcass, hacked off the tusk, buried it in the forest and was waiting for the matter to die down before disposing it off. Due to the co-operation of the FPCs, the tusk was recovered after two years.
3. *Reduction of firewood collection*: The sociologist Dr. B.K. Das collected data from the villagers regarding use and collection of firewood from the forest. The results show that in general, people feel that there is considerable reduction of firewood collection from forest areas for sale. Earlier, some villagers had to collect firewood for sale to sustain their daily family needs. At present, most of these firewood sellers have left the profession due to increased agriculture in all seasons due to improved irrigation facility, increased employment opportunity as labour in agricultural fields and alternate income generating activities under IEDP. Each FPC/EDC decided on a roster for firewood collection so that each family could do so twice a week. This was enforced through joint patrolling by the members themselves. Also, six fair price shops have been opened and are run by the department in the towns. The firewood produced from forestry works is not allowed to be sold outside the area by an executive order of the field director. Thus all the firewood, or most of it at any rate, is available for consumption by local people. Firewood collection is also reduced due to

increased protection work and/or raids, increased awareness, sense of humiliation created among peers and family members. The study showed that people living in revenue villages felt that the use of alternate fuel sources for cooking, such as agricultural residues, bamboo shoots, dried leaves of areca nut and banana, dried branches of trees in homestead lands is increasingly picking up and, hence, reducing the people's dependence on the reserve for fuel. Introduction of fuel-saving devices like smokeless ovens and LPG gas has also helped. On the other hand, forest villagers, in general, feel that firewood collection for consumption is not an offence but is their right as forest dwellers. They also feel that they are collecting firewood as per requirement and not undertaking any commercial benefit. Empirical data collected by the department shows that these measures have resulted in a decrease of around 70% in firewood collection from 1996.

4. *Skill upgradation*: The staff and people were exposed to numerous training programmes as part of the project. The main ones for the staff were training in microplanning, PRA methods, stress management, use of fire arms, census techniques, and refresher courses in law and accounting methods. The FPC/EDC members were also included in training for microplanning and PRA. Besides these, they were also exposed to income generating activity trainings for apiculture, sericulture, self help group formation and functioning, improved agriculture methods. These were in the form of workshops and seminars. Study groups comprising both staff and villagers were sent out to other areas, especially to other IEDP sites, for interactive learning. For the senior management, only one course was selected for the planning officer in the Wildlife Institute of India and a visit to Vietnam for the same. The project director and the deputy field directors also made a study tour to Africa and Costa Rica to study co-management and management of common funds.
   The benefits from such programmes are intangible in nature, but are reflected in the overall improved climate for conservation in the PA.
5. *Reduction in cattle grazing*: A number of measures were contemplated to reduce grazing in the PA, but not all could be implemented. The major occupation of the Nepali and Dukpa community residing in villages enclaved in the park is cattle rearing. These cattle are not very productive and are treated as an investment against future calamities. As part of the project, a veterinary doctor was contracted to work in a holistic manner to reduce the number of cattle in the villages. Seven artificial insemination (AI) centres have been set up in the fringe villages, manned by youth from the villages themselves, and trained for the purpose. They procure frozen semen from the block veterinary centres and carry out AI, charging a modest fee from the farmers for the work. Thus, these centres, apart from helping reduce cattle numbers have become an avenue for self employment.

6. Some of the fringe FPC/EDCs also invested in a cattle pound and have been quite effective in controlling grazing in their area. A good example of this is the Narathali FPC, where plantations prior to 1996 failed due to grazing, but current ones have one of the best survival rates. Though the PA management attempted to introduce the concept of rotational grazing, the response to this has been rather poor. Multipurpose fodder plantations have been raised in some areas and are quite useful. Introduction of improved variety, castration of bulls and use of alternate cattle feed were also tried,

but the effects are not very visible. The main reason is that such measures need a much greater support than that provided by the forest department and unless the whole village adopts these measures, the effect is negated. Inspite of these shortcomings, the cattle number around the PA decreased by about 40% but grazing within the PA decreased only by 20%.

IV.1.2: Benefits to the People / Social Justice

Formation of self help groups: To foster economic as well as social empowerment of womenfolk in BTR, a collaborative partnership with CARE (West Bengal) was established to promote self help groups with a focus on economic and social upliftment of the community. Major activities of this initiative are:

a) SHG and institutional development;
b) Skills and capacity building;
c) Linkages with raw materials;
d) Potential markets and enhancing internal systems for sustainability and quality control.

Over 400 SHGs have been formed under different FPCs/EDCs with women taking the lead role. They have built their own corpus through contributions from members. This has led to more cohesion in the group and has provided the motivation to work together. Some of the older SHGs have now started availing of credit from banks for financing group activities. These groups have taken up many innovative activities such as leasing land for agriculture, weaving, and development of picnic spots.

Increased participation of women in decision-making and social reforms: Women, who were hitherto confined to household jobs, have come up as a group and are taking an active part in decision-making in FPC/EDCs. The women members have now become more organised and taken up some social causes also. They have successfully fought against alcohol addiction and gambling in their villages. Some villages have now started taking up adult literacy programmes and family welfare programmes. In the 2003 elections for local self-governance bodies, 19 women from the FPCs / EDCs have been elected as panchayat members.

IV.2: Shortcomings, Issues and Constraints

At the time of project preparation, three issues were not considered very important for biodiversity conservation but became critical subsequently. These were the problems of the surrounding tea estates, the increasing militancy, and market linkages for produce of the beneficiary schemes. Major constraints about which very little could be done was the postings of key personnel and the absence of creditable NGOs in the region. Further, the issue of including new families in the FPC/EDCs subsequent to budgets being finalised also could not be resolved entirely to the satisfaction of all concerned stakeholders. Finally, project monitoring was severely constrained by the absence of baseline data. A summary of the salient issues that acted as stumbling blocks is presented below:

1. Tea Estates: The tea industry started to decline around the mid-nineties, resulting in unremunerative production. Suddenly a number of tea estates surrounding the PA shut

down. These estates maintained large labour colonies and followed a practice of looking after all matters of labour welfare, including provision of free ration, firewood, medical and school facilities, in addition to paying wages. Each estate had an average population of 2,000 families and around 7 such estates around the PA, closed down. After closure of the estates, the labourers had no gainful employment and were not trained for anything else, nor did they have any land or tenurial rights. To sustain themselves, they started getting involved in illicit removal from the forests, resulting in conflict with the forest department staff and FPC members. The state government has made a number of attempts to resolve this problem. However, no long-term solution is in place yet. Since the tea estates were not included in the IEDP, major interventions were not possible. Measures like awareness generation, policing and discussions with the management were carried out, but these steps were too insignificant given the magnitude of the problem.

2. Militancy: The area had incipient militancy in the guise of the Kamtapuri Liberation Organisation, with links to other such organisations of the north-east. Though the movement did not affect the working of the forest department, a sense of unease prevailed in the minds of the staff. Key personnel of other departments also resisted postings in the area. Security personnel would not give too much importance to crimes against forests, as they considered such activities relatively insignificant. However, this problem was successfully terminated with the destruction of their camps in Bhutan in December 2003 and subsequent arrest of all key leaders by the security forces.

3. Marketing opportunities: The project resulted in improved agriculture, many self-employment activities and training for employment. However, no markets were available for the additional products. This was akin to the Green Revolution where agricultural production increased, but the farmer still has to depend on government procurement to survive.

4. Postings of key personnel: Some key personnel such as the ecologist and a lady officer actively involved in issues relating to women left midway to a better job and on promotion, respectively. This also happened to other lower staff like range officers and foresters. Replacements for the ecologist and the lady officer could not be found. In case of others, the replacements took time to understand the ethos of the project and implement it properly. Though these transfers were never more than 2-3 at a time, it did slow down the implementation.

5. Inclusion of new families in the FPC/EDCs: Initially, when contact programmes were started for formation of FPC/EDCs, many villagers opted out of the project, largely on account of the history of strained relationship between the people and the forest department. There was a sense of mistrust that the forest department was collecting names to build a database for using it to prosecute the villagers for forest related offences. Also, most of them felt that the promises of ecodevelopment benefits would never materialise as had been their experience with other government schemes. However, once the implementation of project the activities started, a number of erstwhile sceptics wanted to join the committees. However, their numbers were so large that the benefits to existing members would have diluted if the budget was not increased. Many such non-member families participate voluntarily in the patrolling roster today as a gesture of their commitment in the hope that a new project will benefit them in future. They have been given the opportunity of joining the SHGs and participate in all training programmes conducted by the department.

6. Absence of baseline data: Though the project laid great emphasis on research and monitoring leading up to management action, the absence of baseline data meant that such monitoring was only partially effective. Such initiatives in future should be made contingent upon the collection of baseline data so that the project can be effectively monitored and conclusions drawn about its effectiveness.

CHAPTER 7

PENCH TIGER RESERVE[15]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Location

The Pench Tiger Reserve (79^0 9' E to $79^0$22' E longitude and 21^0 38 N' to $21^0$50' N latitude) lies in Madhya Pradesh. It consists of the Pench National Park (PNP) and the Pench Sanctuary. While the PNP is spread over Seoni and Chhindwara districts, the Pench Sanctuary is confined to the Kurai block of Seoni district. The PA derives its name from river Pench, the valley of which it occupies.

I.2: Extent

The entire area of 757.907 sq. km. has been divided into two zones, the Core and the Buffer, as under:

S. No.	Zone	Status	Area (sq. km)
1	Core	Pench National Park	292.860
2	Buffer	Pench Sanctuary	118.307
		Forest areas (RF & PF)	346.740
Total			**757.907**

Submergence area: A submergence of 76 sq. km has resulted from the hydroelectric dam on river Pench at Totladoh (border of Madhya Pradesh and Maharashtra). Of this about 54 sq. km. is in PTR while the rest is in Maharashtra.

I.3: Legal status

An area of 449.39 sq. km was initially notified as the Pench Sanctuary in the year 1977. Later, in 1983, an area of 292.860 sq km from the initially notified sanctuary was declared as the Pench National Park[16]. In the year 1992, a total area of 757 sq. km was declared to be under Project Tiger[17].

I.4: Biodiversity values

Situated in the foothills of Mahadeo in the Satpura range, PTR represents the wild floral and faunal diversity of the central Indian highlands. A mix of two representative forest sub-types -- the moist deciduous teak forest and the moist deciduous teak -- dominated miscellaneous forest, across a variety of plain and undulating terrain. This provides a suitable habitat to a variety of wild animals (56 mammals, 35 reptiles, 12 amphibians, 317 birds and 50 fishes) at the apex of which sits the Tiger (*Panthera tigris*). PTR includes a number of rare and endangered plants of medicinal, educational, scientific, and

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[15]R.G. Soni, Field Director; S. Sen, Deputy Director, Pench TR.

[16] (Govt.of M.P. Forest deparment notification no. 5-15-82-10-(2) Bhopal dated 1 March 1983.

[17] (Govt. of India order no. 1-2/92-PT (Part II) dated 23 November 1992).

conservation values. Teak (*Tectona grandis*) is the predominant tree species. PTR is the critical link for a possible continuity of habitat in the Satpura landscape ranging from Melghat in the west to Achanakmar in the east through the Kanha Tiger Reserve.

I.5: Cultural values

The local inhabitants: There are over 50,000 inhabitants (1981 census) in 99 villages around the Park. The locals are predominantly tribal (62 per cent) belonging to Gond and Baiga community. The rest include scheduled castes (15 per cent), OBCs (13 per cent) and few (9 per cent) belonging to the general category. For the majority of the people, agriculture and allied vocations (animal husbandry, farm labour) provide main source of livelihood. Local people, mainly the tribals, use sites within the PTR for celebration of festivals and fairs.

Opportunities for Visitors: Easy approach, good forest roads, scenic beauty, moderate to high class lodging and boarding facilities, and easy wild animal sightings provide a good recreational and educational experience to visitors.

I.6: Main Threats

- Illegal fishing in the Totladoh reservoir and the related deleterious activities including setting forest on fire, poaching of animals, and unaccounted presence of human beings inside the reserve
- Colonisation of grasslands and the submergence area of the reservoir by weeds like *Parthenium spp*. and *Lantana camara*
- A large number of people (50,000) and cattle (48,000) inhabit the buffer zone of the PA, resulting in biotic pressures on the Park
- Electrocution of wild animals from live electric wires laid by the villagers to keep the crop raiding herbivores away from agricultural fields
- Acute shortage of water during the summer months in the north and northwest parts of the PA. This compels the animals to move to adjoining forests and villages, out side the PTR
- National Highway No. 7 passes along the western boundary of the Pench Sanctuary. Fast moving vehicles ply day and night on this highway. Wild animals often cross this highway in both directions, especially during nights. There are reports of wild animals having been hit, run over and killed by vehicles on the highway.
- Certain pathways used by the local villagers pass through the core of the PTR.
- Poisoning of water holes, intentional chasing of wild animals by trained dogs and attempted poaching of wildlife by locals and the outsiders
- Grazing pressure by the domestic cattle on the peripheral forests of the PA due to the absence of common grazing lands in the villages located in the Chhindwara district
- Close proximity of PTR with Nagpur and Balaghat towns, which are notorious wildlife trade hotspots

I.7: **Management Objectives**

- To conserve the ecological integrity and interspersion of various habitats and their associated fauna so as to maintain the genetic diversity in perpetuity in the PTR.

- To protect the entire catchment area of the Totladoh reservoir, falling within the core area of the Park in order to prolong the life of the dam and provide water for power generation for Madhya Pradesh and for drinking purposes to Nagpur city.

I.8: Objectives of Ecodevelopment: There are 99 villages situated within a 3 km radius of the PA boundary. These villages impact the park adversely, and *vice versa*. Thus, the major objectives of ecodevelopment in PTR are:

(i) To ensure the economic upliftment of the people in the villages by strengthening their traditional system of occupation (agriculture) along with creating new means of gainful employment so that their dependence on the PA for livelihood support is reduced.

(ii) To rehabilitate approximately 2,000 hectares of degraded forests of the PA.

(iii)To reduce the negative impact of PA on people and people on PA.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1: PA Management

II.1.1: Strengthening protection measures

- A number of patrolling and anti-poaching camps have been established to cover most parts of the PA.
- An effective wireless network has been established throughout the PA, with staff up to the beat guard level using hand held wireless sets.
- A fleet of vehicles and motorised boats at PTR facilitates quicker movement for surveillance within the Park.
- A number of field *naka* (check posts*)*, road barriers, wireless huts, labour huts and staff quarters have been constructed and repaired to provide better working environment to the field staff. Two hostels for the wards of the field staff have also been constructed at Bichhua and Kurai.
- Camping and patrolling kits, winter wear, shoes etc. have been provided to the field staffs.
- Patrolling has been made strict along HT power lines and agricultural fields having electric pump-sets. The 5-Km power line passing through the buffer zone forests between Barelipar and Karmajhiri villages has been realigned to pass along the road where it can be easily monitored.
- Information network for protection has been strengthened with the involvement of the EDCs as a part of the reciprocal commitment made by them.

II.1.2: Water management

Most of the watercourses in the PTR are seasonal and the streams dry up before summer. Even the Pench River dries up and only a few pools of water are to be seen outside the submergence area. This results in overuse of the habitat near the water sources and under utilisation of other suitable habitats with little water. Water scarcity was one of the major reasons for the distress migration of wild animals to water sources located in the

periphery of the park or outside the park. Some of these were across the National highway and many were small sources of water near villages where the animals faced threats from poachers as well as the spread of diseases from domestic animals. The distress migration of animals in search of water also resulted in road kills on the National highway passing along the Pench sanctuary.

Many animals, including tigers, were reportedly killed in the past on the highway. Initially hand pumps were utilised to supply water into a concrete saucer to provide drinking water to the wild animals. While such sites were not sufficient in number and the water in concrete saucer became extremely hot and hence not consumable during peak summer hours, the system had frequent operational breakdowns too. During acute water shortages, tractor trolley tankers had to be utilised to fill these saucers. These tankers were noisy and caused avoidable disturbance to the wild animals.

- *Construction of ponds*: A number of *talab* (ponds) have been constructed at strategic sites within the Park to provide water to the wild animals.
- *Revival of jhiriyas*: Extensive survey was made in the PTR to explore the possibility of ground water near the surface. The catchments earlier treated with soil and moisture conservation works were located and pits called *Jhiriyas* were dug. (A *Jhiriya* is a shallow pit, which harvests ground water percolated during the rains). A slope was made to facilitate an easy access by wild animals to the water source.

II.1.3: Control over Grazing

At the start of the project there were 48,000 cattle head in 99 EDCs and about 30,000 cattle head used to graze inside the PA. The reasons were

- Large number of scrub cattle owned by people in the villages as they were reared at almost zero cost
- No effective physical barrier between PA and the villages
- No alternative source of fodder for the cattle
- The Pench reservoir used as source of drinking water for cattle during the summer months
- Generation of supplementary income from the sale of plough and milch cattle heads in the local markets

In view of this, the activities undertaking for grazing control included:

Creation of Pasturelands: Most micro-plans provided for the development of 50-100 hectare (ha.) plots of pasturelands per EDC, which would support stall-feeding of cattle. It was expected that in the interim, the EDC members would use agricultural crop residues for feeding their productive cattle.

Game Proof Wall (GPW): A GPW (loose rubble stone wall of 1.5 m height) has been raised on the PA boundary with villages where farms were often raided by the wild animals. It has been found effective in checking wild animals leaving the park and the cattle from entering into the park.

II.1.4: Eradication of weeds

The major weeds encountered in the park are *Lantana camara, Cassia tora* and *Parthenium hysterophorus.* While lantana infestation was especially along the

submergence and along the national highway in the Pench sanctuary, the other two are a major problem in the submergence zone. *Parthenium* in the submergence zone had replaced the naturally occurring palatable *doob* (*Cynodon dactylon*) grass.

Uprooting of weeds, especially lantana and parthenium has been carried out intensively. Parthenium was sought to be completely eradicated from the grasslands whereas lantana was retained at some locations where its presence was found useful and strategic for providing refuge cover, ambush cover and hide out along the open meadows, water holes, breeding grounds, etc.

II.1.5: Soil and moisture conservation works

A series of loose boulder check dams have been erected to check soil erosion in vulnerable tracts in the Park.

II.1.6: Diversion of village paths

Alternate routes have been provided to the villagers for commuting between villages Jamtara-Gumtara, Mohgaon-Alesur, Barelipar-Khamrith and Gumtara- Pulpuldohas. This ensures that the villagers do not need to commute through the Park. Some of these alternate paths are not yet fully developed and hence still not fully functional especially in the rainy season.

II.2: Village eco-development

II.2.1: Ecodevelopment Committees (EDCs): Eco-development Committees (EDC) with local forest guard or forester as the ex-officio member secretary have been constituted and micro plans prepared in all the 99 villages.

II.2.2: Credibility Development Activities

A credibility fund of Rs 500 per family has been utilised for confidence building activities, often also called as the entry-level activities. These are the works prioritised by the villagers themselves and related mainly to repairs / completion / construction of basic infrastructure in the village.

a) Construction of platforms, community halls and waiting rooms
b) Procurement of utensils and musical instruments for community use
c) Installation of hand pumps, construction of water storage tank, repair of tube well and construction of dug wells
d) Repair and additions to school buildings, construction of a school boundary wall and supply of school uniforms and teaching material
e) Upgradation and construction of roads and causeway and culverts
f) Deepening of village pond and construction of a waste weir
g) Provision of electricity and construction of temple and playground
h) Biomass substitution through energy-saving devices
i) Installation of large number of biogas plants, distribution of pressure cookers, provision of LPG connections and distribution of *Nutan* stoves (fuel efficient stoves) have resulted in a reduction in the firewood requirement of the village people.

II.2.3: Creation of Pasture Land

Several EDCs have developed pasture sites in nearby degraded forests or community lands. The activities have included digging of cattle proof trenches, weed eradication, soil conservation measures, seeding of grass rhizomes and raising of fuel wood plantations.

II.2.4: Minor water harvesting, catchment treatment and irrigation works

These have included the construction of tube wells, stop dams, check dams, *nistari* ponds, sinking of wells and repair of ponds and wells. In addition, irrigation canals and culverts have also been constructed. .

II.2.5: Levelling and bunding of fields and use of improved agriculture

The activities have included levelling and bunding of agricultural fields and assistance with procurement of improved variety of seeds, application of farmyard manure and vermi-composting.

II.2.6: Grain Bank

EDCs have been encouraged to set up grain banks. Such grain banks lend food grain to poor EDC members during the period between crop sowing and harvesting (rainy season), when poor people don't have any other means of earning their livelihood.

II.2.7: Village Development Fund (VDF)

VDFs have been established at the EDC level from the reciprocal contribution (25 per cent) made by the project beneficiaries. These are mandated to revolve the fund through soft-term loans to the needy members of the EDC at interest rates that are below the market rates. Draft guidelines for the management of VDF funds have been developed.

II.2.8: Alternative income-generation activities

Beneficiaries have been assisted by the EDCs through training and loans in generation of self-employment. These activities have included, lac production, handicrafts, tailoring, ropes and basket making and small businesses. The landless members of EDCs have been provided with interest free soft- term loans from the VDF (village development fund) to carry out small-scale businesses.

Trade	No. of trainees
Rope making	120
Tailoring	510
Making scented stick	167
Making *Papad* and *Achar* (household food items)	20
Computer training	176

II.2.9: Improving roads and market access

Most micro plans have stressed on development of approach roads to the villages as a priority activity.

II.2.10: Chiraita as a cure for malaria

Chiraita (*Andrographis paniculata*) also called locally as *Kalmegh* is a shrub used as a prophylactic as well as a cure for malaria. It is also a blood purifier. Malaria fever is rampant in villages on the boundary of PTR. Since 2001, the PA authorities have provided Kalmegh (Powder) to the villagers with good effect in the Park's buffer.

II.2.11: Reciprocal commitments

The EDCs' members provide help to the park staff in protecting the forest in lieu of the ecodevelopment investments. Such assistance includes forest patrolling, prevention and control of forest fires, detection of offences and in apprehending the offenders and rescue of wild animals in distress.

II.3: Environment education and awareness campaign

II.3.1: Park Interpretation Centre:

An interpretation centre is under development at the *Turiya* gate (main entrance to PTR). The work has been contracted to the Centre for Environment Education (CEE), Ahmedabad. Earlier in 2002, an education centre was constructed at Khawasa on NH 7 for the benefit of visitors from Nagpur and Jabalpur.

II.3.2: Promotion of Tourism:

The Park was opened to tourists in 1983, but the number of tourists coming to the park in the initial years was very few. This situation changed gradually and it was not until the late 1990s that tourism started to pick up. However the influx of tourists was still low as compared to the visitation in other major national parks and tiger reserves. Absence of tourism infrastructure (especially accommodation, vehicles and other facilities) and non-existent publicity and interpretation support by the park led to little tourist interest in the Park.

A brief research into the history of the area and perusal of relevant books on the region revealed that the Seoni region was the original setting of Rudyard Kipling's '*Jungle Book*'. Kipling had borrowed heavily from Robert Armitage Strendale's books-'Seonee', 'Mammalia of India and Ceylon' and Denizens of the Jungle' for the descriptions of the topography, the wildlife, and its ways in his book. Mowgli was inspired by Sir William Henry Sleeman's pamphlet titled 'An account of wolves nurturing children in their dens' which described a wolf-boy captured in Seoni district near the village of Sant Baori in 1831. Many of *Jungle Book's* locations are actual locations in Seoni district like the river Waingunga, Kanhiwara village and the Seonee hills.

The mass popularity of the character 'Mowgli' in 'Jungle Book' was seen as a unique selling point (USP) for attracting the tourists to the Park. PTR has since been promoted as 'Mowgli land' not only through hoardings but also through various articles in leading magazines like *India Today* and TV channels like *Aaj Tak*. The result is evident in the increase in tourist numbers as under:

Year	**No. of Tourist**
1997-98	988

1998-99	1,170
1999-2000	1,333
2000-01	5,288
2001-02	10,488
2002-03	18,308
2003-04 (Up to April '04)	14,385

II.3.3: Involvement of the private sector

With 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 four such tourist complexes operating in the area, one of which is owned and run by the M.P. Tourism Board. It has also resulted in the involvement and generation of income for the local people, through direct employment at the resorts as well as the encouragement of income generating activities like poultry farming and cultivation of vegetables in the nearby villages with a ready market for the produce.

Engagement of local youth as tourist guides, after a brief training, has also helped the locals find gainful employment. Currently, about 60 young men from the villages adjoining the park are working as tour guides.

II.4: Research and Monitoring

The project has supported the following research and monitoring studies in the park and supported the hiring of contract staff:

S. No.	Consultancy services	Contracted Individual/ organisations	Current status
1	Baseline mapping of PA and surrounding areas	Wildlife Institute of India, Dehradun	Report has been submitted.
2	Environmental Education Awareness Strategy Action Plan	Indore School of Social Works, Indore	Consultancy was dropped by World Bank due to delay in work
3	Environmental Assessment of Regional Plan	Dalal Consultant, Ahmedabad	Report has been submitted.
4	PA Level Visitor Management and Participatory Eco-tourism Study	SHODH, Jabalpur	Report has been submitted.
5	Process Documentation Research	The Indian Institute Of Forest Management, Bhopal	Report has been submitted.
7	Documentation of traditional knowledge	State Forest Research Institute, Jabalpur	Report has been submitted.

9	Study on wetland and riparian areas in PTR with diversity and status of fish and waterfowl	Zoological Survey of India, Jabalpur	Report has been submitted
8	Floristic Survey, Vegetation Description, Conservation Status And Distribution of Rare and Endangered Plants/Plants Communities contributed for Herbarium	Division of Biodiversity & Ecology, SFRI, Jabalpur	Report has been submitted
10	Sociologist	Shri. Subhash Verma	Working since April 1998
11	Ecologist	Dr. Alok Dwivedi	Working since April 1998
12	Women Facilitator	Dr. Ragini Mehra	Report has been submitted. Worked from August 2002 – October 2003

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

III.1.1: Maintenance of Ecosystem integrity requires:
a) Control over incidences of forest fires
b) Control over poaching of wild animals and plants
c) Control over infestation of weeds in meadows
d) Control over grazing inside forests by the livestock
e) Appropriate and adequate environmental conditions for populations of wild animals and plants to flourish

Forest fires: IEDP has helped contain forest fires in the park as evidenced by visual observations of park managers as well as the recorded data on fire incidences. But whether the gains achieved during the project period would sustain themselves would depend on the ability of the villagers to resist the temptation of putting forest on fire. How far the EDCs would be able to ensure availability of fodder to the villagers and ensure a watch and ward in place to catch and penalise the guilty would be crucial too.

With the demonstration of the fact that forest fires directly impact availability of 'Chiraita' (*Andrographis paniculata*), an effective cure against malaria, it is hoped that villagers would see value in preventing and controlling forest fires.

Poaching of wildlife: EDCs have played a key role in assisting the park management in controlling poaching incidences. A success achieved during the IEDP has been in control over unauthorised fishing in the Totladoh reservoir. As mentioned earlier, some innovative steps taken by the park management including purchasing the rights of

traditional fisherman through the due process of law as well as meeting the felt need of a community hall in the most notorious village (*Khamar pani*) alongside other inputs (earthen dams, sewing and rope making training, etc.) probably have finally put an end to the seemingly intractable problem.

Grazing by cattle and other livestock: Control over grazing inside forests and crop raiding by wild animals through the erection of GPW (Game Proof Walls) is cited as a singular success of the project. But the sustainability of this initiative would depend to a large extent on the maintenance of the GPWs as well as their continued effectiveness against raiding by wild animals like cheetal, wild boar and sambhar. The sustainability of control over grazing would depend to a great extent on the ability of EDCs to ensure fodder availability as also the willingness of villagers to manage with a small number of animals.

Infestation by weeds: This is the least of ecological threats that directly relate to the needs of the villagers or the EDCs. So, while some meadows have been cleared of weeds during the IEDP, the management would require concerted efforts to ensure weed-free meadows.

III.1.2: Ecosystem services benefiting people

Availability of water for drinking, nistar and irrigation purposes: Repair and construction of wells, ponds, and check dams in the villages have on the one hand increased availability of water both for human-cattle drinking as well as irrigation. On the other hand, it has led to recharge of the ground water. It is now imperative for the EDCs to ensure the maintenance of these water-harvesting structures for future usage.

Soil Conservation: The levelling and bunding of agricultural fields is ensuring soil conservation by putting a check on surface water run off and thus a resultant increase in agricultural yield. The beneficiaries would need to maintain their fields now to continue to reap the benefits in future.

Small timber, medicinal plants and fodder for cattle: Identification of forest patches dedicated to the EDC are expected to ensure perpetual returns, both in the short term (grass, fuel wood) as well as in the long term (small timber, bamboo, MFP). However, the critical inputs for this would be capacity building and empowerment of the EDCs.

Clean air, water and soil: Healthy forests would ensure continuous supply of clean air and water. Vermi composting is expected to enrich the village agricultural soils.

III.2: Social sustainability

III.2.1: Park – People relationship

One of the biggest gains from the IEDP has been a sea change in the relationship between the PA and the people. Beginning on an adversarial note, the park-people interaction has transformed as a result of IEDP into one of partnership and trust. Though the frontline forest department staff (FG/Forester) has been a key player, their role is now being

observed as having created dependency. Most EDC are unable to grope with the fact of acting on their own without the forest department's assistance.

The identification of a joint member secretary (an EDC member) and accounts assistant for a cluster of EDCs are some of the futuristic actions taken in the park to empower and enable the EDCs to find their own feet post the IEDP.

III.2.2: Gender and Equity considerations

Representation of various socio-cultural-economic groups and sub groups in the village was ensured in the structural design of the EDC. EDC as the general body consists of all adults in the village while the executive committee of the same requires adequate representation from all sections of the society. It has been made mandatory that in each EDC, the chair or the vice-chair of the executive committee shall be a woman.

There are 320 SHGS in the park run by women members. These women have participated in various capacity building programmes in the park and are now engaged in diverse entrepreneurial activity. The women coordinators in the EDCs are playing an important role in this regard.

Thus gender and equity issues have been addressed appropriately in the formation of the institution, its functional attributes and acceptance of its operational procedure. The micro plan activities are designed and modified (as and when required) to ensure equal benefit to all sections of society.

III.3: Institutional sustainability

The IEDP has provided institution building support to traditional institutions like the forest department as well as engendered new institutions like the EDC (Ecodevelopment Committee) and the SHG (Self Help Group). While EDCs are bodies duly recognised at the concerned forest division / PAs, the SHGs are more informal institutions.

It is notable that the institutional structure created during the project has been designed to operate in synergy with other existing institutions. The executive body of EDC has the representation from Panchayat and members of institutions set up by the other line departments working in the village. This ensures their functioning without a clash of interest or turf. The regular elections to the EDCs are part of the larger political process at the village level. Village panchayat supports the decision taken and micro plans executed by the EDC.

Exposure visits to other PAs: Study tours served the dual purpose of better understanding own problems and learning new methods, strategies and technology. The participants benefited from learning about EDC sustainability, use of the VDF as a revolving fund, procedure for loan sanction and recovery, maintenance of account books, plantation of bamboo, plantation of cash crops, use of vermi compost, etc.

Future: Although the government of MP has given a permanent shape to the EDC, which can outlive the duration of the IEDP, the maintenance of enthusiasm level in the absence of a project remains a big question.

One of the major challenges before the EDCs shall be in finding their own feet in the absence of a government executive in their midst. Alternatively, the forest department will have to devise ways to ensure continuation of the good will that the project enjoys with the local people and vice versa.

III.4: Financial sustainability

The ability of the EDCs and SHGs to manage their financial affairs and the government's commitment and forest department's ingenuity in attracting funds to the Park shall determine the financial sustainability of the achievements made during the project period.

It is assumed that the EDCs will continue to function with (reduced) funding support from Project Tiger and the state resources. The village development fund will be another source of funding where by the VDF will be used as a revolving fund to be used by the villagers to fund mainly individual enterprises. The assets created under the project such as irrigation tanks, fisheries and community halls will help in sustaining EDCs.

However, it will require a sustained effort on the part of the Park management to build capacity of the EDCs and the SHGs to manage their financial affairs properly and in as transparent a manner as possible.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: Beneficial Impact on the PA

Control over Poaching: Poaching of wild animals in the park has been effectively controlled as under:

Year	No of poaching incidences	No. of cases	No. of offenders	No. of case pending with court of law
1999	03	03	12	03
2000	05	03	15	03
2001	06	03	22	03
2002	No poaching incidence			
2003	No poaching incidence			

Control over illegal fishing: Construction of the dam at Totladoh on river Pench was completed in 1990. The reservoir being a part of the Pench TR, fishing in the reservoir was prohibited. Soon, an illegal fish-mafia became active. Operated from village Khamarpani, it supplied fish to Nagpur and other nearby towns. The practice of illegal fishing inside the PA caused disturbance to the wildlife and its habitat. Fishermen illegally extracted fuel-wood from the Park. There were cases of the forest being set on fire by them in retaliation for the action taken by the PA staff. The water birds as well as the birds, which used the dead and dying trees and small islands in the reservoir as their roosting sites were often disturbed as the fishermen uprooted such dead and dying trees to clear the path for an easy movement of their boats.

In its judgment of March 1997[18], the Supreme Court banned all fishing activities in the Totladoh reservoir. The decision however allowed 305 (temporary) fishing permits to be issued to the affected families till their rights had been compensated through a due process of law.

Management Intervention: Despite the Supreme Court decision, the illegal fishing in the reservoir continued unabated. The fish mafia continued to use force and the permit holders as a screen for their illegal activities. Many permit holders were forced to sell their permits to the middlemen. The collector of 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 in the area. Accordingly a compensation of Rs 72 lakh was decided upon for the purchase of such rights in the state's favor. The fishing right holders were accordingly compensated by 2001-02. Thereafter, the management began efforts with careful planning and formulation of an action plan to check the illegal fishing. Patrolling was intensified and a road for easy access to the reservoir was made. As a step for rehabilitating the affected families and gaining their cooperation some of the former right holders were employed as watchmen in the PA. Resultantly in the year 2001-2002, a total of six jeeps, seven motorcycles, 60 cycles, seven boats, 103 fishing nets and 3,800 kg of fish were seized. On the other hand, attention was focused on village Khamarpani for activities under the project. It took quite some time for the park management in setting up an EDC here. Since then 13 bio gas plants, 152 Nutan stoves

[18] Animal and Environment Legal Defense Fund versus Union of India (Citation)

and 165 pressure cookers have been provided by the EDC to the beneficiaries. A village pond and a community centre called the Manas Bhawan have been constructed. This has created goodwill for the park among the villagers.

Thus illegal fishing has been effectively controlled with a judicious use of carrot (EDC) and stick (patrolling) policy.

Control over Forest Fire: Control over forest fire in Pench TR is a success story of people's participation, and the results are clear from the table presented below:

Year	**1999**	**2000**	**2001**	**2002**	**2003**
No. of fire incidences	-	3	-	1	-
Area affected (in ha)	-	15	-	4	-

Control over Grazing: Effective control over grazing has resulted in re-vegetation of degraded forest patches. Good presence of wild animals in areas where they were absent in recent past is an indicator of success.

Habitat Improvement works: These include

Soil and Moisture Conservation Works: Weeds, grasses and woody under growth now occupy the soil deposited behind check dams, and slowly the gullies are getting re-vegetated.

Water Management: Good distribution of water sources in different parts of the Park has ensured even distribution of wildlife in the park.

*Weed Eradication***:** Eradication of weeds from many parts of the park has resulted in re emergence of palatable grasses and an increasing use of such tracts by the herbivores in the park.

IV.1.2: Beneficial Impact on Villagers

1. *Strengthening the agricultural sector*: This has occurred through construction of

   Ponds: Construction of *Nistari* Ponds under the project has resulted in good recharge of the existing wells in the villages to enable retention of sufficient water therein till the month of June.

   Canals: The irrigation canals made in Kohka, Kothar and Potia villages have improved supply of water to the agricultural fields.

   Wells: The sinking and repair of wells in the villages has improved water availability to the villages both for drinking as well as for irrigation purposes. It has reduced the distance and time required for collection of drinking water by women and teenaged children who traditionally fetch the same in the villages.
2. *Loans for purchase of improved varieties of seeds and fertilizers*: Loans from the VDF for purchase of improved variety of seeds, fertilizers and bullocks have enabled the villagers in increasing the returns from their lands.

Rambharose in village Gumtara was provided a loan of Rs 10,400 by the EDC for the purchase of improved variety of seed of garlic. He took advantage of good seeds and fertilizers to cultivate garlic in 0.75 acre land and earned Rs 10,000. He returned the loan amount within 10 months. Similar success stories exist in the EDCs of Thuyepani, Kadaiya, Chhirewani and Ghatkamtha.

3. Game Proof Wall (GPW)

Dashrath s/o Lalaram in Gumtara village used to suffer losses to the tune of Rs 10,000 to 15,000 per annum from crop raiding by wild boar and chital. The construction of the GPW under the project has eliminated crop raiding of his fields by the wild animals. Similar success stories are in place in the EDCs at Naharjhir, Alesur, Rampuri, Mohgaon (khurd).

4. *Pasture development:* These have resulted in good production of grass, water recharge and emergence of successful firewood and small timber plantations.

A pasture site of 100 ha has been developed in Bhondaki village. The villagers collected more than 30 cartload of grass from the site in the year 2002. It was enough to feed their cattle during the year.
There are as many as 40 such examples of good fodder and firewood plantations resulting from the EDC activities. These pasture development sites have considerably reduced the grazing pressure on the Park.

5. *Savings on firewood:* Increased use of Biogas, LPG, fuel efficient *Nutan* stoves and pressure cookers by the villagers has resulted in firewood saving as well as drudgery reduction of women folk involved in fire wood collection. As biogas, LPG, and pressure cooker are saving women's time which was spent earlier in firewood collection, they are now utilising such saved time in learning skills like sewing, preparing home made products like pickle and looking after the kitchen garden. They are especially happy as one of them put it, "*Ab haath kale nahin hote aur kande bhi nahin thapne padte."* (We no longer blacken our hands from soot nor need anymore to prepare cow dung cakes.).

Ajmi Singh of Kanhasagar EDC used to collect fuelwood from the forest. After she started to use biogas and pressure cooker, she has stopped going to the forests and utilises the time saved in sewing petticoat and blouses for the village women folk. She has since earned Rs 700 in three months to add to the family income. (June 2003).

6. *Assistance for self-employment: Shantabai Ka Dhaba*: Shanta bai is a resident of village Karmajhiri situated on the boundary of the core area of the Park. At the beginning of the project she, along with other villagers of Karmajhiri had requested for relocation to a site away from the Park's boundary. In the year 2001 she sought a loan of Rs 8,000 from the EDC's VDF (Village Development Fund) to start a *Dhaba* (roadside eatery) for the tourists visiting the Park. Initially managed by her and her son, the *dhaba* currently engages four assistants to cater to the growing volume of visitors. Having repaid her previous loan she has been further sanctioned Rs 15,000 for the purchase of a refrigerator.

In Pindkapar, EDC skills building training was imparted to 70 women in sewing, making of scented sticks, *Papad* making and in basic computer training. Thirty women have since purchased sewing machines with a VDF loan, and are earning Rs 500 to 1,500 per month.

7. Roads

According to Mrs. Durgabai Tekam, the vice chair of Airma EDC, the improvement of roads under the project have made school education possible for the girls as middle and high schools are situated at a distance from the villages and the approach road in the past was in a very poor condition and impossible to negotiate especially during the rains.

8. *Chiraita as a cure for malaria*: A study conducted in 10 ecodevelopment villages covering 60 households around Pench Tiger Reserve found substantial decrease in malaria cases

IV.2: Shortcomings

- Continued dependence of EDCs on park officials for their functioning: The EDCs continue to depend on the PA executives especially for accounting and other technical matters. It is hoped that the recent appointment of joint secretaries in each EDC will ultimately lead to self sufficiency in the working of the EDCs.
- SHGs are still not fully functional: The SHGs were formed in the later phase of the project and most of them are not functional as the services of the woman facilitator were discontinued in 2003 and the local women coordinators were not able to guide the members as efficiently.
- VDF guidelines: The guidelines for the functioning of Village Development Fund (VDF) have not been developed.
- Closure of project when activities are beginning to take shape: While it is true that the project activities are only now beginning to gain momentum it is hoped that due to a fine rapport between the PA and the people, the park and the EDC both would be able to tide over the lack of resources on the cessation of the project's support.
- Future of contract staff (Sociologist, Ecologist): Although it will be difficult to continue the services of the contract staff in the present manner, alternative mechanisms under the Project Tiger are being explored.

IV.3: Issues:

- Capacity Building of staff: Training programmes and workshops under the Project Tiger scheme and other schemes shall ensure the capacity building of PA staff.
- Capacity Building of EDCs: It is hoped that the Project Tiger support for ecodevelopment will be available in future to sustain the EDCs.
- Maintenance of physical assets created under the project: The assets created by the project will be maintained by the EDCs and the park management respectively. Some of the EDCs may still require support for which funds from central assistance for ecodevelopment under the Project Tiger allocations are planned to be accessed.
- Future of EDC: The EDCs are permanent bodies and will only be strengthened in the future.
- Future of Park-People relations: As a result of the IEDP, there is now a better understanding and appreciation of each other's problems and trust between the Park and the People.

- Impact of project on Park's Management: The IEDP has resulted in scientific management of the park and in creating trained personnel, improvement of amenities for staff and physical assets and infrastructure enhancement in the Park.

CHAPTER 8

KALAKKADMUNDANTHURAI TIGER RESERVE[19]

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Status of the Protected Area

Kalakkad Mundanthurai Tiger Reserve (KMTR) is situated in the southern Western Ghats in Tamil Nadu between latitude 8^{o} 25' N and 8^{o} 53' and longitude 77^{o} 10' E and 77^{o} 35' E and also forms part of the inter-state (Kerala and Tamil Nadu) Agasthiarmalai Biosphere Reserve.

The twin sanctuaries of Kalakkadand Mundanthurai, together with the Kilamalai and Veerapuli RF, were declared as the seventeenth Tiger Reserve in 1988 under Project Tiger. Mundanthurai has the distinction of being declared as the nation's first 'Tiger Sanctuary' in 1962 by the state government followed by Kalakkad as a Sanctuary in 1976. The tiger reserve spread over 890 sq. km carries dry deciduous forests in the eastern low level plateaus in the rain shadow of the Ghats, slowly changing over to rugged mountains westwards, with wet evergreen forests forming the world's largest patch of non-equatorial rain forest. KMTR is the stronghold of the critically endangered Lion-tailed macaque.

I.2: Protected Area (PA) Values

KMTR forms part of the South Western Ghats landscape called Agasthyamalai or Ashambu hills. The major values of KMTR and adjacent region are listed below:

- The southernmost tiger reserve in the country: KMTR is the only Tiger Reserve in Tamil Nadu and is recognised among the viable Type-1 Tiger Conservation Units in the Indian subcontinent. Besides tiger, it hosts a large meta-population of the endangered Asian Elephant *(Elephas maximus)*, gaining special significance.
- Economic Values: Water Security for three districts: KMTR gives rise to as many as 14 rivers and in rightly known as the River Sanctuary of Tamil Nadu. There are 11 dams in and around Kalakkad Mundanthurai tiger reserve catering to the agricultural and drinking water needs of the three districts. The otherwise parched plains to the east of the reserve support thriving agriculture thanks to the rivers and reservoirs in KMTR that feed the irrigation system tanks of the three districts. Civilisations since the historical period have depended on the perennial Tambiraparani river also called the life stream of south Tamil Nadu. KMTR also supports three hydroelectric power stations.
- Biodiversity Hot Spot of Global significance: KMTR is recognised as one of the two mega centres of endemism in India and as one of the 25 Global Hot Spots of biodiversity. It falls in the bio-geographic province 5B (Southern Western Ghats as per Rodgers & Panwar 1991).

[19]Dr. R. Annamalai, IFS, Director, KMTR, Tirunelveli, Tamil Nadu.

- Species Richness-Flora: The richness of flora of the park can be gleaned from its high species diversity and endemism. There are 2255 angiosperms of which 448 are endemic and 58 feature in the Red Data List. There are three species of gymnosperms, whereas pteridophytes number 156, 15 of them endemic and 10 featuring in the Red List. The 448 endemic species of angiosperms identified from this region include *Hopea utilis, Bentickia condappana, Gluta travancorica, Humboldtia unijuga* (var. *unijuga* and *trijuga), Eugenia singampattiana, Popowia beddomeana, Palaquium bourdilloni, Psychotria beddomei, Symplocos marcrocarpa,* and *S. macrophylla*.
- Species Richness-Fauna: The fauna of KMTR also carries high endemism and many belong to the highly endangered category, though secure in the park. There are 47 species of fish, 9 endemic and 2 critically endangered. Amphibians number 47, of which 27 are endemic. Of a total of 89 reptiles, 39 are endemic while the bird species number some 337 with 17 endemic to this region. KMTR also has a high mammalian diversity with 79 species and 17 endemics. It is home to the southern most population of tiger in the country. In this rich mammalian fauna, threatened species include the lion tailed macaque (*Macaca silenus),* Nilgiri langur *(Presbytis johnii)*, Nilgiri marten *(Martes gwatkinsi* sub sp.,), Brown palm civet *(Paradoxurus jerdoni)*, and Nilgiri tahr *(Hemitragus hylocrius).* Fifteen bird species that are endemic to WGs are reported from KMTR viz., Nilgiri pipit *(Anthus nilghiriensis)*, Travancore white breasted laughing thrush *(Garrulax jerdoni),* Grey headed bulbul *(Pycnonotus priocephalus)*, Blue winged parakeet *(Psittacula columboides)* and so on.

The different values of this protected area can be prioritised and ranked as shown in the following table.

Table: PA Values in their order of priority

Category	Represented by
Global	Global Hotspot of Western Ghats: Tiger, Elephant, Nilgiri tahr, Lion tailed Macaque
National	All other endangered, vulnerable, endemic and rare species of native wild plants and animals
State	Catchment capability, water, and power; the only tiger reserve of Tamil Nadu; evergreen broadleaf forest community; wilderness experience for visitors and historically important
Local	Agasthiarmalai peak. Landscape connectivity particularly significant for large bodied and wide ranging wild animals; source population of native wild animals and plant species. Cultural and economic security of the local inhabitants. Religious pilgrimage. Food security, livelihood security, water security and environmental stability to the local people.

I.3: Main threats

The threat assessment done at the beginning of the project in 1994–95 revealed the following threats:

Threats	Status
Forest Dependency	Many families among the fringe dwellers were dependent on the forest for firewood head loading, grazing, MFP collection etc.
Head loading	Heavy dependence for fuel wood for home use and sale for livelihood. Around 3215 head loaders entered forest daily for felling trees for fuel wood.
Grazing	About 22,000 cattle grazed here and many graziers depended on forest for their livelihood.
MFP collection	MFP collection was widespread and heavy
Timber Felling	There were incidences of felling of trees for commercial and small timber
Poaching	Poaching was generally a minor issue in KMTR.
Fire	This was a major issue affecting the habitat and the eco systems of the Tiger Reserve.
Ganja cultivation	There were occasional cases of ganja cultivation in the period preceding the project.
Illicit Gem Mining	There were occasional cases of illicit mining for gemstones.
Encroachment	There were old encroachments during the pre project period.
Enclaves, Tea Estates, EB-Colony Pressures	The population living in the enclaves still continues to exert pressure on the forest continuously and negatively.
Pilgrims and	Pilgrims and tourists exert still exert negative pressure like removal

Tourists pressures	of fuel wood, causing pollution etc
Man-Animal conflict	Wild boar, elephant and sloth bear continue to invade agricultural crop. Common langur occasionally caused damages to the houses in the fringe villages. Leopard and sloth bear occasionally strayed into the tribal hamlets and caused problems.

I.4: PA Management Goal

PA management goal is to restore the 'old growth' status of the park and to serve its primary role as the watershed of the Tamirabarani and other river systems. The objective of the Project Tiger is to ensure maintenance of a viable population of tigers in India and preserve, for all time to come, areas of biological importance as a national heritage for the benefit, education and enjoyment of the people. KMTR serves this objective as the host for the southern most tiger reserve.

Management objectives for KMTR

1. Conserve the entire spectrum of biodiversity including ecosystem diversity, species diversity and genetic diversity by eliminating / reducing the adverse impact of people on the Tiger Reserve like head loading, grazing, MFP collection, weed proliferation, poaching, fire, illicit collection of timber and small timber, illicit gemstone mining, ganja cultivation, etc.
2. Maintain and, where necessary, restore the catchment's capability, forest integrity for aquifer and water regime security.
3. Maintain the inter-state elephant corridor and other wildlife corridors.
4. Evolve recovery strategies for Red listed plants and animals. Maintain/restore demographically positive trends in the populations of all threatened (critically endangered, endangered, vulnerable), and other red-listed and endemic species of plants and animals with special focus on Elephant, Tiger, Nilgiri tahr and the Lion Tailed macaque.
5. Maintain/restore demographically positive trends in populations of the prey species of the tiger and co-predators.
6. Establish a system to create opportunities for enhancing management capability and knowledge of wildlife science.
7. Consistent with the above, provide a rich and informed wilderness experience to visitors and promote locally and regionally awareness for nature conservation and ecotourism.
8. Strive for people's participation in Tiger Reserve management through ecodevelopment initiatives. Create enabling environment and mechanisms to reduce the economic dependency of people on forest-based resources.
9. Develop peoples' stake in nature conservation and consistent with the above objectives provide security to cultural interests.

I.5: Ecodevelopment Objectives

In line with the general theme of ecodevelopment the philosophy of KMTR model of ecodevelopment, under the World Bank funded FREEP and its sub-project, the COB, helps effective conservation of the forests through the economic development of the forest fringe dwellers by adopting a strategy of micro credit. Ecological development has

to be achieved by adopting a strategy where forest fringe dwellers have zero dependency on the bio resources of the park. Accordingly, the main ecodevelopment objectives at KMTR are:

1. To establish committed village forest committees concerned with conservation by educating, motivating and eliciting participation in the ecodevelopment villages.
2. To achieve reduction in resource dependency on forests of the Reserve by providing alternative livelihoods thereby leading to habitat improvement and conservation.
3. To create awareness among the target villages about the value of the Reserve focusing on the vision of protecting catchment of the Tamirabarani river and the need for conserving it using different media (folk arts, audio-visual, posters and brochures).
4. To enhance the capacity among local people in needed skills and knowledge for alternate non-forest dependent economic activities by way of organising training courses, workshops and field visits.
5. To reduce adverse impacts of local people on biodiversity and also to reduce the adverse impact of PAs on local people (Man-Animal conflict), and also promote collaboration of local people in conservation.
6. To provide opportunities for local people participation in PAs management activities.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1: PA Management

II.1.1: Protection: The adverse impact on PA from local pressures like head loading firewood, grazing, poaching, fire, removal of minor forest produce and illicit mining for gemstones and ganja cultivation have been considerably reduced as a result of various ecodevelopment measures undertaken through the World Bank's Forestry Research Education and Extension Project leading to better protection status of the forests. The dependency on forest for firewood and grazing is now next to negligible, but the project interventions at the same time have significantly enhanced alternate livelihoods and improved the well being of the poor and underprivileged. Further project inputs in improvement of roads, acquisition of vehicles, arms & ammunitions to field staff and construction of watch towers / anti-poaching sheds in the PA have facilitated better protection.

II.1.2: Improvement in overall infrastructure: With support from the World Bank's FREEP, 39 buildings have been constructed and nine vehicles have been added. Major equipment additions include Laptops and desktop computers, binoculars and cameras, which facilitate better PA management.

Communication Network and Mobility: During the project period, wireless stations were constructed at sensitive locations. Wireless sets were also acquired and provided to the vehicles. Walkie-talkie sets were also provided for helping focused mobility of patrolling teams through better communication. Mobility also improved due to better maintenance of roads and addition of vehicles.

Habitat amelioration: for overall biodiversity, endangered species / communities of flora and fauna: The drastic reduction in cutting of trees for firewood, timber and grazing facilitated optimum revival of vegetation including regeneration of plant and tree species, which had been affected by the earlier pressures. This, in turn, has resulted in increasing availability of food for herbivores, which is likely to optimize the growth of predator population (Tiger, Leopard, Wild dogs). The overall biodiversity of the PA is now better conserved as a result of drastic reduction in biotic pressures, though around the enclaves the pressures are continuing with visible signs of continuing degradation.

II.2: Village Ecodevelopment

Ecodevelopment strategies, initiated in 1995 aimed at involving local people in the conservation efforts through better understanding of their problems and making them realise the necessity of conservation for their better future. The main strategy-plank was providing alternative livelihood options to the forest dependent people through various income-generating activities. The alternatives would be chosen by the beneficiaries themselves in order to ensure that right choices were made. Switching over to sustainable alternate livelihood options have been facilitated by micro credit programmes to the individuals as well as to the self-help groups. All these steps have been facilitated by cogent and comprehensive Government Orders ensuring full participation of the poor underprivileged and women as well as a transparent accounting procedure involving the joint operation of accounts by the VFC chairman and the member secretary (Forester). The government order has also facilitated the revolving fund of each VFC to give micro credit to needy individuals and the SHGs formed under the VFCs.

II.2.1: Ecodevelopment Villages (as on 31 December 2003): In all, 182 VFCs have been constituted covering 37 Revenue Villages, 104 hamlets and five Kani tribal settlements spread across 53 Panchayats. A notable feature of planning ecodevelopment in KMTR was a prior demographic and socio-economic survey of the impact zone. This enabled focused attention on those families, which were poor and more forest dependent during the micro planning process through their full participation enabled by the GO and ensured by the PA management with the help of NGOs.

II.2.2: Demography of the Ecodevelopment Villages by Economic Status (as on 31.12.2003):

Table: Classification of households by PA dependence

ED Coverage	Red*	Yellow@	Green#	Total
Total families	18,879	7,552	2,633	29,064
Families in VFC	14,530	5,313	1,410	21,253
Total VFC members	31,118	13,172	4,074	48,364

*Red=Highly dependent @Yellow=Moderately dependent #Slightly dependent

Table: Classification of households by gender

Gender Ratio	Male	Female	Total
VFC members	22,155	26,209	48,364

II.2.3: Salient features of ecodevelopment

Exclusive staff team for ecodevelopment headed by the ecodevelopment officer with the rank of Deputy Conservator of Forests. Besides him, included four Assistant Wildlife Warden with the rank of Ranger and nine Foresters (at present only four foresters).

- NGO linkage: 52 NGO Associates as part of project support team.
- Project staff with Project sociologist, ecologist and computer operator.
- Financial empowerment of VFCs.
- Transparency and joint account system; VFC chairman and member secretary (Forester) jointly operate the accounts.
- People's contribution of 25 per cent in all activities; government contribution 75 per cent only for all activities.
- Successful mutual trust building and mutual rapport building between the forest fringe dwellers and forest department staff
- A committed and dedicated project team headed by the Field Director and Conservator of Forests and supported by Chief Wildlife Warden by giving a free hand for all field activities.

II.2.4: Implementation Details

Village Forest Committee (VFC): A VFC was constituted for every 250 households in a hamlet or a cluster of hamlets or in a revenue village consisting.

Table: Structure of the Village Forest Committee

Membership	Each household is entitled: Any two adult members from each house, at least one of them a woman
Membership Fee	One rupee per member per month
Registration	Registered under Tamil Nadu Societies Registration Act, 1975
Quorum for meeting	50 per of house holds represented by an adult member of each house hold
Periodicity of meeting	Once in 3 months

Table: Structure of the Executive Committee

Elected	Not more than 7 elected by the VFC:

Members	At least half of the elected members should be women
Other Members	Concerned forest guard: One representative of a voluntary agency
Member Secretary	Concerned forester
Term of office for elected members	1 year; election for EC has to be held every year: members can get re-elected
Voting Rights	Only for the elected members No voting rights for the Forester, Forest Guard and the Voluntary agency
Periodicity of meeting	Once in a month or whenever needed

Table: Chairman of VFC

Elected by	The Executive Committee will elect its own chairperson: He/she shall also be the chairperson of the Village Forest Committee
Term of office	2 years; can be reelected for 2nd term; should not be continued beyond 2 terms.

Table: Details of the VFC Bank Account

Joint Account	Jointly operated by the member secretary (Forester) and the chairman of the VFC.
Fund flow	FD directly sends the cheque to the VFC accounts; initially only 25 per cent of the project contribution or Rs 50,000 which ever is higher
Drawing of funds	Funds can be drawn only for the items of works passed in a resolution by the Village Forest Committee
Cash book maintenance	Village Forest Committee (chairman) will maintain the cash book; Printed cash books are supplied by the FD
Auditing	Audited by the local fund audit and also by chartered accountant
Surprise checking	By the Range officer, Ecodevelopment officer and FD's office

Initial deposits for each village	Rs 50,000
Subsequent deposits	Amount varies depending upon the plan
Guiding rules	For each household enrolled as members, the amount is deposited at

	the rate of Rs 1,600 per household; micro plan amount for each village will be calculated on the basis of number of households enrolled in the VFC and at the rate of Rs 1,600 per household.

Table: Role and Responsibilities of Executive Committee

Constitution	The committee will be constituted at the commencement of and at the end of every term with the Range Officer concerned acting as a Returning Officer (or Forester if so authorised by him) for filling in the quota of elected members. The executive committee will meet at least once a month, or more often if need be.
Member Secretary	The Member-Secretary shall be responsible for convening the meetings and maintaining the record of proceedings. He shall send one copy of the proceedings to the Range Officer to keep him informed and obtain necessary guidance.
The Field Director	The Field Director, Ecodevelopment Officer or the Range Officer may give directions from time to time for smooth and proper functioning of the committee which will be binding on the committee

Village Forest Committee Duties and Responsibilities

- A general body meeting of the Village Forest Committee shall be held once in every three months to review the activities and functioning of the Executive Committee. The Member Secretary, Range Officer and the concerned Forest Guard will have the right to participate, but no right to vote.
- The reciprocal commitments of the VFC are given below:

    a. The members of the Village Forest Committee, individually and collectively, will ensure protection against grazing, fires and thefts of forest produce in accordance with the ecodevelopment micro plan
    b. Make other villagers aware of the importance of forests
    c. Assist the Forest Officers in carrying out forestry development works in accordance with the approved ecodevelopment plan
    d. Identify beneficiaries in accordance with the approved ecodevelopment micro plan.

Memorandum of Understanding

- Signed between the Ecodevelopment officer and the Executive Committee Members
- Undertaking given by EC members in the MoU
- To implement the micro plan with utmost sincerity and devotion
- To prevent grazing inside the reserve totally or to a certain extent
- To stop collection of fuel-wood, minor forest produce and small timber completely from the forests
- To protect the reserve by themselves and to extend cooperation to the forest department staff in protecting the reserve

Micro planning: The micro plan includes community asset building, individual income generation activities, alternate energy and energy conservation devices, biomass regeneration, and human resources development

Prepared by	Village Forest council, General body members, NGOs and Eco-development Forester, Ranger and Forest guard
Process	PRA based process approach
Approved by	Field Director
Implemented by	Village Forest Committee

Ecodevelopment Planning: The micro planning process involves active involvement of people in micro plan preparation and the process is based on Participatory Learning and Action-based methods. People are involved in Social Mapping, Resource Mapping, Semi Structured Interview, Wealth Ranking, Institutional Diagram, Past System Of Management, Pair Wise Ranking, Seasonality Analysis and Micro Plan Meeting

Participatory Learning & Action Based Micro Planning: The village ecodevelopment activities involved were of the following three kinds:

1. Entry point activities to enlist the support of the people
2. Community asset building to create facilities for the local people
3. Micro credit programme to facilitate starting of micro enterprises for attaining sustainable alternative livelihood options focusing on forest dependent people.

Entry Point Activities: In order to enlist the support of the local people the following kinds of entry point activity have been undertaken

1. Temple construction
2. Creation of drinking water facility

Community asset building: In order to increase the facilities for the people the following kinds of community asset building activities have been undertaken in many of the VFCs.

- Eco centre: Community hall
- Threshing floor
- Ration shop construction
- Village drainage improvement
- Bore-well and overhead tank
- Facilities to schools / Furniture supply
- Roads in the villages
- Check dams

Sustainable Alternative Livelihood System: Micro credit was given to individuals as well as to SHGs for starting micro enterprises as sustainable alternate livelihood options, using which as many as 64 types of micro-enterprises have been started by the people.

Energy Conservation Device: In order to reduce the pressure on fuel wood resources on forests alternative energy saving devices have been provided to the people as listed below:

- Husk chullah, LPG connection
- Hot point stove
- Pressure cookers
- Bio-gas domestic plants
- Smokeless chullah

Biomass Regeneration: To create biomass resources outside the forests, the following activities have been undertaken:

- Homestead tree planting - coconut seedlings and fruit seedlings (mango, guava, pomegranate, gooseberry, etc.)
- Agro-forestry with casuarina plantation, neem plantation)
- Road avenue plantation
- Fodder farms

Human Resources Development: In order to improve the skills of the people for choosing their livelihoods various training programmes have been conducted and some of them are listed below:

- Tailoring training
- Driving training
- Embroidery designing

II.3 Environment education and awareness

Awareness programmes in the form of traditional folk theatre / street theatre Oyilattam, Kummi, Karagam, etc were planned simultaneously and the task was assigned to the Arumbugal Trust, an NGO from Tirunelveli who are well versed in traditional performing art forms. During the first year, only a limited 20-25 villages were selected and the project introduced through the cultural programmes by this NGO. The first phase of the programme consisted of conveying the aims and objectives and message of the project to the villagers, which would facilitate the starting of VFCs in each of the villages. The first programme was conducted in Chidambarapuram village in the Kalakkadrange. The villagers sat through the cultural programme for about two hours after which the eco team elicited responses from them in the form of questions and comments. The response received showed that the folk form had a good impact and had worked well to influence the minds of the villagers. The constant interaction of the Arumbugal Trust workers with the Eco team helped make the project approach and methodology clear to them, which upgraded and improved the quality of their folk programmes.

The second phase of the programme comprising of information on how to run the VFC, the role of committee members, forest protection, etc., now began. More than 60 folk media programmes were conducted in this phase.

The third phase concentrated on capacity building in the villagers about the use of loan money, recovery of loan money, sustainability, etc. The Arumbugal Trust also continuously assessed and evaluated their own programmes by asking their team members to sit with their audience to hear their comments. Stories connected with Indian

philosophy and culture, gods, goddesses, ghosts, local myths and beliefs about evil spirits, etc., were used to communicate the message effectively. Thus, the dedicated staff of the Arumbugal Trust did commendable work in changing and moulding the attitudes of the villagers. So far, the Trust has conducted more than 450 programmes within a span of three years covering all the 113 villages and hamlets. This method of awareness generation and social mobilisation wherein even the poorest of the poor attended the programme with people of a higher economic level, provided great support and resulted in a total co-operation during the formation of the VFC. The cultural programmes conducted in schools were to go a long way in motivating the next generation of villagers in realising the need to protect and conserve their own natural resources.

Besides these, the following environment education and awareness progammes were carried out / being continued in the PA and Ecodevelopment villages.

- Door to door canvassing through the NGOs (especially women) about the advantages of the scheme.
- Awareness through film shows / exhibiting posters / distribution of handbills etc.
- Conducting cycle rallies / suzhal jothi etc.
- Involvement of the VFC members in World Forestry Day, Wildlife Week celebration, conducting wildlife census etc.

II.4: Research and monitoring

Research and monitoring received due importance and attention during the project tenure and the tempo is being sustained. The R&M activities involved collection of data of floral and faunal diversity, rare and endemic species, ethno-botany, anthropogenic pressures, peoples' dependence on the PA, economic valuation of the natural resources of the PA and human-wildlife conflict.

Parameters	During the project	Post project
Wildlife Institute of India	Research reports and management plan and monitoring protocol generated	Reports available for guiding management
French Institute of Pondicherry	Maps and research reports generated	-do-
Tropical Botanical Garden and Research Center	Research reports on biodiversity generated	-do-
Manonmanian Sundaranar University	Research and monitoring reports generated	-do-
Others	About five important reports generated on biodiversity	-do-

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

Ecological sustainability is visibly evidenced by forest recovery as a result of the project in KMTR. Catchment protection has considerably improved as a result of reduction in tree felling, which in turn has arrested degradation including soil erosion thereby reducing the silting up in the dams and reservoirs. This is due to the various PA management practices, i.e. reduction in removal of tree growth, construction of soil and moisture conservation structures, overall amelioration of flora in the entire reserve facilitated better soil and moisture conservation in the PA. This not only enhanced aquifer recharge but also increased the availability of water for irrigation through dams. This has helped significantly mitigate the severe water problems of Tirunelveli, Kanyakumari and Thoothukudi districts of Tamil Nadu.

Further due to non-removal of under growth, green leaf manure, dried twigs, reduction in grazing by cattle and massive natural regeneration the status of nutrient cycling has vastly improved in the Tiger Reserve. The better management of PA through the effective implementation of ecodevelopment programmes in the fringe villages has helped in better protection of **floral** and **faunal diversity**.

III.2: Institutional sustainability

Sustainability of the VFCs: The life of the village level institutions (i.e VFCs) has not been prescribed in the Government Order. It has not been made project linked. These institutions are permanent and enthusiastically sustained by the people themselves in participation with PA staff and NGOs. The enthusiasm of the people is evident in the forming of more VFCs post-project, which is a mark of their long-term sustainability. While 132 VFCs were formed during the project period, 50 VFCs were added in the post project period taking the tally to 182 VFCs.

Sustainability of village institutions linked to PA Staff: In the post project period, the first and foremost issue is the retention of required staff to monitor the VFC and assist activities. Discontinuance or non-availability of optimum level of staff may affect sustainability of gains made hereto in the post project period. However, optimum level of staff of all categories has been continued in the post project period.

Sustainability of NGOs Links: The services of NGO representatives now known as VFC accountants are utilised for supervision of loan recovery and maintenance of the relevant registers. The number of NGO associates has been reduced from 60 to 30 to effect economy in expenditure. As there is no possibility of payment of honorarium to the VFC accountant from the Government sources, it is being met from the accrued interest of the loan amount for alternate income generation activities. Now they are being paid by VFCs. The present level of the NGO involvement is considered adequate.

Sustainability of SHGs: Nearly 540 SHGs have been set up during the project period and in the two years following the end of the project. All SHG members are also VFC members and they function under the umbrella and loan support of the VFCs. They are all functioning well with 100 per cent loan recovery and show strong portents of emerging sustainability. The key players in the SHG are the facilitator (*ukkunar*) and the first representative. The NGOs (VFC Accountants) are actively involved in formation of SHGs. They are also taking care of the management and finance aspects of SHGs functioning.

III.3: Financial sustainability

The growth of funds and loan recovery details from the 'revolving funds' of the VFCS are given below. As the corpus fund is steadily growing through better recovery of loan, the financial sustainability is assured.

Table: Growth of Corpus fund of SHGs

Government contributed	Rs 3.94 crore (From 1996 onwards)
People have revolved this to	Rs10.98 crore (as on December 2003)

Table: Success Rating in Loan Recovery by VFCs

S.No.	% of Loan Recovery	No. of VFCs	% of VFCs
1	100	60	32
2	90-100	38	22
3	80-90	35	20
4	70-80	17	9
5	60-70	18	10
6	< 60	13	7
	TOTAL	**182**	

Table: Loan recovery rates of SHGs

S.No.	% of Loan Recovery	No. of SHGs	% of SHGs
1	100	538	100

- For the security of the amount generated from IGAs, a procedure has been introduced wherein the person taking loan has to execute a security bond. For reviving the old outstanding loans it has been made necessary to sign a security bond. Previously the loan amount was issued in cash but now loan is issued by cheque only. For loan repayment triplicate chalan mode payment to the banks has been introduced so as to avoid handling of cash.
- To improve the economy of women VFC members, exclusive women SHGs have been formed. These SHGs are given priority while issuing loans. Another trend introduced is to gradually switch over from issuing loans to individuals to issuing loans to SHGs. Instead of dealing with many individuals this means dealing with fewer SHGs having collective responsibility.

III.4: Social sustainability

The FREE Project achieved an excellent degree of social sustainability in KMTR. All religious groups, women, poor people living in and around the PA are given due importance and involved in all PA management activities. This has changed the mindset of the people and helped the development of an inclusive culture. All awareness programmes during wildlife week / world forestry day, Pongal and other festivals are being celebrated collectively and the message about the need to conserve the PA is spread. By and large, there is no political interferences in any activities of PA management in KMTR, which in turn facilitated the PA staff to implement the schemes / programmes effectively.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: Beneficial Impact on the PA

This project has enhanced prospects for total biodiversity conservation by reducing the adverse impact of people on park. This has also changed the mindset of people towards conservation.

1. *Reduction of Head-loaders* (Firewood): This project has achieved a reduction of 96 per cent of head loaders in a period of seven years in the fringe villages. Reduction in head loading has saved lakhs of trees from felling. Monitoring Study conducted by Manonmanium Sundaranar University has indicated that all the paths used by the head loaders have been completely covered with vegetation, a clear indication of reduction in pressures on the forests. Reduction of deforestation is sure to lead to overall improvement in habitat thereby creating better environment for all wild animals and wild plants.
2. *Reduction of grazing:* KMTR has achieved a 95 per cent reduction in grazing of cattle inside the Reserve. Fodder saved now will be available for wild herbivores due to reduction in competition with domestic cattle grazing. This has helped to enhance wild ungulate prey base for tiger and other carnivores and prevent straying of wild

herbivores into agricultural lands for crop raiding. The seedlings and saplings are saved from grazing and trampling resulting in better conservation of biodiversity.

3. *Reduction in MFP Collection:* The programme component related to awareness generation and education seem to have helped reduce MFP collection, except illicit collection of honey
4. *Reduction in Illicit felling for timber and small timber*
5. *Reduction in Encroachment*
    - Whatever encroachments are there, are very old
    - No fresh encroachments
    - All the old encroachments are enclaves in the PA.
    - Relocation of the encroachers outside the PA is the only possible solution
6. *Reduction in Poaching*
    - Poaching has always been a minor issue in KMTR.
    - After the project, widespread awareness has greatly contributed to the control of poaching.
    - People themselves are apprehending the poachers and handing them over to Forest Department and this is a positive development.
7. *Reduction in Fire Occurrences:*
    - Fire continues to be a cause of concern
    - However, awareness generated among people has motivated for coming spontaneously for fire control works
    - Now VFCs are fully involving themselves in fire fighting and this is a positive development.
8. *Reduction of Ganja Cultivation and illicit mining for gemstones*
    - These problems used to be there in the past.
    - Now these problems are not there.
    - However constant monitoring is required.

IV.1.2: Benefits to the People / Social Justice

Poverty Alleviation: The World Bank's FREE Project consisting of important components like improvement of PA management, ecodevelopment, awareness promotion and research and monitoring in KMTR from 1995 to 2001 have facilitated all people (poor / illiterate / socially and economically weaker sections) especially forest dependent to change their forest dependent livelihoods to alternate employments which in turn helped them earn more and lead a better life. Besides increase in income, they are also enjoying better environment in the surroundings. So far, the following benefits have been availed by the people due to ecodevelopment programmes and better PA management is as follows:

The forest dependent red and yellow groups have been completely freed from forest dependency and have been diverted to other occupations. Thus pressures on the forest have come down drastically preventing degradation and promoting amelioration.

BENEFITED FAMILIES			
Red	**Yellow**	**Green**	**Total**
15,547	4,995	825	21,367

Energy-saving devices: In order to reduce the pressure on fuel wood resources on forests a large number of alternative energy saving devices have been provided to the people on participatory cost sharing (75 per cent project: 25 per cent beneficiary). These include 2,048 husk chullahs, 1,048 hot-point stoves, 956 LPG connections and 348 domestic animal-dung based biogas plants, covering in all 4,400 families. Besides 184 pressure cookers were also provided. As 4,400 families have switched over from using the fuel wood to other forms of energy, it has reduced the fuel wood consumption by 7216 tonnes per annum.

Biomass regeneration: Alternative biomass production strategies have been adopted for augmenting fuel, fodder and other resources. These measures benefited 10,749 families in all and involved the issue of nearly 1.5 lakh fruit seedlings for home gardens and over 67,000 fuel-fodder tree seedlings for farmlands. In addition, over 170 km of avenue planting was done, 182 ha of puramboke (village forests) were planted up and 18 ha of fodder plots were raised.

Social Justice: The greatest impact of this project is that it has reached all sections of society without any bias and has gone a long way in empowerment of women and the under privileged communities.

- Benefits to all communities
- Gender empowerment
- Benefits to all Communities
- Benefits to all religious groups

Table: Caste-composition of VFC Chairman

Community	Number	Percentage
Backward community	99	54.50
Scheduled caste	68	37.36
Most backward community	10	5.49
Other communities	3	1.65
Scheduled tribe	2	1.10
Total	182	100.00

Table: Caste-composition of VFC membership

Community	Number	Percentage
Backward community	19415	56
Scheduled caste	13948	40
Most backward community	1,025	3

Other communities	411	1
Scheduled tribe	103	
Total	34,902	100

Table: Caste-composition of beneficiaries

Community	**Number**	**Percentage**
Backward community	17,487	64
Scheduled caste	8,342	31
Most backward community	1,023	4
Other communities	246	1
Scheduled tribe	80	
Total	27,178	100

Also, people from all religions have benefited from ecodevelopment activities.

Gender empowerment: This project has led to a tremendous improvement in the living standards of women and has empowered the women in many ways.

Women membership in VFC	21,639	62%
Women membership in EC	811	56%
Women Chairman in VFC	56	30%

SELF HELP GROUPS (As On 31.12.2003)

No. of Women SHGs formed	540
No. of Women beneficiaries	6,980
Amount of Loan Issued (Rs. In Lakhs)	93.63
% of Loan recovery	100

The project, implemented by an exclusively selected ecodevelopment team from the regular KMTR staff, has been a resounding success with as many as 182 border hamlets responding positively to the objectives of the project. However, enlisting the support of the people during the initial days of the project was extremely slow as they were suspicious about the intention of the forest department as though the forest department is trying to deny the traditional culture of head loading and grazing. Once the trust was built, the tempo mounted and as of now the level of trust as well as the efficiency of activities is high. The impact on the forest has also been clearly positive, indicating an overall successful implementation.

IV.2: Lessons

Some of the important lessons learned are summarised below

1. The ecodevelopment programme has contributed significantly to poverty alleviation of the below poverty line (BPL), forest dependant and forest non dependant forest fringe dwellers in the entire KMTR area. This project has

reached the un-reached and the poorest of the poor and has raised them above poverty line (APL).

2. Participation of forest fringe dwellers has proved essential and highly effective in reducing the human impacts on protected areas and in ecological restoration and upgradation in the entire KMTR area.
3. Benefit sharing from forest in the form of timber and non timber forest produce with the forest fringe dwellers is a central concept in Joint Forest Management implemented all over the country in India. However, experiences in ecodevelopment have shown that there can be effective JFM without benefit sharing, in terms of consumptive use of forest produce. What the people need is sustainable alternative livelihood system, which can with understanding and commitment as well as mutual trust be created by employing micro finance linked to micro enterprises and revolving fund linked self help groups. Hence, a new 'JFM' model seems to be emerging 'without benefit sharing' if alternative IGAs can provide economic wellbeing to communities.
4. As in the case of Joint Forest Management village level institution building like village forest council in ecodevelopment has empowered the people and structured the participation of forest fringe dwellers in decision-making. The elected executive council and the elected chairman of the village forest committee have helped in developing leadership resources in the village.
5. Building up of mutual trust between forest fringe dwellers and forest departments has helped the successful implementation of the project.
6. Participatory rural appraisal / Participatory learning and action based interactive participation and process approach in micro planning has helped to develop good micro plans reflecting the felt needs of the forest fringe community.
7. Training of field staff, NGOs, VFC chairman and SHG members has been found to be highly effective in project implementation.
8. Tripartite Association Building among the forest department, forest fringe dwellers and NGO's have enabled successful implementation of the project. The role of NGO's has been highly commendable particularly in awareness creation and recovery of loans.
9. Empowerment of women through membership in executive committee, village forest council and exclusive women self help groups has enabled them to voice their concerns and meaningfully influence decision making in conservation and development.
10. Alternative energy sources such as biogas, LPG gas and smokeless *chullahs*, are found highly effective in saving time and in mitigating drudgery of women and reducing the consumption of fuelwood and thereby reducing pressure on forests.
11. Training of the micro finance beneficiaries should precede issuing of loans so that effective sustainable alternative livelihood system can be developed and the assets can be properly utilised.
12. Forest protection can be effective only by sustained awareness creation; Cultural Programmes conducted by the NGO's, folk arts, mass rally, human chain etc., have created enormous awareness.
13. Joint account system established to incur expenditure under the ecodevelopment programme has helped in total transparency in financial transactions.

14. Ecodevelopment implementation has to be viewed as a team work (Ecodevelopment in KMTR won the Team Award)
15. Intra and Inter group conflicts: village level institutions such as the village forest committee and the ecodevelopment committee can effectively solve Intra and Inter Village conflicts.
16. Human impact on the biodiversity of KMTR was largely from firewood head loading, over grazing by domestic livestock, habitat degradation and deforestation due to unsustainable collection of timber and non-timber forest produce. These caused destabilisation of forest ecosystems. Poaching of wild animals was also an area of concern. This project has made a significant and ameliorative impact on the diversity and abundance of indigenous flora and fauna throughout the Tiger Reserve. The most important impacts have been significant reduction in head loading and cattle grazing leading to restoration of forest floor ecosystems and associated fauna including wild herbivores and the carnivores that prey on them.
17. Experiential learning based approaches have proved to be central to changing attitudes, competence and confidence to adopt and respond to site specific conditions.
18. The most remarkable impact has been the **change in the mindset of the people.** The positive emotion generated by the project on the minds of the people has been reflected through a series of mass rallies with high participation that was entirely voluntary. Villagers have expressed willingness on more than one occasion to take up the cause of conservation actively.
19. Exclusive staff for ecodevelopment in KMTR is a major factor for success. Strategies that are to be adopted outside the forest areas have to be tackled by exclusive staff and not to be combined with the territorial responsibility.
20. Forest fringe dwellers have been liberated from the clutches of unscrupulous moneylenders who used to charge interest as high as 120 per cent per annum!
21. This project has gradually altered the initial trend from individual based activities and micro enterprises to group based activities and now they are planning collective enterprises. This augurs well for long-term socio-economic sustainability and continued support to PA protection.
22. Even though many departments like the Rural Development Department (RDD) / District Rural Development Agency (DRDA), Cooperatives and National Banks have implemented similar micro finance and self help groups programmes, but loan recovery has been a major problem for them. This project has demonstrated that it is possible to achieve success in recovery of loans by the village institutions with genuine assistance by a Government Agency and this can be compared to the success of the Grameen Bank of Bangladesh. Poor people are prompt in repayment of loans if activity selection is done carefully and people are helped sincerely.

IV.3: Constraints

Delay in release of funds by government was a major constraint during the project period.

IV.4: Suggestions for future projects

1. Continue the existing tempo of ecodevelopment initiatives by sustaining the 182 VFCs and their forged institutionalised link with Forest Department.
2. Focus the future of ecodevelopment towards SHGs based movement. Promote creation of more SHGs beyond present level of 540.
3. Increase the corpus fund in all the VFCs to a level of Rs.5 lakhs in each VFC.
4. Increase the membership to 100 per cent in all the VFCs.
5. Ensure adequate fund flow to PA management for anti-poaching measures, fire control, maintenance of roads and buildings, etc.
6. Provide direct flow of fund as in the case of FDA.
7. Currently this project is being replicated in the Gulf of Mannar Biosphere Reserve and this model can be replicated in all the other PAs of the State.
8. Promote ecotourism adopting the model of Periyar Tiger Reserve.
9. Address the Enclaves problem particularly the grazing and fuel wood pressures in the Mundanthurai Plateau.
10. Relocate the encroachers and other tribal settlements outside the Tiger Reserve.
11. Minimise the impacts of religious tourism in and around the temples.

CHAPTER 9

GREAT HIMALAYAN NATIONAL PARK[20]

SECTION I: INTRODUCTION AND BACKGROUND

I.1. Location and Extent

On the basis of very elaborate field surveys by an international team of scientists in 1980s (Gaston e*t al*, 1981), the Government of Himachal Pradesh declared its intention of creating the Great Himalayan National Park (GHNP) in 1984. Located in the Kullu district of the northern state of Himachal Pradesh in India, the GHNP has been constituted as a representative area to conserve the unique biological diversity of the western Himalayas.

I.2: Biodiversity of the Park:

The boundaries of GHNP are contiguous with the Pin Valley NP in Trans-Himalaya, and the Rupi-Bhaba WLS in the Sutlej catchment. Another Protected Area (PA) adjacent to the GHNP is the Kanawar WLS. Together, all these PAs have varied wildlife habitats, and the full range of western Himalayan biodiversity, from tropical to alpine and Tibetan. Rodgers and Panwar identified this area as being of foremost priority for biodiversity conservation in India. The World Conservation Monitoring Centre has identified the western Himalayan region as one of the five Centres of Plant Diversity and Endemism in India and in need of urgent protection. Beyond its biological significance, the suitability of this area for conservation is enhanced by factors like relatively low human population, low rate of tourist visitation, and a local economy based on traditional undertakings.

I.3: Composition of GHNP

High mountain ridges and peaks on its northern, eastern and southern sides naturally protect the 754.4 sq. km area of the park. However, many small villages inhabit the western side. In 1994, the first year of the World Bank-funded Conservation of Biodiversity (CoB) project, two major changes were made in land use around the park:

a. An area 5 km from the park boundary was delineated as the ecodevelopment zone (or Ecozone) for carrying out integrated conservation and development activities based on the ecodevelopment principle. The Ecozone has 2,300 households in 160 villages covering an area of 265.6 sq. km. Most of the population (about 13,000 to 14,000 people) in Ecozone is poor and depend on the natural resources for their livelihood.
b. The Sainj Wildlife Sanctuary was created around the three villages of Shagwar, Shakti and Marore, to avoid relocation of these villages under the Indian Wildlife Protection Act, 1972 The 90 sq. km Sainj WLS virtually divides the GHNP into two parts (see Map at Annexure 1).

The southern part of the GHNP consists of another protected area known as the Tirthan WLS, which is 65 sq. km in area, and has no habitation. Thus the Park administration has

[20] Sanjeeva Pandey, Director, GHNP, Himachal Pradesh.

a total of 1,171sq. km under the four categories of GHNP, Ecozone, Sainj and Tirthan WLSs which are collectively referred to as the Great Himalayan National Park Conservation Area (GHNPCA).

I.4. Main Threats - External and Local

I.4.1: Pressures from surrounding communities

Natural processes in the PA are affected by

a. Biotic disturbances such as grazing by more than 20,000 sheep and goats
b. Medicinal plant collection by 4,000–5,000 herb collectors in each season
c. Collection of *Guchhi* (morels, an edible fungus) by the locals in April-May, which coincides with the breeding season of pheasants

Over the years, a free-access system has emerged which enables such livelihood practices, despite the fact that most of the herders/herb collectors do not have any legal or customary rights to the PA as per the Settlement Report (Anderson, 1886). Local herb dealers have traditionally hired Gorkha labour to collect medicinal plants and, over time, the villagers and hired labourers have started grazing their animals and / or collecting herbs from the pastures inside the PA beyond the prescribed limits of time and space. There have also been many instances of snaring of pheasants, ghorals and musk deer by these people, and instances abound of young ones of red fox being killed by shepherds as they are a potential threat to their lambs. The collective impact of such actions on local flora and fauna has been very adverse (Gaston and Garson, 1992).

I.4.2: External pressures

The four major rivers originating from the PA are an important factor in the ambitious plans of the Himachal Pradesh government for production of hydroelectric (hydel) power. Initial surveys for the Parvati hydel project in the Parvati and Sainj valleys were carried out in the 1960s and 70s. The location of the Parvati project in the neighborhood of the PA is a potential threat to its natural resources. In addition, there are numerous small hydroelectric projects that are proposed just outside the boundary of the GHNP and Sainj and Tirthan WLSs. At the time of the final notification (1999) of the GHNP, a portion of prime forest land of 10.6 sq. km in the Jiwa Nal valley has been taken away for purposes other than forest conservation. All these projects are going to change the land use pattern in the Ecozone in a very big way. This may have an impact on the home ranges for different wildlife species. The immediate and long-term impacts of such land use changes are immense. Already, there is an influx of outside labour force which despite restrictions damages the herbivores of the area and clears the woodland for firewood, etc. The location of these projects on the fringe areas of the GHNP represent a degraded landscape, which affects the livelihood options of the poor in an adverse manner (Pandey 2004).

I.5: The Park – People Relationship

The penetration of people from Punjab, Tibet and Nepal into the region in the 19th and 20th century, and more prominently after independence of India in 1947, has affected the social and economic conditions of the Kullu district people. Due to isolation and inaccessibility,

the indigenous communities of the Jiwa, Sainj and Tirthan Valleys have developed distinct traditions and customs. The isolation of valleys has led to the development of different farming practices and methods of forest exploitation. The villages around GHNP have also evolved their own terminology and folklore, and methods of classification and local faunal and floral taxonomy, which, though reflected in their dialects and life styles, remains poorly documented. These attributes influence the daily lives of people and their impact on their surroundings.

As a whole, the villages in the Ecozone of the park represent a stratified society: where a small number of rich households command most of the assets/resources such as land, orchards, cattle and sheep and goats. The poor, in contrast, are numerically greater and have larger families on an average, but own very little resources/assets. The poor are further getting marginalised over the years due to lop-sided "development". Caste-wise, Rajputs and Brahmins are the dominant castes, while the scheduled castes are the most marginalised economically, and depend upon manual labour and the natural resources of the PA (Tandon, 1999, 2002).

The Park remains untouched by any road network and thus provides a unique opportunity for sound conservation efforts. Until the 1960s, human pressure on the Sainj-Tirthan area grew very slowly. People in the area were primarily living at a subsistence level with very limited export of natural resources. More recently, the state government's commitment to rapid economic and social development of the area put great pressures on the environment (Tucker 1999). The major pressure on GHNP's species diversity is the collection of medicinal herbs, as well as other forest products, including the commercially valuable morel mushroom. Until the 1960s there was no significant commercial market for the major herbs, and no one anticipated that this would become a critical issue for the park. Beginning in the 1960s the commercial market expanded enormously, giving local people a major new source of income. By 1999, a survey indicates that 70-85% of households derived cash income from collecting and selling herbs (Tandon 1999).

I.6: Management Objectives

The primary goal of management at GHNP is to conserve biodiversity through

(i) Reduction in biotic interference with natural resources of the park

(ii) Linking village level development issues (livelihoods of the Ecozone residents) with conservation of biodiversity in the park.

The above tasks can be accomplished by integrating environmental, social and economic issues into a holistic framework based on the ecological needs of natural resource dependent communities. In order to achieve this goal, it is imperative to work with the local communities to reduce their dependence on the PA's natural resources, and simultaneously manage, monitor and protect the natural habitats and resources of the PA. Primarily, this requires putting people at the centre of biodiversity conservation of the PA.

In the management plan that is being prepared at the park (2003-04), it is proposed to develop a microplan based on the user groups in a village. It is further envisaged that the various user groups will be federated to create linkages between the micro-level planning and the big picture at the panchayat level. The Management plan is aiming that the microplanning process is flexible towards change, and that community-based monitoring and evaluation can facilitate mid-course changes in the progress of microplanning.

I.7: Ecodevelopment initiatives at GHNP

I.7.1: Introduction to FREEP

The World Bank aided Forestry Research Education and Extension Project (FREEP) was initiated in 1994 for a 5-year duration. In order to test participatory biodiversity conservation in India, an additional sub-project titled Conservation of Biodiversity (CoB) was formulated as part of the bigger FREE Project. Under the CoB, two protected areas, the Great Himalayan National Park in north India and the Kalakkad Mundanthurai Tiger Reserve in south India were selected for experimenting with the community centered biodiversity conservation approach. In the global context, the CoB project at GHNP was aimed at addressing some of the concerns relating to conservation of biodiversity in a "megadiversity" country; facilitating the conservation of the endangered Himalayan ecosystem; helping prepare future projects to address additional critical biodiversity issues, and demonstrating linkages between conservation and development.

I.7.2: The Conservation of Biodiversity (CoB) Project

The GHNP became one of the first protected areas in India to receive funds for linking protected area management with local social and economic development programmes, under the approach usually referred to as ecodevelopment. The challenge at GHNP has been to reduce local dependence on the park, mitigate poverty, and create cooperative relations with local people, all on a sustainable basis. Starting in late 1994, GHNP received approximately US $2.5 million over five years for ecodevelopment (Pandey and Wells 1997) under the World Bank aided Conservation of Biodiversity project. This paper looks at the implementation of the ecodevelopment project (1994-99) and the post-project phase, which continued to evolve and incorporated many new innovations and mechanisms.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1: Improvement in PA management

PA management interventions during the FREEP remained confined to general activities like repair of village and trekking trails, construction of a few watchtowers in the mountain terrain, plantation of a few hectares of forestland and patrolling of the forests. An interpretation centre was constructed at Sai Ropa, though in effect this began to be

used for community training and ecotourism only after the FREE project ended. In addition, a number of buildings were constructed at Shamshi (HQ) and in field. The CoB project suffered at the GHNP for a number of reasons like unduly lengthy government procedures to obtain financial sanctions for the proposed works under the project and also because the PA staff was not trained to handle their new responsibilities under the project.

II.2: Village Ecodevelopment

II.2.1: Formation of EDCs and the process of microplanning

The CoB Project emphasised the formation of ecodevelopment committees (EDCs) to undertake the village level activities through microplanning. Under the project, 16 microplan units were developed in order to involve the various stakeholders in the buffer zone area of GHNP. Each microplan unit was to have a village EDC (VEDC). The park staff grappled with the issue of preparing the microplan. The initial approach was that all the villages falling in a watershed would be covered in one microplan. For example, the microplan for Tirthan watershed covers 19 villages with a population of 1,300. Thus, it became very difficult to organise meetings of villagers under one microplan as the houses/villages in hills are located far from each other. Moreover, it was virtually impossible to discuss issues among 1,300 villagers at a time. In another attempt, the park engaged services of the Society for Promotion of Wasteland Development (SPWD), a non-government organisation (NGO), to prepare the microplans. This attempt could not succeed due to the lack of a proper interface between the SPWD and park staff. The most important point here, perhaps was that the microplanning, by and large, remained a task of the park staff or an NGO, and there has been not much of involvement of the local villagers in this important subject. As a result, most of the VEDCs formed during the CoB project remained non-functional.

The CoB Project was expected to contribute significantly through village level organisation to the biodiversity conservation of the park. At GHNP, the concept of ecodevelopment was new both to the field staff and the neighbouring communities. Such an approach would necessitate that the professional capacity of GHNP staff is built up, and organisational structures and procedures are established. The CoB project at the park faced problems of lack of establishing the mechanisms of a process-approach, micro level planning details, local communities involvement, and coordination among various developmental agencies and NGOs in the area. The villagers remained alienated from the process of their involvement in the park protection. The project inputs could not infuse any workable solutions that would have promoted nature conservation education among the community members. Nor the attitude of the park staff could be changed in favour of a people oriented approach towards the biodiversity conservation. The strategy of EDC formation and overall microplanning could not yield the desired results of community involvement and, thus, failed in addressing the question of mitigation of threats to GHNP.

II.3: Settlement of rights

The pre-Settlement Scenario (before May 1999): The people depend upon the resources of the park mainly for grazing their sheep and goats and some cattle, and collection of minor forest produce. Before settlement of rights in 1999, the local villagers living on the western

boundary claim traditional grazing rights as well as rights of herb collection in the national park. An estimated 35,000 sheep and goats (local 25,000, and migratory 10,000) graze in the park during the summer months. About 2,500 people collect herbs and mushrooms (*Morchella esculenta*) from this area each year. The areas within which these rights may be exercised are organised on a *kothi* (a revenue unit) basis. Pressures on park resources from neighbouring village communities varied considerably. Some of them depend on the Park heavily during collection season of mushrooms (April-June) and medicinal herbs (August-October). Others who subsisted on basket making, handloom weaving, horticulture, etc., did not depend on the park's resources at all. As the two roads into the Sainj and Tirthan valleys were constructed in 1950s onwards, a number of immigrants came along and settled in the region. These new settlements have influenced the older inhabitants, which so far were characterised by features such as inaccessibility, fragility, marginality, diversity, `niche', and specific human adaptation mechanisms to the mountains. The most significant change that occurred due to these immigrants was acquisition of skills and material necessary for exploitation of forest wealth for marketable use as opposed to its appropriation merely for home utilisation (Pandey and Wells 1997).

Traditional Rights of the local community: Traditional rights are mentioned in the forest and revenue settlements commissioned by the British in the second half of 19th century. After 1865, documentation and settlement of rights was a major step introduced by the British to conserve forests in the subcontinent. The traditional use of the forests by the local people was restricted. In the Forest Settlement Report, the names of forests and local people allowed to use them were recorded. This document also recorded the rights of the people that they were allowed to exercise in the forests. The Forest Settlement Report defined criteria of use of the various forest categories by the local people. The rights to cut grass, to remove medicinal roots, fruits, flowers, dry fallen wood, except deodar, walnut, box and ash, to cut bamboos, and to take splinters of deodar and kail stump, were allowed in all forests without permission.

Settlement of Rights after May 1999: The traditional rights of the local people in the GHNP were settled in May 1999 through an elaborate procedure as prescribed in the Indian Wildlife Protection Act 1972. This has led to the issuance of final notification of the GHNP.

Impact of Rights settlement: The post-settlement-of-rights situation is going to affect the Park in the following ways:

(i) Biological processes, when free of current biotic disturbances, are expected to bring positive changes in the status of biological diversity in the park;

(ii) Restrictions on access to the park area may have some negative effect on the livelihood of the local community, given their high dependence on herb collection and livestock grazing. Alternative ways and means are now getting in place to mitigate such effects.

In the years following the settlement of rights of local people and imposition of restrictions on their entry into the park, a number of agitations were sparked off in the adjoining villages to protest the rights settlement process. As per the Anderson report, only 349 families had rights in the forests that are now part of the PA. The government,

accordingly, only provided compensation (to the tune of Rs. 1,56,00,000) to the families mentioned in the Anderson Report. This has elicited protests from other households, which had traditionally been entering the park for resource extraction, even though they did not have legal rights to do so. These villagers have been demanding a *quid pro quo* in lieu of the ban on their entry into the PA. The PA management has no flexibility to support the claims of these affected villagers in the absence of any legal rights to the PA on their part. In the beginning, these villagers tried to organise themselves in groups to fight their case in court, but their agitation has now abated, probably in the absence of any organised leadership.

II.4: Environment education and awareness

As a strategy, the CoB project had earmarked funds for this purpose. However, a weak leadership at the PA management level combined with bureaucratic red tape and lack of financial and managerial freedom at the PA level jeopardised the initial efforts at running an effective environment education and awareness programme. The distance between the staff and community could not be minimised during the project period, and in spite of the availability of funds for this purpose, an effective effort could not be made in this direction due to lack of proper direction and planning. Till the fourth year of the FREEP, the funds for training and NGO participation were lying unused with the PA management. The proposed inter-departmental cooperation could not become a reality in the absence of broader planning for biodiversity conservation of the park. Typically, the park staff tried to do everything that was mentioned in the project document. This provided very little space and flexibility for facilitation and synergic cooperation between the park staff and the local community.

II.4: Research and monitoring

The Great Himalayan National Park is one of the few national parks in India that has developed a good amount of database on aspects of flora, fauna and socio-economic aspects through a well-executed research programme (from 1994 to 1999) in collaboration with the Wildlife Institute of India, Dehradun. Research has significantly contributed in providing baseline information on the floral and faunal diversity, land use, historic development, socio-economic conditions, people's attitudes and perceptions. The GHNP is one among the few conservation areas in the country where different taxonomic groups were studied simultaneously. They included vertebrates (mammals, birds, reptiles and amphibians), invertebrates (insects, annelids and molluses) and plants (angiosperms, gymnosperms, pteridophytes, bryophytes and lichens). The research results from, 1994 to 1999, were published in a six-volume report titled 'An Ecological Study of the Conservation of Biodiversity and Biotic Pressures in the Great Himalayan National Park Conservation Area-An Ecodevelopment Approach'.

II.4.1: Long-Term Ecological Monitoring (LTEM)

Under the CoB Project, the Long-Term Ecological Monitoring (LTEM) prepared with the Wildlife Institute of India is a very important aspect of biodiversity conservation at the park. Collection of baseline data and field research has been successfully accomplished for developing integrated management strategies and ecodevelopment guidelines. In order to create information on biological diversity and socio-economic aspects, the use of

plots, quadrants and different types of transects is made. They are all similar in their nature, entailing different ways of defining a measured area to create a sample. Considering the vastness of the Great Himalayan National Park, existing trails in the park have been be used as transect lines in all four valleys. A system of experimental plots, about 1,000 of them so far, along these trails has been established which can easily be understood by the park staff and used for monitoring by both the park staff and the community.

GHNP is one of the few national parks in India that has developed a significant ecological and environmental database. A well-executed research program, in collaboration with the Wildlife Institute of India, Dehradun, has studied the flora, fauna, and socio-economic aspects of the park and its environs. The results were published in a detailed report (1994 to 1999). Research has significantly contributed in providing baseline information on the floral and faunal diversity, land use, historic development, socio-economic conditions, people's attitudes, and perceptions. The GHNP is one among the few conservation areas in the country where different taxonomic groups were studied simultaneously. They included vertebrates (mammals, birds, reptiles and amphibians), invertebrates (insects, annelids and molluses) and plants (angiosperms, gymnosperms, pteridophytes, bryophytes and lichens). The research results from, 1994 to 1999, were published in a six-volume report.

II.4.2: Need for New Research Initiatives

If the monitoring and evaluation of ecodevelopment alternatives and their effect on biodiversity conservation is to be effective, a thorough, ongoing understanding of the ecological processes within the major Park ecosystems is needed. A partnership between researchers and the Park management is also essential. GHNP plans to introduce and strengthen development of its computerized database. A Park level computerized biodiversity database (using Geographical Information System or GIS) needs to be set up.

Areas of potential and new, needed research include

a. Impact of global warming on the snow areas and glaciers in the park.
b. Impact of prevention of use of park's pastures, and other resources
c. Access to other potentially relevant databases (e.g., forest inventories, regional development, database of the Wildlife Institute of India, etc.)
d. Facilitation of interaction between database systems
e. Development of an electronic mail network which will connect the GHNP HQ with related conservation organisations.

II.5: THE POST-COB STRATEGY

II.5.1: Critique of the CoB Project

The World Bank, under the COB project at the GHNP, stopped all project financing on December 31, 1999, even though the CoB project at the Kalakkad Mundanthurai Tiger Reserve (KMTR) and the FREE project continued for another two years (extended period). However, a review of the CoB project at GHNP was conducted in the first quarter of 2002, i.e., two years after the stoppage of World Bank financing. The World

Bank prepared an Implementation Completion Report (ICR) for FREEP, which ended on December 31, 2001 with the following comments on the CoB project at the GHNP:

- "In the GHNP, achievement of project objectives during the project period was unsatisfactory when provision of bank financing ceased, due to difficulties over legal ruling that compromised the ecodevelopment program. However, during the post bank-financing period, some promising innovations have been established at GHNP."
- "At GHNP, the processes in formation of local level institutions and micro planning left much to be desired. There has been little or no impact on the ground from ecodevelopment investments. The 16 village committees formed during project period are defunct. However, in the post credit closure period, women's saving and credit groups have been established covering poor families and a Biodiversity Conservation Society is in place."
- "At GHNP, women's saving and credit groups have been successful. However, because project financed GHNP investments tended to be routine forestry works without imagination, without community involvement and without clearly targeted linkages to conservation, those ecodevelopment investments have not proved cost effective."
- "At GHNP, there is need for strategic communication to win over antagonists and gain the support of allies. In this context, some key activities would include: (i) continued capacity building of women's groups; (ii) successful demonstration of income generation activities on the ground; (iii) extension of coverage to other left out poor forest department communities; (iv) improved communication and relationship with wider range of stakeholders; and (v) closer and effective linkages with other government agencies to channel resources to the benefit of forest department communities. If such steps are undertaken, the likelihood of sustainability of GHNP could be marginally improved. However, national and state level policy and legal changes regarding the sustainable use of park resources by local communities may be needed if there is to be a viable incentive and regulatory framework over the long-term."
- "At GHNP, the performance of the implementing agency remained unsatisfactory for much of the project period. However, performance started to improve in the last year of the project prior to the government action on settlement of rights, and in 2000 and 2001, after project closure on December 31, 1999."

The CoB project ended at GHNP in December 1999. During the last year of this project the GHNP management commenced efforts to involve community participation (Chander 2001). Programmes focused on creating equitable and sustainable use of natural resources by local people. A major goal is developing new economic opportunities from biological resources that will increase land productivity as well as provide alternative livelihood sources. The innovative strategy in the post-CoB period was aimed at bringing about a change in the relationship between the natural resource base including the park Ecozone and the immediate and long-term livelihood needs of the local communities, from the present open access arrangement to an increasingly participatory mode of joint management involving all stakeholders. The idea was to effect conservation through

sustainable use rather than exploitation (Tandon 1997), through creation of a positive stake in conservation for the local communities.

II.6: Elements of the Post-COB Strategy: Gender concerns and community participation

II.6.1: Status of women in the hills

The hill society is highly patriarchal and encourages discrimination against women, so that among the poorest households, women are the most highly deprived. Their workload in the household is the highest, and includes working in agricultural fields, taking cattle for grazing, collecting fodder and fuel wood, fetching water, daily milking and care of cows and so on. The status and well-being of women is directly related to important village-level decisions like closure of areas, restrictions on grazing or collection of fodder and fuel wood, choice of tree, fodder and grass species to be planted, and location of and access to water bodies/ sources, all of which directly affect the work burden of women.

While women comprise almost half of the total population in the Ecozone, they are rarely a part of the decision-making process at the village level. The levels of literacy are very low in the Ecozone and still lower for the women. In the panchayat ward of Gara Parli, there is not even a single literate woman among a total female population of 175. It is often seen that in the Ecozone of the GHNP, the women of a poor household are the ones who take care of the major chores of the household, while they have hardly any say in the matters of the panchayat (local village council) or in village level programmes sponsored by the government agencies or NGOs.

II.6.2: New Interventions at GHNP: financing ecodevelopment through small savings of the women's groups

The women-centered intervention at GHNP began with efforts to organise poor women in small savings and credit groups through a micro-credit programme. For doing so, the PA management undertook a detailed capacity building and monitoring programme for 12 selected women's group organisers (GOs) from the buffer zone. The first training programme was held in January 1999. The following facts about this new mechanism of community participation deserve attention:

- Ability of communication, education qualification (at least high school pass), and trainability were some of the criteria based on which a GO was selected from within the Ecozone of the GHNP.
- A number of training sessions were organised to train the GOs in various aspects of community mobilisation, including poverty surveys in Ecozone villages and skills of group formation for organising women from poor households.
- For effective participation, the group size is kept small (about 10 to 15 poor women) and it is of homogenous nature (women with homogenous social and economic conditions).
- Such small groups of poor women are known as Women Saving and Credit Groups (WSCGs). A microcredit programme has been introduced to bring the poor women together to save a small amount (like one rupee a day). In extreme cases, the poor women were given daily wage opportunities in the medicinal plant

nurseries of the forest department, so that they are able to save money and contribute to the WSCG.

- The members of the WSCG choose one of their members as the animator, who facilitates record keeping and depositing of collected money in the nearest bank. The group members pay for the services of the animator.
- Each of the WSCGs is evolving into a production centre, where the group members discuss income generation activities to be undertaken. The group being small and members being very aware of each other's capabilities, it is easier for the group to decide which members will undertake different activities. The range of activities undertaken by these groups includes medicinal plant cultivation (in the buffer zone), vermicomposting, organic farming and handicraft making (see the details below), which to some extent will be able to compensate for the loss of their herb collection rights in the GHNP.
- The GOs and WSCGs have come together and organised themselves into a community-based organisation called SAHARA (Society for Scientific Advancement of Hill and Rural Area), which is a body registered under the Societies Registration Act, 1886, and provides ongoing support to the WSCGs in group formation, skill development and marketing of produce.
- Till the end of 2003, 95 WSCGs consisting of 1,050 members have been organised by SAHARA. The cumulative savings of these groups are more than Rs. 5,30,000.

II.6.3: Income generation activities currently undertaken by the WSCGs

- **Vermicomposting:** About 800 vermicomposting sites have been established by the WSCGs and, at present, 7 to 9 tonnes of vermicompost is being produced each month. The development of a vermicompost site requires an investment of only Rs. 1,200, which is affordable for almost all poor members of the WSCGs through internal credit within the group. The GHNP had so far been a ready buyer of the vermicompost for its nurseries. However, now the women are attempting to market vermicompost in the open market.
- **Organic Farming:** Vermicomposting is in fact the first step towards organic farming. The WSCGs are now using the surplus vermicompost to manure their agricultural fields. Already there is a substantial reduction in the use of chemical fertilisers and pesticides in the Ecozone; and long-term use of this organic manure is expected to produce high quality fruits, vegetables and cereals.
- **Medicinal Plant Cultivation:** During 1990-2000, the PA management established 10 major nurseries for cultivation of medicinal plants. Mainly high value species such as Karoo (*Picrorhiza kurrooa*), Patish (*Aconitum* spp), and Hathpanja (*Dactyloriza sp.*) are grown here. The park management is encouraging the WSCGs and erstwhile herb collectors from the local community to take up medicinal herb cultivation in the Ecozone of the park. Under the Participatory Forest Management Rules (2001) of Himachal Pradesh, the park is providing forest land for medicinal plant cultivation to these groups. A WSCG or any other group can enter into a contract with the

park to propagate medicinal plants on the already enclosed forest land. About 22,500 plants are planted on a hectare of land, which is estimated to make medicinal plant cultivation commercially viable. It has been decided that the entire produce from these Medicinal Plant Propagation Areas (MPPAs) will go to the community groups.

- **Stone Oil Extraction:** Earlier, local traders were buying fruit such as hill apricots, walnuts and almonds at a cheap rate from the rural poor, but now the WSCGs are providing credit to their members to buy seeds of these fruits and process these to produce oil. The park management is helping in marketing of oil through the local NGO SAHARA.
- **Handicrafts/Souvenirs:** Training workshops are being organised with the help of SAHARA for WSCGs to make hemp or grass based handicrafts/souvenirs. The GHNP has organised sale of such material through two departmental shops as well as in various local fairs and exhibitions.
- **Wage Labour:** The GHNP gives priority to WSCGs for working as wage labour in its ten medicinal plant nurseries, as well as in PA related construction work and repairs. This further encourages savings by the women in their groups.
- **Ecotourism:** This activity is now getting organised in the area, targeting the spouses of WSCG members. These men are being organised into an ecotourism group to work as guides, cooks, camp organisers and porters. Ecotourism activity in 2000 generated revenues of Rs. 5,50,000 in the WSCGs of GHNP.
- **Street Theater:** Twelve boys and girls from the local community have come together to form a street theatre based on local folk music. This group earns daily wages from the HP Forest Department for giving regular shows on nature awareness in the villages close to the park and forest areas.

SECTION III: SUSTAINABILITY

III.1: Ecological sustainability

A combination of law enforcement and community participation through ecodevelopment has had many visible effects on conservation of the physical environment at GHNP. As a result of improved protection, medicinal plants like *Aconitum spp., Jurinea macrocephala*, *Picrorhiza kurroo, Dactylorhiza heterozerea* can be seen growing profusely in the PA. At the same time, plant species like Anemone and Rumex are growing in very large numbers, like weeds, in meadows like Dhel, which were under heavy grazing pressure prior to 1999. Thus, one can conclude that new ecological succession processes have started in meadows and pastures as a result of stoppage of grazing, which in turn has occurred directly as an impact of ecodevelopment. A Long-Term Ecological Monitoring programme has been put in place to measure these changes over a longer duration.

III.2: Institutional sustainability

The PA management is now attempting to dovetail members from the WSCGs of women from poor and PA dependent households with the village forest development Society (VFDS) at the panchayat ward level, which is also a forum for developing a ward level microplan. If successful, this effort will ensure that members of WSCGs are able to raise their voice and integrate their concerns into the microplan. Such an initiative is bringing more confidence among the group members and, in turn, improving prospects of social and political empowerment of the women and their households. This matter being very delicate, the park management and SAHARA have been organising trainings on various aspects of functioning of the VFDS and the role of sub-village level institutions in this process.

The Participatory Forest Management (PFM) rules, 2001 of the Himachal Pradesh government provide for organising user groups (such as WSCGs) at the ward level, and require that such user groups be federated into a VFDS. These rules also provide that all voters (that is, all adults above 18 years of age in that ward) are members of the VFDS. The executive committee of the VFDS provides for 50% representation of women. Each WSCG being a user group, their federation into VFDS at the ward level is likely to integrate the VFDS directly and organically into the panchayati raj system. In November 2000, in GHNP, 16 women members of scheduled caste groups, including animators, contested the panchayat elections and out of these, 7 were elected as members of the panchayat (representing a panchayat ward) or even as panchayat president. It is also significant that this is the first time that sustainable village/ hamlet level organisations in the hills of Kullu have emerged, through the interventions of the PA management at GHNP.

Mechanisms are now being developed so that the WSCGs strengthen a village council (panchayat) from within. All the WSCGs are now being developed on the ward-basis (about five or six wards constitute a panchayat). This programme is expected to address the issues of sustainability through its inherent strength of empowerment of women within the hill society. In the long run, such WSCGs are going to be sustainable and will be able to contribute to the conservation of the biodiversity of the park.

III.3: Financial Sustainability

III.3.1: Financial sustainability of WSCGs

The WSCGs in the Ecozone of GHNP were set up to enhance the asset building capability of women from poor households so that the dependence of such households on the natural resources of the park is reduced. So far, about 1,000 women of poor households have been organised in 95 WSCGs, which have an accumulated savings of Rs.5,50,000. With these savings, they have done business worth Rs.25,00,000. The members of WSCGs show a remarkable discipline in recovery of loans from within the group members. However, they need a continuous input in matters such as new methods of asset building, marketing of their produce, distribution of benefits within the group, etc.

By far the weakest link in the WSCG model as promoted in GHNP is the internal dynamics within these groups. The selection of women within a group has been made more on the basis of expediency (the poorest women, the women who exert maximum pressure on the PA) than factors like affinity and mutual trust, and the most serious consequence of this is that even groups that have managed to save large amounts of money are wary about lending this money within the group. This shows a mutual lack of trust and confidence among the group members, as a result of which most groups do not have members taking loans for starting income-generating activities. Thus, the link between savings and ultimate livelihood security is still tenuous in GHNP, and until this can be remedied through realignment of groups / further training and capacity building of group members, the financial sustainability of the groups cannot be guaranteed.

III.3.2: Marketing (locally, outside), quality control and packaging issues: financial sustainability of IGAs

The PA management has intervened actively in the formation, training, capacity building and follow up support (quality control, marketing) of the women's savings and credit groups (WSCGs), and has also played a major role in promoting a support organisation called SAHARA to help the fledgling WSCGs in all aspects of their functioning. For the income-generating activities (IGAs) taken up by the WSCGs, the PA management provides marketing support through its sales outlets in HP as well as Delhi. *However, at this juncture, continuation of handholding support is critical for firming up marketing and quality control, which are crucial to maintaining markets already captured for IGA products by SAHARA.*

III.3.3: Sustainability of WSCGs and VFDS through linkage with markets / state agencies

The PA management believes that the process of linking WSCGs to the formal banking system should be encouraged only after the WSCGs have been strengthened up to a level where they can handle external funds in a responsible manner. Concrete indicators need to be worked out for monitoring and evaluation of the WSCGs, as well as identification of further capacity building needs, so that the WSCGs can move towards such bank linkages over time.

For the village level institutions like the VFDS, sustainability concerns are being addressed through attempts at linking these institutions with the Panchayati Raj system, to ensure that their micro-plans get funded through regular state schemes and are not dependent on project funds from the PA management.

III.3.4: Adequacy and timeliness of fund flow from the state

As is apparent from the GHNP Management Plan (2004-09), the PA management views biodiversity conservation from the perspective of many stakeholders, and not merely from a forester or wildlifer's perspective. The plan addresses sustainability issues through strengthening and broadbasing the institutional framework at the PA level. However, to implement such a plan, it is very essential that fund flow to the PA is adequate and timely. The commitment of the state government in this regard is very important. To ensure long-term participation of the villagers in natural resource conservation, it is important that the microplan prepared by the community and the PA staff receives timely

finance, otherwise interest of the local community in such an exercise starts waning. This has been the experience in GHNP during the CoB Project, when fund flow was inadequate and untimely, and this was one of the factors resulting in non-functioning of the EDCs.

III.4: Social sustainability

III.4.1: Awareness

At GHNP, the WSCGs are the hub around which all awareness activities (material, political, spiritual, economic and information related to government schemes) have been discussed, planned and implemented in the post-CoB period. Regular WSCG meetings held twice every month address these issues in detail.

Recently, encouraged by the WSCGs and their income generation activities, the panchayats of the ecozone of the PA came together and formed a group called the "Jujurana Jive" (translated as "long live the Western Tragopan"), in which the respective panchayat *pradhans* (chief of the panchayat) have identified three men and three women from each panchayat to take an active role in wildlife protection. The group is quite enthusiastic, and says that it will not only keep an eye on villagers and poachers, but also on the activities of the PA staff.

III.4.2: Gender and equity concerns

Choice and voice to local women: In most of the WSCGs, rates of literacy are abysmally low and there is a perpetual lack of medical facilities. There is also a lack of veterinary care for the cattle in these groups as well as in the villages where they live. Hence, it is important that WSCGs become active centres for propagation of literacy programmes, women and child health care, and veterinary programmes. Through income generation activities, the WSCGs are making "choices" (or decisions) about spending their savings in more productive manner, which is bringing financial stability, while the activities/services such as literacy programme, women and child healthcare, and veterinary care will be able to bring changes in the social status of the poor women members of the WSCGs. This, in turn is expected to make the poor women's "voice" heard at the village political forum such as Panchayats/Mahila Mandals, etc.

A hallmark of the post-CoB ecodevelopment interventions at GHNP is that for the first time, women as a critical constituency affecting conservation have been recognised and brought to the forefront of the official efforts at participatory conservation. As a result of continuous engagement with and efforts at merging livelihood concerns of poor women with conservation concerns of the PA management, local women have the ability to make autonomous economic decisions, and affect village level decision-making to reflect their specific problems and requirements. This creation of "choice" and "voice" for women from poor households is a unique feature of the GHNP experience.

Reduction in drudgery for women: Another important result from the ecodevelopment experience in GHNP has been that once women have been organised and given "choice" and "voice", they are empowered to make decisions that improve their quality of life,

even if this comes with a financial cost. For isntance, the distribution of LPG units and pressure cookers among members of the WSCGs has reduced the drudgery involved in wood fuel based cooking. As a result, the women put aside voluntarily the money required for refilling gas cylinders, since the cost is defrayed by benefits in terms of ease of cleaning utensils, cleaner kitchen environment and reduced cooking time.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Impact of ecodevelopment during the FREEP and COB period

The ecodevelopment interventions made during FREEP were designed on conventional lines, with the forest department staff playing the main role in forming village ecodevelopment committees (VEDCs) and preparation of microplans for these VEDCs. The main activities undertaken under these microplans were of an entry point or rapport-building nature, but there was very little correlation between these activities and conservation of the PA or mitigation of main threats to the PA. At best, they led to some reduction in hostilities between the community and the PA management, but the viability of these initiatives and the chances of using these as a platform for involving the community in conservation of the PA were under question from the start. Interventions in the area of environment awareness and research and monitoring were also not very imaginative during FREEP, and all this is documented revealingly in the assessment of FREEP conducted by the Bank in 1999. The usual problems of fund flow and general lack of support from the state government also contributed to the lacklustre achievements during FREEP.

IV.2: Impact of ecodevelopment in the post-COB period

1. In view of this, the current initiatives in GHNP are remarkable, because the existing constraints are the same, or perhaps even worse, because of low fund availability after FREEP. However, proper identification of threats and innovative solutions to these threats has been the hallmark of the post-FREEP strategy.
2. Livelihood concerns have been interwoven comprehensively into the conservation agenda at GHNP in the post-FREEP period, by fostering women's savings and credit groups as the instrument for income-generating activities, with focus on women from poor and forest-dependent households. This approach, in theory, combines the advantages of participatory conservation with effective empowerment and poverty alleviation, and also makes for long-run sustainability, both institutional and financial. Given the scattered nature of dwellings in the hills, working through a large unit like the VEDC was problematic, and in any case, experiences in community mobilisation from across the country have now established the superiority of initially working through small groups, preferably of women.
3. The PA management has tried to use the WSCGs to convert the main threat to the PA (**medicinal plants collection** by the poor) into a viable income-generating activity, by promoting cultivation in place of collection from the PA, and putting in place a system of support for this. However, at the present jucture, this activity requires continued inputs from the park management as well as from external experts in areas

like production techniques, methods of collection and processing, and strengthening of marketing opportunities.

4. Introduction of **LPG units** has been one of the successes of GHNP, as hill women have taken to it very well as a drudgery-reducing measure, and seem to have used the time saved at fuel wood collection to go in for weaving and knitting to augment the household income. The positive impact of adoption of LPG on the habitat is of course beyond doubt significant.
5. Another important initiative in GHNP that has managed to combine conservation and livelihood concerns quite effectively is the promotion of **ecotourism** with male members of the households covered under WSCGs. Support provided to ecotourism by the PA management throught the aegis of SAHARA has resulted in generation of productive employment for the local men as porters, cooks and guides, but once again, at the present juncture, continuation of this support is critical to take this intervention to a level of self-sufficiency.
6. The PA management has fostered some **innovative institutions** like SAHARA, the Biodiversity Conservation Society (BioDCS) and Friends of GHNP (FoGHNP) to facilitate the ongoing interventions. These have assisted in easing fund flow constraints (BioDCS), providing support to the WSCGs (SAHARA) and garnering international support for the cause of wildlife conservation in GHNP (FoGHNP).

Table: Schematic depiction of impact of ecodevelopment with reference to main threats

Main Threats	ED Activities Undertaken	Impact on PA
Collection of medicinal plants	Enhanced PA patrolling, along with cultivation of medicinal plants near the village through WSCGs, supported by the PA management through wages, saplings and technical assistance	Reduced collection of medicinal plants: As compared to 4,000 to 6,000 herb collectors entering the PA before the initiation of ecodevelopment, there is virtually no herb collection now. Only a few stray cases of medicinal plant theft have been reported from the PA after 1999.
Collection of fuel wood	Distribution of LPG units and pressure cookers to WSCG members	Reduced firewood collection: Interviews with women from the households affected indicate that the need to go to the forest for fuel collection has come down from 3 visits to 2 visits daily.
Grazing of cattle	Settlement of rights in ecozone villages as per the Anderson Report; more intensive patrolling of the PA to prevent illegal grazing	Reduced forays by ecozone villagers into the PA: Although there has been a lot of resistance to the new rules, shepherds have respected these, and many of them have sold their sheep in the local markets
"Guchhi" collection by poor women	Formation of women's groups and alternative IGAs; better policing of the PA; promotion of collection from ecozone, and enhanced returns due to assistance through SAHARA for sale in Delhi	Improved wildlife density: The survival rate of Monal pheasants has improved dramatically, and a higher density per square km has been observed due to lower disturbance during the egg-hatching phase

IV.3: CONCERNS

Will economic well-being alone contribute to improved conservation?

The user group approach with a thrust on income generation activities may by itself be not enough for the conservation of biodiversity of the GHNPCU. By themselves, economic incentives are usually inadequate and unsustainable, and the work on alternate income generation around GHNPCU needs to be supported with other measures that promote participation of communities in aspects of resource management. Hence, these alternate income generation interventions have to be supported with a range of other measures and incentives besides economic incentives including effective policy and legislation, tenure security, empowerment, collaborative management, etc.

However, the user group approach will facilitate the poor and women to become a part of the decision-making process. The economic uplifting of local communities may prepare

the basis for developing a common understanding on the issues of participatory management of biological diversity, its importance to villagers and to the outside world, and identification and protection of biodiversity hot spots. The user groups can be developed into centres of discussion on these aspects, and this ultimately will lead to formation of a common vision for biodiversity conservation among the community members, the government and non-government organisations.

CHAPTER 10[21]

KANHA TIGER RESERVE

SECTION I: INTRODUCTION AND BACKGROUND

I.1: Location and Extent

The Kanha Tiger Reserve in the Maikal Hills of the Central Indian Highlands is located between longitudes 80° 26' 10" - 81° 04' 40" and latitudes 22° 01' 05"- 22° 27' 48" in Mandla and Balaghat districts of Madhya Pradesh. The tiger reserve comprises two conservation entities, namely the Kanha National Park (Core Zone) and the Buffer Zone (Multiple Use Area). Besides, there is also a Satellite Micro Core, the Phen Wildlife Sanctuary of 110 sq. km., under the administration of the Kanha Tiger Reserve.

I.2: Legal History

The establishment of state control over the forests of Kanha dates back to the last part of the nineteenth century, when the Banjar Valley, which forms the western segment of the Kanha National park and the Halon valley, the eastern segment of the National park were notified as reserved forests. In 1933, about 233 sq. km of the Banjar reserved forest and 500 sq. km of the Halon reserved forest were declared Wildlife Sanctuaries. However, in 1942, the Halon valley was de-notified to minimise the grazing pressure of chital on sal regeneration. In 1943, the area of the Banjar Valley Sanctuary was reduced to 134 sq. km. This sanctuary (now called Kanha) was notified as a National Park in June 1955 under the Madhya Pradesh National Parks Act (VII of 1955). Subsequently, in 1964 and in 1970, the area of the National Park was extended through 446 sq. km. In 1974, the Supkhar area was declared a Sanctuary and in 1976, this sanctuary was merged with the National Park, enlarging its area to 940 sq. km vide notification No. 15-13-76-X (2) dated 29 September 1976. The boundaries of the National Park have been clearly demarcated on the ground by using cement pillars, masonry pillars and boundary lines of the Reserve Forest blocks.

Kanha National Park was declared a "Tiger Reserve" under the Project Tiger in 1973. Subsequently, a buffer zone was demarcated. This zone was spread over four territorial divisions and comprises forestland, revenue land as well as orange areas (Undemarcated Protected Areas). In 1995, however, the buffer zone was declared as a separate division under the unified control of the Conservator of Forests and Field Director, Kanha Tiger Reserve, and its boundaries were duly notified vide notification F-14-46-92-X (2), dated 10 January 1995 and No. F-14-46-92-X (2), dated 4 July 1995.

With the formation of Chhattisgarh and the transfer of Chilpi Range to Chhattisgarh in year 2000, the boundaries of the buffer zone were revised. The final notification of these boundaries is under submission with the Government of India. It has to be made clear that whereas the entire National Park of Reserved Forest is a wildlife protected area, the

[21] K. Naik, Director; Aseem Shrivastava, Deputy Director (Buffer Division); Dr. R.K. Shukla, Research officer, Kanha TR.

buffer zone has no such status, and it is a mosaic of Reserved Forest, Protected Forest, private land and orange area (undemarcated Protected Forest)

1.3 Cultural values and demography

There are 18 forest villages in the National Park, and 29 forest and 121 revenue villages in the buffer zone division.

I.4: Biodiversity Values

As a result of over seven decades of conservation efforts in Kanha, the Tiger Reserve today boasts 10 diverse habitat types that support a wide range of Central Indian fauna, including an endemic population of the hard ground barasingha (Cervus duvauceli branderi). More than 43 species of mammals, 300 species of birds, and 609 floral species, including 50 species of aquatic plants and 18 species of rare plants are found in the Tiger Reserve. The International Union for Conservation of Nature and Natural Resources (IUCN) has prepared an important Red List of plant and animal species under various categories of threat all over the world. Some of the species found in the Tiger Reserve also feature in the IUCN Red List and include *Cuon alpinus*, *Vulpes bengalensis*, *Melursus ursinus, Bos gaurus, Panthera pardus, Panthera tigris* and *Lutra perspicillata.* The flagship species, the tiger, has increased from 48 in 1976, to 128 in 2002.

I.5: Main Threats

Like all Protected Areas, the Kanha Tiger Reserve is also subject to a number of internal as well as external threats that have been summarised as under:

- Biotic pressure of the villages in the buffer zone
- Interface problems fostering grudge against the Tiger Reserve management in the minds of the local people
- Lack of adequate grazing/ forest areas for nistar (bonafide use) in the buffer
- Frequent crop raiding by ungulates
- Contamination of peripheral water points by village livestock with risks of disease transmission
- Presence of the Mukki - Supkhar highway
- Tiger Reserve makes border with the newly formed state of Chhattisgarh
- Traditional footpaths through the Tiger Reserve
- Manmade fires during summer owing to MFP collection
- Lack of MFP like Mahul climbers, tendu in the peripheral areas luring villagers to the core area
- Proximity to cities like Nainpur, Gondia, Nagpur, Katni and Jabalpur, increasing the risk of wildlife related crimes
- Proximity of Hindustan Copper Limited (around 10 km from the buffer)
- Self-styled social activities inciting the locals against Tiger Reserve management
- Extremist engineered disturbances in the adjoining district

I.6: Rationale for and objectives of ecodevelopment in Kanha

As the focus on conservation in Kanha increased in the twentieth century, the rights and concessions of the local population were gradually curtailed. Consequently, the local communities found, to their dismay, that they no longer enjoyed the free and wanton access to forest resources. The ecodevelopment efforts in Kanha are based on the conviction that effective conservation can result only if the needs of the local communities are adequately met and they are involved in the protection efforts. The thrust of the activities is, therefore, on the "human aspects" of conservation.

History of Ecodevelopment in Kanha

The village relocation programme in the National Park began with the shifting of the Sonf village in 1969-70. This programme continued till a few years back when the Kanha village was relocated outside the National Park in 1997-98. Initially, this relocation programme was neither sufficiently funded nor properly chalked out, and resulted in the sub-optimal, and in some cases, very inadequate settlement of villages. Most of the villages were provided only very basic amenities relating to drinking water, irrigation, and some agriculture improvement works. Understandably, the relocated people felt embittered and resentful towards wildlife conservation in general and the Park Management in particular. Later, towards the end of the 1980s, ecodevelopment activities started at the relocated sites and forest villages, which were inside the National Park. At that time, the current buffer zone division was not under the control of the Conservator & Field Director, Kanha Tiger Reserve, and was part of several territorial divisions. When the buffer zone was brought under the unified control of the Tiger Reserve Management, ecodevelopment activities were also extended to the villages of this division.

Specifically, the objectives of ecodevelopment are:

- To ameliorate the hardships faced by the villagers living in and around Kanha National Park, due to the curtailment of their access to grazing, collection of fuelwood, fodder, bamboo, MFP and the like, with a view to reducing their dependence on the protected area
- Planning for resource substitution
- Socio-economic upliftment of the target population
- Involving local communities in conservation by adopting a “people friendly” system of management, so as to elicit public support for conservation
- Creating organised communities at the village level, and assuring benefits and rights to usufruct by developing viable partnerships with the village communities, subject to successful protection and conditions laid by the park management
- Developing micro-institutional and technical functions in the community management organisations, so as to make them self-sustaining in the long run with minimum dependence on the Park Management
- Formulation of utilisation rules and their enforcement, so that the contemplated welfare actions are not nipped in their infancy

As has been mentioned, ecodevelopment forms an integral part of the Buffer Management objectives, for it is this Zone that is expected to absorb the biotic pressures and insulate the core from the same. Such "Social buffering" is expected to support "Extension buffering" that involves providing a habitat for the spillover population of wildlife. It is pertinent to note here that while ecodevelopment is part of the Buffer Management Objectives, its activities are not restricted only to the 150 Buffer villages but are also carried out in the 18 forest villages of the Core. There is no difference in the objectives and approach to ecodevelopment between the Core and the Buffer. After all, 16 forest villages lie on the periphery of the Core Zone, whereas only two are located a little inside the boundary of the Core. If the boundary of the National Park is realigned, most of these forest villages will fall in the Buffer Zone. An effort to do the same has already been initiated.

Village Prioritisation for Ecodevelopment

Kanha Tiger Reserve has a fluctuating resource inflow for ecodevelopment. The limited fund availability as well as the uncertainty regarding future resource availability necessitated a conservative approach to ecodevelopment planning in Kanha as well as a prioritisation of villages for providing inputs. This prioritisation is based on three-fold criteria:

1. The primary focus of ecodevelopment is on the relocated forest villages. These 27 villages on 26 sites have faced the maximum hardship on account of the Park and are completely dependent on the same for development. Of the 27 relocated villages, eight have been resettled in the National Park, whereas 11 in the Buffer Zone and 7 outside the Buffer, in the east and west Mandla, and north Balaghat Territorial Divisions. The Management feels that it is necessary to mitigate their "heartburn". Hence some activity, no matter how small, is carried out in all these, every year to engage them in an interaction
2. Next in priority are the other forest villages (18 in the National Park and 29 in the Buffer), for the onus of their development lies with the Tiger Reserve Management. The inputs in these villages are based on need and resource availability. Interventions may or may not be carried out each year
3. The Revenue Villages (121) in the buffer zone are less dependent on the Park for developmental activities, and their socio-economic status is better than that of the forest villages. Though they receive developmental support from other government programmes, they have to face a lot of hardship on account of human-animal conflict and restricted resource use. Therefore, ecodevelopment is necessary.

While the ecodevelopment objectives, approach and activities in the Buffer and Core are the same, the nature of benefits are different because resource sharing with the core villages is not legally permissible, since they fall in the area of the National Park.

SECTION II: PA MANAGEMENT AND ECODEVELOPMENT ACTIVITIES

II.1: PA Management Activities

In the Kanha Tiger Reserve, there are 135 Ecodevelopment Committees (EDCs) that have been constituted in 130 villages. Since almost 90 per cent of the ecodevelopment inputs are concentrated in the buffer zone, where the focus is on "human development", the nature of inputs to these committees often seems to be along the lines of rural development with conservation objectives.

The PA Management initiatives under the ecodevelopment programme are mainly of the following types:

1. Rehabilitation and protection of degraded forests, as well as increasing the productivity of the forests to meet the fuel, fodder, timber and minor forest produce demands of the local communities
2. Continuity of amicable relationships and dialogues with the local community
3. Prevention of antagonistic attitude towards the Tiger Reserve Management
4. Provision of potable water
5. Replenishment of bio-resources for the target people
6. Rehabilitation of degraded forestlands by raising adequate forest crops
7. Raising bamboo and fuelwood plantation
8. Land levelling and bunding in agricultural land
9. Irrigation facilities for agriculture
10. Distribution of seedlings
11. Soft loans for self-employment activities through EDCs
12. Off farm income generation activities
13. Alternative energy resources
14. Soil and moisture conservation works
15. Encouragement to substitute fuelwood consumption with biogas
16. Construction/ Introduction of the Aanganbadis (nursery/ preparatory schools)
17. Introduction of solar lights
18. Involvement of committees in fire control, and in elimination of deliberate fires

II.2: Village Ecodevelopment

The thrust of the ecodevelopment inputs is essentially on village development. The activities that are carried out for the same may be classified into following types, on the basis of the purpose that they serve:

II.2.1: Community Development: The Management has undertaken several committee development initiatives under its ecodevelopment programme to help the communities come into the national mainstream through good linkages to the urban areas, literacy initiatives and other social infrastructure such as under:

1. Approach roads

2. School buildings
3. Wells
4. Street lights
5. Water tanks
6. Community hall

II.2.2: Enhancement of Food Production

In the Buffer Division alone, there are around 17,000 families completely dependent on agriculture for sustenance. These local communities raise a single rain-fed wheat crop. Owing to the poor quality of land, paucity of water and inadequate inputs, the yields are insufficient to meet their food requirements. The communities have no alternative but to depend on the forests for sustenance and livelihood. In view of the above, the following initiatives have been taken:

1. Irrigation facilities
2. Land levelling and bunding
3. Raising fruit-bearing plants
4. Distribution of improved variety seeds
5. Pisciculture
6. Provision of loans (seeds, bullocks, agricultural equipment, etc.)

II.2.3: Economic Upliftment

As stated above, the majority of the population living in the Tiger Reserve belongs to the Gond and Baiga tribes, dependent solely upon marginal agriculture, forest resources and petty occupations of daily wages. The Reserve Management ensures that the target population is benefited economically through the Ecodevelopment Support Fund, which not only finances village development works but also the loans. Economic opportunity is also generated through their involvement in ecotourism, as route guides, drivers and facilitators. Besides, the Management also ensures to provide loans for several self-employment activities such as small hotels and tailoring, betel, poultry, grocery, and cycle shops, rope making, carpentry, etc.

II.2.4: Employment Through Conservation Activities

As the broad goals and objectives of the Tiger Reserve necessitate a wide range of conservation/ development practices in the National Park and the Buffer, it harbours tremendous scope for employment generation. Consequently, works of almost 1,300 man-days are generated daily with at least 400 persons benefiting from daily employment throughout the year. Thus, the protection of the National Park, which requires a large number of game watchers from the local communities, may also be regarded as a by product of the ecodevelopment programme, helping them earn their livelihood.

II.2.5: Immunisation of Cattle

The Management has also undertaken cattle immunisation programme in the target villages resulting in the achievement of the twin objectives of preventing wild ungulates from various diseases such as Anthrax, FMD, HS and BQ, and also immunising the

village livestock against the same. The target villages have welcomed this initiative wholeheartedly, and last year around 50,000 cattle were vaccinated in 125 villages.

II.2.6: Fodder Improvement

This programme has also been undertaken by the Park Management in target villages to compensate for degraded grazing grounds. Fodder improvement activities include amelioration of grazing lands, planting of fodder species and enclosure of promising areas for recuperation.

II.2.7: Health Camps

Besides the prevalence of malaria in the villages, the people also suffer from malnutrition and water bone diseases. The Management ensures to arrange several health camps every year so that the sick may undergo thorough check-up and receive adequate treatment from the visiting physicians.

II.3: Environment Education and Awareness

The Park Management ensures that people of the surrounding villages and districts also become aware of the importance of wildlife and biodiversity conservation and wildlife protected areas, and lend their wholehearted support. This is achieved through periodic celebration at school and college levels, mobile film shows, and circulation of pamphlets.

SECTION III: SUSTAINABILITY

III.1: Ecological Sustainability

Kanha, as a protected area with very high biodiversity value, is surrounded by a socio-economically disadvantaged population that does not understand the global concerns of conservation. The Management realises that the protection of the Tiger Reserve has to be encouraged as a part of ecodevelopment. Management practices in Kanha for ecological sustainability can be discussed as under:

III.1.1: Environmental Education and Awareness: The Park Management ensures that people of the surrounding villages and districts also become aware of the importance of wildlife and biodiversity conservation and wildlife protected areas, and lend their wholehearted support. In view of the above, Wildlife Conservation Week is celebrated in the first week of October by the Park Management, involving hundreds of school and college level students in many types of competition. The message of conservation is also conveyed to the local inhabitants by convening local workshops and group discussions, apart from the distribution of pamphlets.

III.1.2: Relations with Other Departments: Generally, relations with District & Police Administration and other departments are cordial. The Management also realises that this mutuality is in the best interest of the conservation of wildlife protected area. As far as court cases relating to forest and wildlife offences are concerned, the progress is rather slow.

III.1.3: Grazing Lands for Cattle: There are many villages that lack grazing lands for their livestock, and this unavailability of grazing expanses lead to them exerting pressure on the periphery of, and making inroads into, the National Park. In spite of tremendous pressure, grasses are made available only to a limited extent.

III.1.4: Barasingha Conservation: The resurrection of the hard ground barasingha, endemic to the Tiger Reserve, and its habitat is a very good testimony to the ecological sustainability of the protected area.

III.1.5: Employment Generation: Conservation activities in the National Park and Buffer can also be regarded as by products of ecodevelopment, under which a total of around 1,300 man-days are generated everyday. At least 1,300 members are restricted indirectly from entering to forest for livelihood.

III.1.6: Wildlife and Fire Protection: Instances of intrusion into the National Park and other petty wildlife offences have minimised considerably over the years. Besides, only small percentage of the total area of the Tiger Reserve gets burnt by manmade fires. Generally, people are cooperative in the prevention/ investigation of wildlife crimes and in fire protection. Rather, these limited fires help wildlife habitats in promoting edge effect and vegetative regression.

III.1.7: Alternative Energy Sources: Though the management has made tremendous efforts in getting the people interested in gobar-gas plants, the result is far from satisfactory.

III.1.8: Changing the Mindset: Every year rallies of school children are organised in the target villages to create awareness about the protection of invaluable forests and wildlife from fire hazards. Discussions with the influential people of the villages are also held periodically to take their cooperation in the drive against forest and wildlife crimes.

III.1.9: Rewards for the EDCs: The Management has also ensured that EDCs which have performed excellently should be adequately rewarded to boost their morale and repeat the same performance in future. Some of the rewarded EDCs are Patpara, Pandrapani, Narna, Chatuakhar and Aamatola.

III.1.10: Awareness of Wildlife Conservation: The Wildlife Conservation Week is celebrated in the first week of October by the Park Management, involving hundreds of school and college level students in many types of competition. The message of conservation is also conveyed to the local inhabitants by convening local workshops and group discussions, apart from the distribution of pamphlets.

III.1.11: Study Tour: Realising that study tours within the Tiger Reserve and outside are essential for inspiration and better performance, several EDCs from the Reserve have also been sent on study tours.

III.2: Institutional Sustainability

This can be discussed as under:

III.2.1: Constitution of Ecodevelopment Committee: The Management has constituted 135 micro-institutions known as Ecodevelopment Committees in 130 villages. Elected members of the respective villages represent each of these. Besides, a local staff member of the Tiger Reserve also plays a role in the EDCs as a representative and coordinator. Under the technical guidance of the Management and as per site-specific micro plans these committees are responsible for implementing ecodevelopment initiatives in the respective villages.

III.2.2: Foolproof Procedure of Transactions: The Management has, since the very beginning of this concept, adopted a reliable mechanism of transactions, ensuring total transparency and mutual trust. This has further cemented the ties with the EDCs.

III.2.3: Special Auditing Procedure: The Management ensures that the cash accounts of these EDCs are audited internally as well as externally. The officers/ accountants of the Reserve conduct internal audits along the traditional guidelines, while a trained Charted Accountant is hired every year for external auditing. This procedure ensures financial discipline as well as clear accountability.

III.2.4: Reciprocal Commitment: The Management ensures that the beneficiaries of the socio-economic development works in the Tiger Reserve also commit themselves, in writing, to the conservation objectives of the Reserve, such as help in prevention of wildlife crimes and fire protection.

III.2.5: Continuous Interactions: The Management also ensures that periodic meetings of the EDC members along with other villagers are held to cement mutual bonds, strengthen reciprocity and trust. In addition to the discussions on routine ecodevelopment initiatives, they are also inspired and encouraged to discard the many social evils degrading the society.

III.3: Financial Sustainability

Some important features of financial sustainability are as under:

III.3.1: Support Funds for the EDCs: Besides the regular allocations received from the GOI and MP government for the ecodevelopment programme, most of the EDCs have been provided with a support fund from the Management. These deposits have been provided from the allocations received from MP Forestry Project and the Kanha Vikas Nidhi for financial sustainability of these micro-institutions.

III.3.2: Involvement of the EDCs: The Management ensures the maximum involvement of the respective EDCs in the ecodevelopment programme. In this way, most of the works, including monsoon patrolling and fire protection, are carried out by the EDCs under the technical supervision of field staff. The money saved in these works automatically goes to the account of the respective EDCs.

III.3.3: Ecodevelopment from Vikas Nidhi: The fund, created to ensure cycling of gate and tariff receipts for the development of tourism infrastructure in the National Park, is also spent generously on ecodevelopment.

III.3.4: Sectoral Integration: The Management also realise the importance of sectoral integration, which is an important prerequisite in the ecodevelopment programme of the Tiger Reserve for soliciting funds available at the district level to execute the interventions proposed in the site-specific micro plans. This would also facilitate the integration of activities relating to various other departments, thereby making the programme holistic in the true sense.

SECTION IV: SUCCESSES, FAILURES, ISSUES AND CONSTRAINTS

IV.1: Successes:

IV.1.1: Beneficial Impact on the PA

Ecodevelopment at Kanha has been continuing for more than a decade, with site-specific inputs based on participatory micro planning being provided in both, the Core and the Buffer Villages. These efforts have resulted in a mix of successes and a few failures, both of which serve as learning blocks for future endeavours. Ecodevelopment can be regarded as a people's programme without whose proactive approaches, regular consultations with the Management and participation this can never become successful. Fortunately, in the case of Kanha, the Management has received almost a euphoric response from many villages. The Management is also confident that when the other, hitherto resistant and unforthcoming villages, witness the fruits reaped from ecodevelopment by the already involved villages, they shall also welcome these initiatives.

The village Sarekha is situated on the periphery of the Kanha National Park. The Village ecodevelopment committee was formed here in 2000, among much scepticism. At that time, the chief requirement of the village was that of a school building that could house the classes for its 250 students. The estimated cost for such a building was about Rs 3.5 lakh. However, the resource availability with the Park allowed an investment of only Rs 2.36 lakh. In this situation, the villagers held consultations among themselves and came to the conclusion that every member of the EDC would contribute, in cash, kind or labour, as per his circumstances, to this task. Thus, some members contributed in material procurement and transport, while the labour drew lower wages. As a result, the village dream of a primary school was realised.

1. Attitudinal Change: One of the key succeses of ecodevelopment has been the attitudinal change towards the Park and its Management. This change is clearly visible in cases like that of village Sarekha that was once a vocal and anti-buffer agitator but is now a supporter of the Park Administration and ecodevelopment. A large part of this achievement may be attributed to the establishment of effective channels of communication between the Park administration and the local communities. In Kanha, the violent conflict situation that emerged during the formation of the buffer division necessitated frequent interaction between the local communities and the Park Management. Innovative techniques such as street plays, puppet shows, as well as pamphlets and posters were used to communicate the philosophy of the buffer zone formation and the resultant benefits to the people. Thus, a channel for communication and dialogue was opened at all levels of Park Management. At the same time, the Park Authorities worked towards maintaining transparency of intention and action. This generated trust among the villagers and enhanced goodwill for the state. Consequently, people were persuaded to participate in ecodevelopment. With such participation, came direct benefits that mitigated, to some extent, the resentment and heartburn that was rife among the villagers. Most committees are now able to perceive a direct link between the presence of the Park and their development, and consequently, nurture a more positive attitude towards the Park and its Management.

2. Sectoral Integration: While the ecodevelopment efforts have resulted in tangible as well as intangible benefits, the ecodevelopment planning in a resource constrained situation was a challenge that the Park Management has met well. Kanha did not have the benefit of concentrated resource inflow for ecodevelopment. The limited fund availability as well as the uncertainty regarding future resource availability necessitated a conservative approach to ED planning. It was realised that inter-sectoral linkages were an essential prerequisite for ensuring meaningful inputs to the beneficiaries. The ecodevelopment activities in Kanha were, therefore, based on a "sectoral integration" approach. In addition to the eco-development allocation through Project Tiger and Madhya Pradesh Forestry Programme (MPFP), the ecodevelopment activities in the Park were supported by financial allocations in several state and centrally sponsored schemes including the World Food programme, the National Afforestation and Ecodevelopment Board, Baiga Vikas yojana, Special backward Class development scheme, Forest Village development, Tenth and Eleventh Plan schemes, Drought relief Programme and Swarna Jayanti Rozgar Yojana. Through these schemes, almost Rs 4 crore were invested in ecodevelopment in the last eleven years or so. While the absence of any ecodevelopment schemes, like the IEDP, was a constraint, it also allowed the process of ecodevelopment to evolve because the park management was not compelled to meet externally set targets.

3. People's Cooperation in Biodiversity Conservation: In some cases, the involvement of the local people in conservation has also resulted in effective biodiversity conservation. An example is that of village Gorakhpur. In the year 2001-02, information was received about the existence of a Saras pair in the village. Further, it was reported that in the last 6-7 years, there had been no sign of any chicks. The Park management held consultations with the village, and it was decided to initiate efforts to protect the birds and their eggs. While two eggs were protected in 2002, the chicks did not survive. However, the village did not accept defeat, and in 2003, when the EDC was formed, they once again resolved to protect the birds. These efforts proved successful when two chicks were born and survived.

IV.1.2: Benefits to the Community

1. Support from Kanha Vikas Nidhi: The fund, created specially to ensure pooling of gate and tariff receipts for the development of tourism infrastructure in the National Park, also plays a very important role in the ecodevelopment of forest villages in general and relocated villages in particular. Till date, a total amount of Rs 100.53 lakh has been given to EDCs as support fund from the Kanha Vikas Nidhi.

2. Irrigation by Gravity: Another feature of success has been the continued interest of people in irrigation due to gravity. Wherever possible, the Management assist villagers in getting the appliances installed for this form of irrigation.

3. Slow and Steady Formation of EDCs: The absence of a "number approach" to the formation EDCs helped the gradual growth of ecodevelopment. In fact, the very formation of EDCs in a number of cases was an achievement in itself. A conscious effort was made to form the committees only when the village was convinced about the need and the benefits of the same. This approach however, required frequent interaction with the village and consequently, substantial investment of time by the ecodevelopment team.

4. **Social Fencing**: In the case of specific activities, there has been success in involving the village communities in the conservation effort. The ecodevelopment efforts have helped in forging a conservation relationship between the local communities and the forest resources. There has been a general decline in the number of cases of illicit felling and poaching, as well as the cases of deliberate fire in the forest. With the restrictions on grazing, and the involvement of the people in grazing control, regeneration has been given considerable support. As far as plantations for rehabilitation are concerned, a total area of 1,175 hectares has been planted through the EDCs. Most of these plantations have been successful due to the protection that was provided by the committees. In some other cases, the committees have revived plantations that were once destroyed. Social fencing has also proved to be effective in few villages, an example being that of Chatuakhar.

RDF in Chatuakhar- an Illustration of Effective Social Fencing

The ecodevelopment committee in Chatuakhar was formed in 1999. From the beginning, the villagers participated actively in the protection of the forests from fire and illegal felling. Before the committee was formed, the adjoining forests had become completely degraded due to the *nistari* pressures of the nearby

villages. They were no longer able to meet the *nistar* demands. The committee therefore decided to rehabilitate these degraded forests not only for their benefit but also for that of the future generations. An area of 109.4 hectares was allotted to the committee for plantation and for protection.

Rehabilitation was a challenge because this plot was surrounded by villages, which used it as a thoroughfare, and for nistar. They did face opposition from these nearby villages but were able to amicably resolve the conflict. Though the area was in the middle of the cattle path, the committee decided against physical fencing. They took it upon themselves to ensure that the plantations were not harmed in any way. Today, these plantations are one of the most successful in the area.

IV.2 Issues and Shortcomings

1. Cultural Incompatibility: **T**he experience has also had its share of shortcomings. One of the main shortcomings of the ecodevelopment effort has been that of smokeless chullahs, distributed in the villages, mainly because of cultural incompatibility. In a culture where men who drink together, usually dine together, these chullahs are inappropriate for they do not allow for cooking in large vessels.

2. Frequent Change of Policies: People were also disillusioned with the frequent change of policies at the government level, and were reluctant to make investments. For instance, it was declared earlier that electricity would be made available free for the pumps of 5 HP, but later this decision was revoked and the target people had to pay for the electricity, and in this way lift irrigation also suffered.

3. Lack of Entrepreneurship: Due to this, along with the lack of proper training in poultry and sericulture, which are beneficial sources of income generation, these enterprises could not start off as expected. Even in spite of training in apiculture, it could not succeed at all.

4. First Food, Then Awareness: The lack of awareness among the target people can be attributed to the Park Management, which was also constrained by the non-availability of staff that could be dedicated only to awareness generation, and on the other hand, the external agencies lacked the stake in such awareness and the infrastructure required. Wherever there were dedicated efforts to generate awareness, these too have not always proved to be effective. For instance, the awareness drive for sensitising people against setting fire to the forest during *mahua* collection was not very successful in spite of a door-to-door awareness campaign. There was direct contact, and apparent understanding, but little change in the behaviour primarily because awareness alone is not enough. First, the people must be assured of food, and their basic needs. Only then can they think about conservation. In the case of *Mahua,* the flowers provide the local communities with food, and with liquor, which is a cultural must. The easiest way to collect the *mahua* flowers is to burn the area. Where the people are dependent on the forest for food, even after the awareness drive, people continued to burn the forest floor, though in some places they ensured that the fire was restricted only around the *mahua* tree.

5. Combining incentives with improved policing: At the same time, it must be realised that developing an understanding alone is not enough. Such understanding needs to be

supplemented with force, and with rewards. Only then can effective conservation be achieved.

6. Low absorption capacity and willingness: There are several villages, where in spite of the availability of water, pump and even money for diesel, people are simply too disinterested or lethargic to avail these facilities. Consequently, the agricultural fields are drying up. An illustrative case is that of village Kariwah where a lift irrigation system was installed and agricultural interventions like providing good seeds were undertaken. Though seemingly appropriate, these initiatives have completely failed and the causes for this need to be understood better.

7. Micro Planning Under Uncertain Fund Flow: However, these failures have reiterated the conviction that all inputs must be need based, and that the ecodevelopment manager must have the flexibility to select such sites, and activities that are best suited in a given set of circumstances. This conviction, however, dilutes the notion that micro planning is essential to effective ecodevelopment. In a situation like that of Kanha, where the fund inflow is uncertain, micro planning not only raises the expectations of the village communities but also reduces the flexibility to change the plan for intervention depending on the changed circumstances in the village. Flexibility in implementation allows for incorporating the lessons learnt during the course of the project itself.

8. Lack of Pastureland: On the one hand cattle grazing is not allowed in the National Park, on the other, more than 50 per cent of the Buffer Zone is in the form of revenue lands and private holdings, and forests are patchy and fragmented. There are no pasturelands in a real sense of the term and many villages face acute crisis due to non-availability of forage for their livestock. Some such villages are Samnapur, Bhilwani, Mana, Lapti and Simaria etc. Inevitably, the livestock exerts pressure on the periphery of the National Park and the areas of the Buffer Division closed for grazing.

9. Lack of Fuelwood: Similarly, the degraded forestland and chronic pressure of villages have deprived the area of fuelwood resulting in acute crisis of the same in many villages of the Tiger Reserve. Consequently, the villagers find it extremely difficult to collect dead, fallen and dried fuelwood in their vicinity for bonafide use.

10. Unemployment: Around 20,000 families inhabit the villages of the National Park and the buffer zone. Baring only a small fraction of the above families, whose members are in government services and are employed round the year, the rest face an acute problem of unemployment. Some of the families do manage to get employment in the conservation practices of the Tiger Reserve and in other departments as daily wagers, yet unemployment persists throughout these villages.

11. Strained Relationship: The Management is known for its strict observance of rules and regulations relating to the National Park. Obviously, this attitude has also seriously antagonised villages whose dependence on the natural resources of the National Park has been stringently restricted. Besides, occasional human kills by the carnivore due to

intrusions into the National Park, further aggravates the already tense relationship between the Management and people.

IV.3 Strengths

1. Continuity of Vision: The Tiger Reserve has been headed by a succession of officers for long tenures. Most of these officers have also served in the second-in-command positions, sharing the same vision for the Tiger Reserve. This understanding has sharpened their focus considerably on achieving the stated objective of Tiger Reserve Management, and has always contributed to the continuity of an overall vision for the future.

2. The 'Kanha Culture': Many years of solidarity, understanding, a sense of mission and camaraderie has evolved a unique culture in the Tiger Reserve. The famous Kanha culture assimilates, besides many other things, a provision of generous facilities for the remotely placed staff, a delicate sensitivity to their personal, familial as well as official problems, and a ready hand to help the distressed in the Kanha family. This distinct sense of fellow feeling and togetherness has always lent an enormous strength to collectively face the odds in conservation.

3. Team Spirit: This, along with cohesion, is most important for the success of any organisation. In Kanha Tiger Reserve, the service conditions require its officers to come very close to the frontline staff including daily wagers during their long foot patrols. Such long and close interactions also provide an opportunity to get acquainted with the problems of the staff, and officers try their best to solve them. Besides, whenever a weakness is detected in the management of the Park, the entire staff, including game watchers, sit together and think over the problem to reach a consensus for implementation. This also results in mutual trust, unity and team spirit.

4. Sense of Pride: Kanha is one of the finest wildlife protected area not only in India but also in Southeast Asia, and is credited with the successful conservation of the tiger and hard ground barasingha. These accolades and compliments instill into the staff a sense of pride and achievement, making them self-motivated for the rest of their service in the Tiger Reserve.

5. Efforts for Excellence: Frequent reviews of duties/ assignments by the officers of the Tiger Reserve and other higher-ups derive instant recognition and encouragement for the excellent performances of the staff. Besides boosting the morale, this mechanism also instills a healthy competition and enthuses the staff to excel others in future. Excellent performers also receive rewards of many kinds and become a source of inspiration for others.

IV.4: Constraints

1. Restricted Water Availability: Due to the undulating and hilly terrain coupled with some other geological factors, most of the villages face crisis of irrigation, and people are not able to tap the water. This crisis often leads to the failure of crops and despondency among farmers.

2. Crop Damage: Crop raiding by ungulates, increasing in numbers by the year has also become a serious problem for the villagers. Often, spotted deer graze the cultivation in large herds, especially at dawn and dusk. Wild pigs come in small groups and cause considerable damage to the cultivated site and also the barns where the crop is stored. Besides, the langur and avian species like the parakeet, jungle crow and the peafowl frequent the fields when the crop is ripe and ready for harvest. This causes immense distress to cultivators.

3. Irregular Funding: Though the Management strives to procure the required allocations for ecodevelopmental initiatives on the basis of prioritisation and site-specific plan, the inflow of funds remain irregular, and sometimes inadequate. This creates obstacles in a well-planned scheme of ecodevelopment measures.

4. Inadequate confidence building in villages: In spite of so many types of confidence building measures, the management feels that some villages are still resistant to the well-meaning ecodevelopment initiatives. This has resulted in a cold response and indifference to the introduction of field works. The people are still sceptical about the feelers sent by the Management.

5. Lack of Staff: This constitutes another very important constraint in the Tiger Reserve. The Management realises that staff is already overburdened with the ever expanding conservation activities. Besides, almost every cadre in the Tiger Reserve is severely under-staffed. These limitations seriously hamper ecodevelopment initiatives.

IV.5: Lessons

1. All ecodevelopment initiatives should be socio-culturally compatible with the target communities, without changing their original ways of life.
2. Care should be taken to identify such policies that might change in future and affect the ecodevelopment initiatives and beneficiaries negatively.
3. More importance should be given for enhancing food production under ecodevelopment initiatives.
4. Funds have to be made available as per micro plans.
5. All such revenue lands that are fit for pasture should be identified and developed accordingly
6. Fuelwood should also be grown under various forestry practices.
7. Without the minimum level of literacy conservation programmes may be difficult to implement. Hence, proper education should be imparted to the target community.
8. Ecodevelopment initiative should be directed at generating employment opportunity in large numbers.
9. Timely compensation for human and cattle kills should be ensured.
10. All the water should be channelised thorough agricultural fields to ensure its proper harvesting and equitable distribution.

11. Crop damage should be prevented by means of a fencing or rubble wall, and also adequately compensated for.
12. The inflow of fund should be regular and un-fluctuating to achieve the initiatives as per prioritisation.
13. Community development works should always be undertaken for the continuation of dialogues with the target community.
14. Wildlife cases should be quickly disposed of to emphasise the government's commitment to wildlife conservation.
15. Alternative energy resources should be encouraged particularly to replace fuelwood with biogas.
16. An ecodevelopment tax should be levied on all types of charges relating to tourism in the National Park. This can be used to support ecodevelopment initiatives.
17. Under sectoral integration, efforts should be made to acquire funds from various quarters, giving an effective thrust to ecodevelopment programme.
18. EDCs should be rewarded every year for their excellent performance.
19. The protection of the National Park and Buffer Zone Division should be incorporated as a part of ecodevelopment for generating opportunities for employment.
20. Hoteliers and other businessmen, the sole beneficiaries of eco-tourism in the Tiger Reserve, should contribute for ecodevelopment from their incomes.
21. As the existence of the National Park became possible only after curtailment of the rights of the local people, hence the laws relating to the purchase/ transfer of lands should be change in favour of local people so that outsiders may be prevented from establishing their business around the National Park.
22. Fuelwood should be supplied to the local people only at harvest cost to motivate them in favour of sustainable use of forest resources.
23. Sufficient bamboo clumps should be raised and protected for every family to make themselves self-sufficient after certain years.
24. Unbrowsable fuel species should also be planted for every family to make themselves self-sufficient in fuelwood every year.
25. Training like driving, cycle repairing, TV repairing, mushroom cultivation and poultry etc. should also be imparted and some incentives should be given to help the villagers start their enterprises.