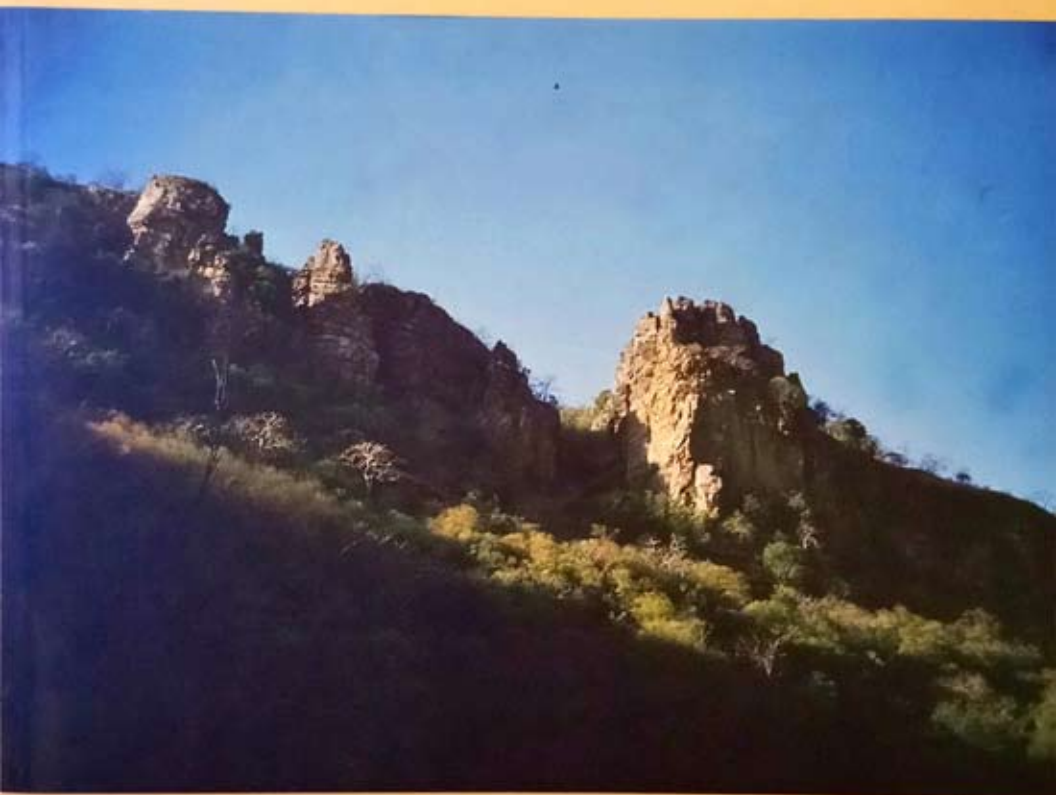


STRENGTHENING CONSERVATION CULTURES

**LOCAL COMMUNITIES AND BIODIVERSITY
CONSERVATION**



**Shekhar Singh, Vasumathi Sankaran, Harsh Mander,
Sejal Worah**



MAN AND THE BIOSPHERE PROGRAMME



**UNITED NATIONS EDUCATIONAL, SCIENTIFIC, AND CULTURAL
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The cover photograph is a scene from Ranthambore Tiger Reserve, Rajasthan, India and was taken by Shekhar Singh.

FOREWORD

The growing global concern for conserving biodiversity is paralleled by an increasing realisation that conservation can only be effective if there is a meaningful involvement of all the stakeholders. Of course the most important of the stakeholders, especially in countries of the South, are the local communities who live in and around protected areas and other wilderness areas and have often had age-old relationships with the ecosystems. Not only are these communities dependent on the resources of such areas, they have also contributed to the conservation and maintenance of the biodiversity there.

However, with the sudden spurt in human population, with rapid growth in technology and with increasing aspirations, many of these wilderness areas are today threatened. This threat perception often leads people to assume that the only way of conserving them is by removing them from the control of those people who have actually looked after these areas for hundreds, sometimes thousands, of years.

Fortunately, in the last 20 years or so there have been many attempts at developing effective biodiversity conservation strategies that not only promote local community participation but are also designed and managed by them. UNESCO has in many ways been contributing to this debate. By promoting the concept of biosphere reserves, UNESCO has demonstrated to the world an innovative strategy for biodiversity conservation in partnership with local communities. In recent times, other participatory approaches have also been discussed, analysed and disseminated by various programmes of UNESCO, including the Programme on Man and Biosphere, especially through initiatives in South-South Co-operation on Environmentally Sound Socio-Economic Development in the Humid Tropics. Recent meetings and publications have focussed on traditional methods of biodiversity conservation and on ecodevelopment.

This study, sponsored by UNESCO, is one more attempt to understand some of these initiatives and to abstract from them the general principles that make decentralised and participatory conservation strategies effective and sustainable. We hope that the insights and findings of this study, as

reported in this publication, would help develop our understanding of how best to conserve biodiversity and, equally important, how to do this in a just and equitable manner.

Dr. Peter Bridgewater
Director
Division of Ecological Sciences
Secretary
Man and Biosphere Programme (MAB)
UNESCO
Paris

PREFACE

For many of the people struggling to find effective means and strategies of conserving and regenerating the fast disappearing biodiversity of the World, the search is a frustrating one. Very few new ideas have emerged in the last decade and the few that have emerged only offer temporary respite. Priority species and biodiversity rich sites are being identified at a rapid rate. Every day we are learning more about how ecological processes work and what is the contribution of the various species and ecosystems to the well being of the Earth. We are increasingly documenting, in graphic detail, the ravages that human activities have caused, and are causing, to species and ecosystems. However, despite all this, our understanding of how to conserve biodiversity, especially in the real world where many countervailing pressures operate, is abysmal. We mostly cling, with child like faith, to conventional strategies, despite the fact that they are clearly not working. Occasionally, when a seemingly new idea presents itself, we pounce upon it with the eagerness of desperate beings and push it to its illogical limits, in the hope that something miraculous would happen and suddenly all our problems would disappear.

The 20th century was characterised by the development of protected areas (PAs) as citadels of biodiversity conservation. Wilderness areas were demarcated and human use and access was restricted to enable nature to have a free play. An increasing number of PAs were set up across the World till they numbered in the thousands and enclosed hundreds of millions of hectares of natural landscape and marine and aquatic areas. However, for the last fifty years or so it has become increasingly obvious that this approach is not working, especially in most of the countries of the South where much of the biodiversity remains. Despite this, the focus of a large proportion of the international conservation community and many national governments is to expand the network and do more of what has clearly not worked.

In the last twenty years or so the strategy of conserving biodiversity in PAs has been supplemented by ideas of “decentralisation” and “public participation”. There has also been a growing belief that conservation can only be achieved if the basic needs of poor rural communities are met, perhaps through a policy of substitution, in a manner that does not threaten

biodiversity. And that national governments and the World community must provide for and ensure this. Out of such thinking have emerged generations of Integrated Conservation and Development Projects (ICDPs) and a host of other "participatory conservation" and "community conservation" strategies. There have been some notable successes in a few areas, which have been widely publicised and become the basis of a new faith. However, in a large majority of cases these also have not worked well, especially over time. The failures might be due to inappropriate implementation or because of inherent weaknesses in the approaches, but, in either case, they are widespread enough to warrant a detailed analysis.

This study is a small effort to do just that. It attempts to understand what decentralised and participatory approaches to conservation involve and then tries to identify and isolate those necessary and sufficient conditions that must obtain for such approaches to be successful, and to endure over time. In order to do this, it examines examples of decentralised and participatory approaches to conservation in various countries across the World and to learn from their experience and from their successes and failures.

Due to constraints of time and resources, the study depends very heavily on published and unpublished secondary sources and supplements these by a few field visits. It also depends heavily on discussions with experts and knowledgeable people across the world, especially in countries of the South.

The idea of such a study emerged during the various interactions that took place under the aegis of the South-South Co-operation Programme on Environmentally Sound Socio-economic Development in the Humid Tropics. This programme is a collaborative effort of the United Nations University, the Third World Academy of Sciences and the Man and the Biosphere (MAB) Programme of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and has been sponsored by the German Federal Ministry for Co-operation (BMZ). As a part of this programme, an opportunity was provided to experts and professionals from various countries working on issues of environment and development to meet and discuss the issues in their own countries and to learn from the experiences of each other. It emerged during such discussions that the fundamental conservation issues and dilemmas in various countries of the South were similar, despite superficial differences. It also became obvious that there was much to be gained by exchanging ideas and by studying each other's experiments, successes and failures.

Even so, this would have been an impossible task but for the periodic opportunities provided by the South-South initiative to meet and discuss the emerging ideas. From Belem, Brazil, in 1996, to Kunming, China, in

1997 and then Xalapa, Mexico, in 1999, the interaction grew and strengthened. Meanwhile, the South-South Programme had provided the funds to start the work of comparing experiences of decentralised and participatory management of biodiversity resources in various countries of the South. Some additional funds became available through the Biodiversity Conservation Prioritisation Project, which is funded by the Biodiversity Support Programme (BSP). The BSP is a USAID-funded consortium of the World Wildlife Fund, The Nature Conservancy and the World Resources Institute.

The fact that, under the South-South Programme, there now exists a network of committed professionals in many of the countries of the South gives this report a receptive audience who can take the debate forward. If the issues raised in this report can become a part of the national agendas in even some of the countries of the South then the time and effort spent on this study would be amply justified.

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CHAPTER 1

INTRODUCTION

The status of biodiversity around the world is a cause for concern. Ecosystems and species are disappearing at a rapid rate, despite the energetic conservation efforts of the world community, especially in the last twenty years or so. There have been various treaties, conventions, and plans. In 1992, the Convention on Biological Diversity was signed and subsequently ratified by a large number of countries in the World. The World Bank and various other international organisations have been working with countries to develop Environmental Action Plans. The Global Environmental Facility has been supporting biodiversity conservation programmes in many countries and is helping these countries to develop Biodiversity Status Reports, Strategies and Action Plans. UNESCO has been supporting, among others, the programme on biosphere reserves and the FAO has been helping countries to set up and manage protected areas and wildlife management institutions. The IUCN and WWF, as large international NGOs, have been doing their bit for promoting the conservation of biodiversity and the World Conservation Monitoring Centre has been regularly studying the status of conservation.

At a national level, many countries have protected-area networks and other conservation areas. There are national NGOs working and fighting for conservation. Financial and technical inputs are becoming increasingly available to and within countries for conserving biodiversity. However, despite all this, biodiversity resources appear far from secure.

Perhaps as a consequence of this, many governments and international organisations are beginning to realise that centralised governmental efforts are not going to succeed by themselves. Consequently, attention is turning to alternative or new strategies for biodiversity conservation. One such alternate (though perhaps not new) strategy for conservation is what has become known as the participatory strategy of conservation. The basic thrust of such a strategy is to increasingly involve local communities in the task of conserving biodiversity.

However, there has also been, in the last few years, a lot of romanticising about community efforts at conservation. There is a belief among many individuals and institutions, both within and outside governments and international agencies, that the best, perhaps only, way of effectively conserving *in situ* biodiversity is by handing over the task and related controls to local communities.

This is despite the fact that many questions about the universal efficacy of participatory strategies remain unanswered. There is also a tendency to gloss over the differences between communities, ecosystems, socio-economic conditions and, indeed, the objectives of conservation. The naïve assumption that community control will always, everywhere, lead to better conservation is dangerous for at least two reasons. First, in many situations unique biodiversity resources might be lost for good if a community based approach is attempted inappropriately. Secondly, these few failures might pave the way for a turn around in the currently popular support for community management, resulting in a universal re-establishment of centralised governmental control, which has already proved itself to be disastrous.

It is mainly because of this that an effort is being made to evaluate the efficacy of community conservation efforts, not with the objective of discrediting them but in order to identify their strengths and weaknesses and the conditions under which they are most likely to succeed. In effect, this study attempts to describe the necessary and sufficient conditions that are required for community efforts to succeed. It attempts to do this both through a conceptual analysis and through the examination of a large number of case studies.

This study is designed to look at some of the critical issues that determined the success or failure of a community conservation effort. The report focuses on a discussion of these issues, based on a survey of experiences across the world. It discusses the nature of a community, the objectives of biodiversity conservation, a history of community participation in conservation, and issues in community participation.

The study was carried out on the basis of secondary literature and through visits to various conservation sites across the world. The sites visited included those in Thailand, Mexico, Costa Rica, India, East Africa, China, USA and Europe. Libraries and collections were accessed in India and in other parts of the world to develop a preliminary list of the relevant case studies. Though over a hundred cases were studied, restrictions of space do not permit the inclusion of all of them. The most relevant ones have been summarised at the end of the document.

CHAPTER 2

OF COMMUNITIES

There is no one definition of 'community'. In a general sense, a community can be described as a group of people living in geographical proximity of one another, within a definable habitation unit like a village or a colony. However, apart from the geographical criterion there are others that are equally prevalent. There is, for example, the sociological criterion that defines a community as a group of people sharing the same social characteristics, which could be caste, custom, tribe, religion or even a profession. The Oxford English Dictionary describes a community variously as: "The quality of appertaining to or being held by all in common; joint or common ownership, tenure, liability, etc.", "Common character; quality in common; commonness, agreement, identity", "Life in association with others", "The body of those having common or equal rights or ranks.", "A body of persons living together and practising, more or less, community of goods" (OED 1979)

2.1 THE NATURE OF A COMMUNITY

Such definitions lead people to sometimes make certain assumptions about actual communities, as they are found in the real world. The first assumption seems to be that of commonality: that communities are homogenous, with 'common character', 'agreement', 'identity', etc. This often leads to the mistaken assumption that the whole community thinks alike or that within communities there is at least broad agreement about most matters.

The second assumption, sometimes implicit in references to communities, is that they are all of 'equal rights or ranks' and that they practise 'community of goods'. However, in most parts of the world communities are stratified either along traditional strata or along new ones.

Contemporary definitions in the context of conservation practices include the one by Williams. He says that "The community is important because it is typically seen as: a locus of *knowledge*, a site of *regulation* and management, a source of *identity* and a repository of "tradition", the

embodiment of various *institutions* (say property rights) which necessarily turn on questions of representation, power, authority, governance and accountability, an object of *state control*, and a theatre of *resistance* and struggle (of social movement, and potentially of *alternate visions of development*). It is often invoked as a unity, as an undifferentiated thing with intrinsic powers, which speaks with a single voice to the state, to transnational NGOs or the World Court. Communities are of course nothing of the sort" (in Zerner 1999).

Therefore, however one defines a community, there remains the problem of its heterogeneous and stratified character. Both these characteristics are critical, as will be seen later, in assessing the efficacy of community based conservation strategies.

2.2 THE RIGHTS OF A COMMUNITY

Even in democracies where the rights of individual citizens are recognised, there is a tendency to question the right of a specific community to determine how the state should act. There is also, in federal states, a tendency to question the right of a specific community to determine the use of resources that happen to be located near it.

Political analysts argue that, in a nation-state, individual and community interests must be subordinate to public or national interests, or the interests of the society as a whole. The only exceptions are those provided as fundamental rights under the constitution or law. Also, resources must also first be national resources and only after that community or private resources.

Though, in different societies varying levels of private control and autonomy are granted over privately held resources, many states reserve the right to appropriate private resources, if public interest so requires. Certainly, many countries reserve the right to regulate the use and management of natural resources, even if privately held, to ensure that these are in conformity with larger national interests.

It is in countries where natural resources are being managed primarily by the state that debates about the merits of community management rage most fiercely. In the Mexico case study given later, Mander concludes by stating that: "The most thorny related question that remains is the issue of what kind of state is most conducive to the development of community initiatives. If one is to generalise from the Mexican experience, the levels of community initiative for protection of bio-diversity among some indigenous communities of Mexico, largely unmatched in its scale, vigour, technical proficiency and autonomy in the Indian experience, arose initially in the context of highly centralised and corrupt military government. The ecological community movement in Mexico was consolidated in a situation

inspired by neo-liberal economic philosophies, a situation of almost complete withdrawal of the state from the forestry and rural development sectors. In India, both situations are not found, either of centralised non-democratic political regimes, or of laissez-faire in the sectors of ecology and rural development, nor do we believe that they are desirable. The difficult question, however, that can only be answered with far greater empirical research and socio-historical evidence, is whether a paternalistic welfare state but one with a weak and corrupt delivery system as prevails in rural India, actually inhibits proud, conscious, autonomous, self reliant and technically sophisticated action by local communities, both for the protection of their threatened bio-diversity, as well as for solution of their problems of livelihood, survival and justice.” (case 28)

The debates about the merits of community involvement in conservation come out of one or both of two reasons:

- A sense of dissatisfaction with the conservation status of the areas being managed by governments
- A sense of dissatisfaction with the manner in which the resources are being used and allocated, especially regarding the access being provided to the people, including the local communities.

From both these types of dissatisfactions emerges a debate about the rights of local communities¹. In the first case, it can be a debate about the rights of local communities to protect their areas against degradation or destruction authorised by the government. This happens most often when areas are leased out to external entrepreneurs for commercial use and extraction (timber, minerals, water, sand, stone, tourism, etc.) or diverted for infrastructure projects (dams, roads, industry etc.). However, sometimes the debate is about curbing the rights² of local communities to use these areas or to hunt endangered species or hunt in protected areas.

In the second case, the debate is about the rights of local communities to use the resources that they have been traditionally using (and conserving) and that are a part of their natural surrounds. This debate also goes both ways. On the one hand the rights are asserted, especially in a protected area where its setting up has resulted in their curtailment. On the other hand, such rights are questioned where they are seen to be resulting in the over use or destruction of wilderness areas. Often, the protagonists are polarised and well defined, with the ‘wildlifer’s’ lobby invariably demanding the curbing of rights, while community representatives usually demand greater rights. However, a recent phenomenon has been the alliance between

¹ Local communities are communities located near a natural resource

² ‘Rights’ here means both legal, recorded, rights and un-recorded customary rights

many belonging to both sides and the evolution, as will be discussed later, of strategies aimed to serve both interests.

Another major debate is regarding the legitimacy of the individual community's demand to be heard or consulted in regional and national decision making processes. It is argued by some that the voice of the community is amply heard through their elected representatives in Parliament or the Legislature, or in other democratic fora, and these communities have no right to be heard separately in every matter, leave alone to be consulted.

Strictly speaking, it is correct to argue that every community cannot claim ownership over the natural resources found in its geographical proximity. Otherwise, this would lead to the break up of the federal structure of a nation state and only local interests would be served, at the cost of larger national interests. It would also lead to huge regional disparities, where areas rich in natural resources would benefit at the cost of those poor in such resources. In other words, nation states would become divided the way the world is divided today. Just as sovereign nations today lay claim on all the resources within their boundaries, so would 'sovereign communities' start laying claims on all their proximate resources. And just as the world, as a consequence, has fragmented into countries, some of which are enormously rich and wasteful and others that are pitifully poor, so would communities and regions fragment within nations.

Therefore, at first sight, the demand for decentralisation appears to be a demand for heightening inequities between communities rather than for lessening them. Also, as communities themselves are stratified and often dominated by a small group of people, even within these communities 'sovereignty', or even 'autonomy', would create further inequities. Why, then, do liberal elements in most societies favour such a scheme of things.

Perhaps the answer lies in understanding the current state of the nation state. Under the guise of public or national interest, state after state has usurped and redistributed community resources to the overwhelming advantage of the rich and powerful, mostly urban, minorities. In state after state, forests are submerged under dams that provide irrigation to the rich farmers and electricity to cities and to the rich industrialists. Trees are cut to feed industry owned by the rich and producing for the rich. Land holdings are consolidated by the big farmers and put increasingly under cash crops, and rivers, lakes, the sea and even the atmosphere is polluted and degraded. This has naturally led to a sense of despair and disillusionment with the system of representative democracy.

The fact that laws and constitutions do not treat access to nature and natural resources as a fundamental right reflects more on the inadequacy of these instruments rather than on the importance of nature and natural

resources. Therefore, the moral authority of a state to usurp local natural resources has begun to be questioned.

Of course, stratification within rural communities exists. This has been the basis of exploitation for generations. However, modern society has its own stratification. There are the rich and the poor; the urban and the rural; the educated and the uneducated; those who govern and those who are governed; and, of course, those who obey laws, out of choice or because they have no choice, and those who flaunt them with impunity. Whereas, traditional village strata were known and constant, though oppressive, the modern ones are obscure and transient, and perhaps even more oppressive.

On the other hand, the advent of modernity¹ has helped people to better tackle the vested interests in their own communities, to challenge the power of the traditional oppressors. Often laws are more on the side of the oppressed, even if many of the enforcers are not. Education and literacy has begun to reach down to them and empower them. Most important, in democracies they have the vote and can for the first time use their numbers to their own advantage. But just as all this is beginning to happen, the battle-ground has shifted from their villages to distant towns and cities, to regional and national capitals, where faceless men and women, often in the anonymity of committees, make decisions that affect their lives. The enemy is unknown, faceless, and too distant to tackle. Understandably, then, the local communities prefer to fight their battles at home, with known and accessible opponents, rather than try and intervene in a proxy battle for resources, being fought in their name, in unfamiliar and distant surrounds.

But, if decisions are to be made locally, then how are national and regional interests to be safeguarded? Even if communities can come together and speak in a single voice, this voice might not be acceptable to other communities or to the larger community of the nation. How does one reconcile the obvious contradictions between local interests and national priorities.

There is a belief in some quarters that most communities are essentially wise and unselfish and their decisions would, invariably, not only be in their own interest but also in the larger interest of the nation and the world. In fact, implicitly or explicitly, the move for decentralisation has this or similar assumptions. However, facts seem to present a mixed picture.

For one, there is the very real constraint of knowledge and information. Most rural communities are not aware of issues and problems outside their sphere of interaction. Whereas this might partly be a problem created by a system which restricts access to information and education, partly, at least,

¹ Modernity, here, means the idea that all human beings are equal and deserve equal opportunities and have equal rights.

it is an inevitable outcome of the very nature of a community, its size, its relative isolation and homogeneity. Mander, in relation to the Mexican experiences, comments: "This withdrawal of the state from the forestry sector meant that local peasant communities were left to their own devices entirely to manage their forests, which constitute 70 per cent of the country's forest wealth. Local communities had to take their own initiative and find their own resources, to engage technical consultants to prepare their forest management plans, to run their forest production units, and to negotiate the globalised markets for their products. There were some communities, like the UZACHI, which were conscious, proud, and capable of establishing strategic links with NGOs and universities, and of handling world markets, while maintaining their own world-view. But there are a large number of counter-examples where communities lacked both these competencies and strategic support from external agents, and because of the passivity of the state, the danger is a very real one that powerful corrupt national and foreign interests can again seize control over the community-owned bio-diversity of poor peasant communities of Mexico, albeit through the back door. Thus, neo-liberal policies have two faces, one of which facilitates decentralisation and community control, another which creates an enabling environment for re-entry and effective control by powerful globalised industry" (case 28).

There is also the basic character of a community. Whereas individuals have been known on occasions to act selflessly, in the larger interest, communities invariably act in their own interest and naturally strive to maximise these. Where there are no conflicts among communities or no scarce resources that have to be equitably distributed, perhaps the maximised interests of each community could aggregate into the maximised interest of the country or the world. However, the real world is rarely this ideal. Therefore, conflicts will emerge and will have to be resolved keeping in mind the larger picture.

CHAPTER 3

OF BIODIVERSITY CONSERVATION

There are at least two distinct but inter-related objectives for conserving biodiversity. The first is the scientific objective: to ensure the preservation of all ecosystems, species and genes, and of the associated biological processes. The second is the ethical objective: to ensure a just and equitable distribution of the costs and benefits of biodiversity use and conservation among human beings and between human beings and other species. However, related to each of these objectives are a host of unanswered questions and unresolved issues.

3.1 SOME SCIENTIFIC QUESTIONS AND ISSUES

Biodiversity is a new concept which is still being developed and understood. It is, therefore, not surprising that many of the scientific questions related to biodiversity conservation still remain unanswered. Whereas the debate will most likely continue for many years to come, the answers to some of these questions have a direct bearing on the efficacy of participatory management as a conservation strategy. The more important of these questions are discussed below.

(i) What Impacts do human use and disturbance have on biodiversity conservation?

The world over, a significant strategy for the conservation of biodiversity has been the setting up of national parks and other protected areas. Such areas go from total protection (IUCN category of scientific reserves) to multiple use areas, like biosphere reserves, promoted by UNESCO. However, among many biologists and conservationists there is a belief that areas that are used or otherwise impacted by human beings cannot be true repositories of biodiversity and its processes. There is, they feel, a need to demarcate areas as gene-pools such that the process of natural evolution and succession is allowed to carry on unimpeded by human manipulation.

Clearly, in countries of the South, which are often densely populated and where almost always land and other natural resources are in great

demand, the restriction or regulation of human access to land and other natural resources is a contentious issue. This is especially so because both the poorer rural communities and the commercial and industrial interests compete for these resources. The government also often corners these resources for development and infrastructure projects. Therefore, in order to justify the exclusion of human beings totally or partly from even a few wilderness areas, there has to be a strong scientific justification.

Those who argue in support of such exclusion claim that human intervention disrupts the balance of nature in many ways. Human use of wilderness areas often means that some species that are of direct use to human beings are over used, thereby depleting and degrading them. This also results in competition with other species that also depend on these species. A good example is the extensive grazing in forest areas by domestic livestock. Not only does this often result in the degradation of grasses but it also restricts access to other species, like wild ungulates.

The disturbance that such grazing causes can also result in the spread of weeds and in fire hazards. The presence of domestic livestock and human beings also scares away various species of wild animals from these areas, thereby making their effective habitat and range smaller.

Human use also often results in the manipulation of the habitat by introducing new species that are preferred by human beings, or by changing the natural mix of species, as happens in plantations. Sometimes manipulation results in the destruction of many natural species, as happens when grasslands or forests are deliberately fired for improved grazing or for agricultural activities.

When plant or animal species come into conflict with humans, they are often exterminated. This happens, for example, when plantations are cleared of all other vegetation so that the planted species do not have to share nutrients with them. This also happens when wild animals are trapped and killed because they attack crops, livestock, or humans.

Even the removal of dead trees or fallen branches, which might otherwise seem innocuous, can result in the depletion of biodiversity. It is now known that many species of animals and plants thrive only on dead trees and that the litter on the floor of forests is a preferred habitat to many others. Even the quality of the soil depends to a great extent on the litter being allowed to decompose in forests and other wilderness areas.

Finally, there is the argument that we know very little about the ecological processes that exist in nature. Intervention by human beings might result in the disruption of these processes in a manner that we do not even understand today.

There are also equally strong arguments opposing a 'hands off'

approach. People who propagate the opposite view argue that, in any case, no part of nature is pristine today. Even if a remote island or forest has not faced the direct onslaught of human beings, it cannot be considered pristine because human activities have changed the seas and the atmosphere and have altered climate and released new gases into the air. Therefore, the plea for a pristine environment is unrealistic.

Another argument is that species and ecosystems are by and large robust and, if properly managed, there is no reason why biodiversity conservation cannot be compatible with human use. In fact, the lack of understanding of ecological process can support both sides of the argument. Just as we do not know that biodiversity will not be harmed by human activities, we also do not know that it will. So, why should we assume the worst.

Closely related to this argument is another that maintains that it is wrong to consider human beings as outside, or distinct from, nature. Why should the natural process be understood to exclude human beings, their uses and impacts. After all, we do not think of removing elephants or tigers from a forest just because they eat deer or uproot and defoliate trees. Then why must human activities be considered destructive and out of sync with nature. Recently there have also been arguments that there is evidence to show that human activities actually increase biodiversity, rather than reduce it.

However, a predominant view among conservationists is that to protect biodiversity the conservation area has to be protected from most or all human pressures. This is justified by arguing that human society has evolved in a manner that has made it destructive to the environment. By and large, human beings have lost the ability to live in harmony with their environment. Only a few remote tribal or indigenous groups, who are essentially cut off from the rest of society, still maintain the ability to live in harmony with their natural surrounds.

Perhaps there is some merit in this view. Consider that when human groups develop the ability to export or import natural resources and energy, then the inclination and ability to sustain their own local ecosystems declines. This is because the conservation and rational use of ones own resource is no longer critical to survival. Groups and communities have the option of moving elsewhere once their own resources are exhausted or of supplementing their resources by 'imports' from elsewhere, especially if they have military or economic power. Conversely, the weaker or poorer groups are now open to such exploitation by the more powerful. As the weaker groups can no longer protect their own resources from the marauding of other, more powerful, groups, their resources are now susceptible to exploitation and destruction by outsiders. In such a situation, many of the

local groups prefer to quickly use up their own resources and get whatever short term benefits they can, before they lose them all to external forces.

This happened historically, when armies of raiders plundered conquered territories and laid them to waste. In recent times, as a part of both colonialism and neo colonialism, the colonising nations have exploited the natural resources of their colonies, either through military or through economic power. This also occurs within nations, when powerful urban or industrial groups exploit the rural natural resources for their own consumption, either directly or through the help of the government.

Therefore, modern man and women can no longer be, *prima facie*, considered to be a harmonious part of nature and the natural processes. There is, consequently, a real need to determine what impacts the activities of modern human beings have on the environment.

(ii) What is the carrying capacity of a site or species?

Even if we want to keep some areas totally free from human use and interference, they cannot, by themselves, conserve all biodiversity. Therefore, we have to also conserve other areas, which might be multiple use areas, and ensure that many or most of the biodiversity values in these areas are also conserved.

One way of doing that is by developing zones where some areas are totally protected, while others are subjected to increasing amounts of human use and interaction. A good example of this is found among the conservation strategies of the UZACHI, in Mexico (case 28). They have chosen to keep almost 60% of the forest area managed by them free from human use pressures. Another 20% has been earmarked for supplying domestic fuelwood and house construction material. The rest has been earmarked for production of other resources.

For protected areas, this is often achieved by setting up core and buffer or multiple use zones. The relationship between the core and buffer zones can vary. In the traditional model, they together form a 'fried egg' pattern, with the core zone contained within the buffer or multiple use zone:

However, there can be other models. For example, buffers can form 'resource magnets' and divert pressures away from the core.

For the zoning system to be effective and sustainable, there has to be an understanding of the carrying capacity of the buffers, otherwise not only would all biodiversity within them would get destroyed, but soon they would have no natural resources left and the pressures would reach the core zones.

Also, much of biodiversity, especially species and genes, is conserved outside protected areas. Here, there are no 'core zones' which are being immunised from all human use and pressure. In such areas, which are usually

a much larger proportion of a country than its protected areas, human activities need to be regulated keeping in mind the conservation objectives. Most or all areas need to be used in a manner in which their use can be sustained over time. This means that their basic carrying capacity has to be determined and it has to be ensured that this is not exceeded. The tolerance level to pollutants and other disturbances of the more valuable species (threatened, sensitive, rare), has to be determined. Also, the tolerance level of the habitat that is essential for these species to survive and, based on this, its carrying capacity, has to be determined. It then has to be ensured that human use and activities do not exceed the carrying capacity of the area or of the species that need to be conserved.

Unfortunately, little is known about the carrying capacities, especially long term carrying capacities, of most species and ecosystems. How human activities affect them? For how long can they tolerate disturbance? What are the effects of such disturbance? How can the impacts of such disturbance be minimised? All these questions are difficult, expensive and time consuming to answer. The sort of expertise needed to answer such questions for the millions of species and the thousands of ecosystem types is also not easily available.

(iii) How much area is required for biodiversity conservation?

Whatever be the answers to the first and second questions, it is obvious that there would have to be at least some restrictions on human use in areas earmarked for biodiversity conservation. Therefore, the critical question is "how much area needs to be conserved?"

There are two levels at which this question becomes relevant. First, what is the proportion of an administrative unit, like say a country or a province, that should be managed for biodiversity conservation and why? Secondly, how large must each conservation area be?

In response to the first set of question, it is argued that conservation area networks in a country or a region must be planned in accordance with at least the following principles. First, there must be an adequate proportion of each ecosystem type (biome) under protection. The area under protection, for each ecosystem type, must be representative of that ecosystem in terms of containing all of its distinctive features. Secondly, all areas with unique biodiversity values must also be conserved. Third, areas of exceptional biodiversity richness, in the sense of having an unusually large number of ecosystem types or species, must also be conserved. Also, areas which might not themselves fall into any of the above categories but which are essential for conserving one or more of the earlier defined priority areas, must also be conserved. These could include corridors between two priority areas,

breeding grounds of endangered species or even watersheds or other ecological function areas without which the priority areas cannot be conserved.

Also, given the huge impact of human beings over most wilderness areas, those few areas that are still in their natural form, untouched (at least directly) by human beings, must also be conserved. And, finally, areas that might *prima facie* seem to have a potential to be included in the list of priority areas but have not been adequately studied, must also be conserved, at least till they have been adequately studied and their status and value determined.

It is not considered enough to protect only one representative site as there has to be a safeguard against the destruction of this site. Therefore, at least two, preferably three, representative sites for each ecosystem type need to be conserved and each must be of 'adequate' size.

At the next level, the question is "what is 'adequate' size?" Adequate size has to be determined on the basis of at least two factors. First, the minimum extent of an ecosystem type needed for it to retain its nature and diversity and to evolve normally. Unfortunately, very little is known about this.

The second factor is the minimum size required for supporting viable populations of all the animal species inhabiting it. Again, this is difficult to determine. However, it is assumed that if the area is large enough to support a viable population of the 'apex species', then it is large enough to support a viable population of all species. This, again, is only an assumption.

The three critical questions, then, are:

- What is the apex species?
- What is the minimum viable population of this species?
- How much area is required to support such a population?

If we apply this model to the Indian situation, for many parts of the country the tiger can be taken to be the apex species. However, there is no agreement on what is the minimum viable population of tigers. One view is that you require 50 breeding pairs of large mammals for continued survival of the species and 500 breeding pairs for long-term genetic variability.

There is also no agreement on what the minimum range of a tiger is. It has been variously calculated to be from 10 sq. km. to a 100 sq. km per tiger. This means that a minimum viable conservation area in tiger country could be anything from 10,000 sq. km. to 100,000 sq. km. The fact that tiger populations do not mix well with human populations and their livestock, and that they need, in order to survive, a large prey base of ungulates, makes it critical to come to an agreement regarding the minimum size of a tiger conservation unit. The fact that currently none of the tiger

conservation units in India are anywhere near 10,000 sq. km. makes the resolution of this debate an urgent priority.

Therefore, the extent of area required for biodiversity conservation cannot be determined on any agreed scientific basis. Given the heavy social and economic costs that have to be paid every time biodiversity is conserved, or destroyed, this issue needs an early resolution.

3.2 SOME ETHICAL ISSUES

The conservation of biodiversity also has ethical objectives. At one level, the imperative to conserve emanates out of the cultural and aesthetic values of a society. These have been discussed in detail in the section describing the history of conservation. At another level, they emanate out of the economic values of a society. These have also been discussed elsewhere. However, while conserving or destroying biodiversity, there is also a need to be conscious of the implications these have on equity, especially equity between different segments of this generation of human beings, between this generation and future generations of human beings, and between human beings and other species.

(i) Intra generation issue

The major intra generation Issue is related to equity: who benefits and who loses from biodiversity conservation and use. Historically, there has been a tendency for rich and powerful nations and people to use biodiversity resources and to transfer the costs of such use on the weaker and poorer nations and communities. In recent times, with the growing awareness of the need to conserve biodiversity for the sake of all humanity, the new tendency is to make the poor rural communities bear the brunt of the costs of conservation. This happens when protected areas are set up, or biodiversity is protected in other ways, by denying local people access to subsistence resources and without providing them alternatives.

This also happens when the wasteful and ostentatious life styles of the rich and powerful need resources that are got, and sometimes can only be got, by destroying biodiversity. However, in doing so, the poor local communities, who were dependent on these biodiversity resources for their subsistence needs, are left further impoverished.

There is also a growing recognition of the commercial value of the components of biodiversity. Perfumes, toiletries, medicines, flavourings and many other products are being made from wild plants and animals. There is an army of bio-prospectors tramping through wilderness areas across the world trying to discover commercial uses of wild plants and animals.

This by itself might not be a negative development, for every new

discovery further establishes the value of biodiversity and the need to conserve it. However, if proper care is not taken, this could become counter productive. In so far as commercial pressures are unleashed on vulnerable and often rare populations of wild animals and plants, and care is not taken to harvest them at sustainable rates or to cultivate and domesticate them, it could lead to the rapid degradation and extinction of those species which become sought after. For example, in Sri Lanka "The Ritigala project draws attention also to the link between income-generating activities and their impact on resource conservation. The income generating activities at Ritigala are not reviewed, except to note that they have been rapidly adopted, particularly with respect to the *ex situ* cultivation of medicinal plants. In spite of these successes, it is not at all clear that these and similar activities have had any impact on the quality of the Ritigala Strict Natural reserve (SNR). Even the theoretical link between cultivation of medicinal plants and its impact on the SNR is not clear, since an expanding market for medicinal plants might be an incentive for villagers to cultivate *ex situ* and then augment this with collection from the SNR" (case 25).

But apart from this, there is also the question of sharing the profits of such commercial enterprises. Though the Convention on Biological Diversity attempts to protect the commercial interests of nations, most countries do not have adequate laws to protect the interests of local communities. Therefore, a plant or an animal might have survived in the wild because of the efforts and sacrifices of local communities sharing its habitat. Its medicinal or food value might also have been discovered and passed down the ages by members of such a community. However, when it comes to commercially exploiting the medicinal and food value, the government or corporate houses take over, leaving the local communities without any share of the profits.

Therefore, the major intra generation ethical issue is the promotion of equity among nations and among classes of people, by ensuring that the costs and benefits of biodiversity conservation and use are fairly apportioned.

(ii) Inter generation issue

The major inter generation issue is that of sustainability. What is the ethics of destroying and using up biodiversity resources to meet the demands, sometimes urgent and genuine demands, of the current generation and thereby foreclosing options for future generations?

Where these demands are to meet wasteful and ostentatious life styles, the answer is relatively easy. However, *prima facie*, the answer is far more difficult when the demands are from poor people striving to make two ends meet. It is a difficult ethical dilemma to choose between the survival

of the present generation of poor and the survival options of future generations.

Fortunately, the dilemma is rarely such. By and large, the poor are not in conflict with future generations but with the rich and powerful of their own generation. If the natural and other economic resources of the world were more equitably distributed, there would be no need for the poor of the world to destroy their own natural surrounds. Similarly, if the resources within nations were more equitably distributed, the issue of the survival of the poor would not haunt humanity.

Conflicts around the conservation of biodiversity or wildlife are often projected as conflicts between human and wildlife interests or between the interests of the poor and the imperatives of conservation. When seen like this, they present a moral dilemma. However, in reality, they are mostly conflicts between the poor and the well to do and, as such, are much easier to resolve.

(iii) Inter species issue

In recent years, there has been an increasing recognition that animals (and to a lesser extent plants) have a right to survive and live happy and healthy lives, independent of their utility to human beings. Of course, this is not a new sentiment. In many of the old cultures, the world over, traditional societies not only recognised the rights of other living creatures but also held them in awe and reverence.

However, as discussed elsewhere in detail, this ethic was gradually overtaken by utilitarianism, where nothing had a justification unless it had utility. And utility only counted if it was for the benefit of human beings.

Though there is now a reaffirmation of the rights of all living creatures, it is still in the early stages. The movement against cruelty to animals has also begun to gain support. In any case, there is no evidence to believe that this World was created for human beings alone. Therefore, other life forms must be conserved not just because such conservation is critical to the present and future generations of human beings but because these other life forms also have a right to life.

CHAPTER 4

HISTORY OF COMMUNITY PARTICIPATION IN BIODIVERSITY CONSERVATION¹

Community participation in biodiversity conservation is not a recent phenomenon. Historical evidence indicates communities all over the world were getting together to protect sites and species hundreds of years ago. Even in pre-historical times some areas were demarcated for conservation and certainly many species were protected. However, much of the documented evidence that survives details conservation initiatives by communities in the last few hundred years.

What is most striking about traditional conservation initiatives is their efficacy. Even today, after a hundred years of degradation, some of the best-protected areas across the world are those that were protected by traditional communities as sacred sites.

Perhaps one fundamental question that needs to be answered is 'Were traditional lifestyles deliberately, or only accidentally, oriented towards biodiversity conservation?'

A bulk of the literature on the subject seems to suggest that these were deliberate conservation strategies adopted by traditional communities. However, considering that very often the explicit purpose of these strategies was not conservation oriented but mainly an appeasement of gods and spirits, some further explanation is required. Popular belief has it that members of traditional societies, or at least some among them, had the wisdom to recognise that various sites and species needed to be protected and conserved for the benefit of humanity. Also, recognising that if the conservation of these sites and species was stipulated merely for human benefits then it might not be incentive enough for the common folk, the wise men and

¹ An earlier version of this chapter was a part of the presentation made in the third annual meeting of the joint UNESCO-UNU-TWAS Programme on South-South Co-operation on Environmentally Sound Socio-economic Development in the Humid Tropics, at Kunming, China, in December 1997.

women of such societies associated divine imperatives with those of conservation. Consequently, human beings were forced to conserve what needed to be conserved, under threat of godly or spiritual displeasure and retribution.

However, the evidence available can also support the alternate thesis that the attitude traditional communities had towards such sites and species was actually out of reverence and respect to the Gods and spirits. The fact that this led to the conservation of biodiversity was only an incidental benefit.

4.1 SOME BASIC QUESTIONS

Perhaps the first set of questions that needs to be answered with regard to such strategies is concerning their initial evolution:

- Who formulated the strategy?
- What was the need for such a strategy?
- How was this particular strategy determined to be optimum, if it was?
- How was the acceptance of the strategy by the community, and their participation and co-operation, ensured?

Unfortunately, very little direct evidence remains to give clear answers to any of these questions. To take the well known example of sacred groves, at one level there were myths and beliefs about the Gods and supernatural entities determining what area would be sacred. They also determined the response that such sacredness deserved from the local communities and, without further reasoning, issued a conservation imperative which could be violated only at the risk of inviting the wrath of the Gods.

It is in the very nature of the logic of divine intervention that details of the social and the very human processes that went on behind the scenes would never be revealed, lest their revelation weakened the force of the divine imperative. Consequently, details have not survived of what actually happened and how these various decisions were made.

However, an analysis of the reasons behind the creation of sacred groves, or of other such traditional institutions for conservation, throw up interesting questions. For example, given the social reality of the time, it could be postulated that a small group of people, representing religious and other institutional authority in the society, decided that specific areas or species must be conserved. They also recognised that perhaps the most effective way to ensure this would be to invoke divine sanction. Clearly, given the theological beliefs of the time, this would have had at least three advantages over the more mundane strategies:

- There would be no need to have a troop of watchers to ensure compliance with these divine sanctions, nor another group of people to watch over these watchers, as by common belief the Gods and other supernatural entities were always watching.
- There would be no need to waste resources and time on a complex and perhaps corruptible judicial process, to try and convict the offenders. Under divine management, any one who violated the laws of the Gods would be speedily and appropriately punished. Presumably, there were enough diseases and other misfortunes in traditional societies to be able to constantly demonstrate that the Gods were watching and that there was no escape from their justice.

Characteristically, in most cases the belief that great evil will befall any one who violated divine dictums was very powerful. In rare instances it was so powerful that if persons began to believe that they were defaulters, they often became ill and sometimes even died, all because they so strongly believed that this would happen to them. There are many recorded examples of what can now perhaps be explained as a self-satisfying prophecy

- The invocation of divine authority also saved the leaders from having to explain to the people in any great detail why these areas needed to be conserved, and to what extent and level. This saved them from the many debates that we see today on the need for protected areas, or between environment and "development"; or between different viewpoints among the environmentalists themselves.

Of course, there always remains a possibility that some or many of the conservation areas were not set up with benign intentions but were actually created to protect specific, vested, interests. For obvious reasons information about such 'hidden' objectives was never made public and has not therefore been handed down. In the euphoria that now exists regarding the wisdom and the inherent ethicality of traditional methods of conservation, it becomes difficult to postulate a thesis regarding traditional conspiracies by a few against the many. Also, as in many parts of the world such sites are today perhaps the only pristine ecosystems remaining, it is difficult to unravel what sinister purposes, if any, were behind their initial setting-up.

But all said and done, given today's scientific understanding, it seems incredible that people hundreds, sometimes thousands, of years ago managed to protect what appear today to be the most critical sites and species. Whether this was a matter of knowledge or a matter of chance, is another fascinating area of study. Perhaps all that can be said is that today we know of only those societies who had the wisdom (or the good luck) to adopt such a strategy and protect such sites and species. We know very little of those

who did not and therefore have not lived to tell the tale.

The second set of questions that need to be asked concern the implementation of the strategy. How did a society or the rulers of a society manage to ensure that the rules and principles laid down under these strategies were followed over time and by everyone?

As already mentioned, there were great advantages in having divine support for unpopular policies. However, the interesting question is how this divine support, or perhaps the myth of divine support, was established and maintained.

Characteristically, where societies had less evolved structures of social administration, the intervention of human agents in enforcing the will of the Gods was minimal. In these "primitive" societies any misfortune or illness, of which there were many, was taken as a demonstration of supernatural wrath. In most cases the victim had, or believed that he or she had, already done something that was in violation of divine dictums. Therefore, there was little reason to doubt that the illness or loss was a swift and harsh retribution. In those few cases where the victims did not accept that they had done anything to deserve this, the fact that there was retribution from the Gods was considered better evidence than their denials. Consequently, they were branded as having sinned twice, once when they disregarded divine edicts and again when they falsely protested their innocence.

Individual misfortunes were not the only types of evidence offered for establishing a belief in divine retributive power. Natural calamities like earthquakes, floods, droughts, storms, forest fires, landslides and many such, which affected the whole community, were also postulated as retribution of God or nature, on those who defied the law. Very often the ire of the whole community was focussed on those few who were seen as having brought such misfortunes on to the heads of everyone.

Interestingly, as social organisations evolved and there was a growth of what is often called the 'scientific temper', the hold of divine imperatives began to weaken. People started finding other explanations for natural and even certain non-natural phenomenon, and began to question whether these really were retributions unleashed by the Gods. The rulers responded by developing new social institutions aimed at ensuring that "God's will" is respected. Rather than leaving punishment and retribution directly to the Gods, these institutions became agents and claimed that they derived their authority and power from the Gods.

In these "less primitive" social groups, rather than wait for divine retribution, human beings themselves began to inflict punishment on those that violated divine edicts. This was, of course, also an admission that God

was not always able to look after his or her own affairs and that human help was required. However, it also brought in at least some elements of the disadvantages inherent in systems administered by human beings. Though there was still no need to justify the demands of conservation, as these continued to be held up as divine edicts, there was now a need to watch over the people and to catch the guilty, as only then would human, though not always humane, punishment be possible. Also, very soon there was a demand that due process of law be set up by which the guilt of the accused could be demonstratively established, as humans could not claim the same infallibility that was the right of the Gods.

In some cases, human rulers attempted to take on the mantle of the Gods and claimed not only infallibility but extra sensory methods of knowledge. Though these sustained for a while in some societies, they were far more difficult to impose over time and, almost everywhere, more objective processes were demanded and finally conceded.

In this process, the distinction between those strategies which worked purely out of fear of the Gods and those where the fear of society or social institutions was the main motivation, became blurred. There was also a consequent blurring of the distinction between strategies fully implemented by an individual or a small select group of rulers, and those that increasingly required participation of the general public.

The next inevitable phase was the questioning of the very basis on which it was decided that a particular area or species was to be conserved, and the level to which it would be protected. But this came later.

In the transitional period there appeared to have been growing incidents of the violation of the rules of conservation, whether divine or human made, and whether directly communicated by the Gods themselves or indirectly through their human agents. Very often, such violations were a result of the survival needs of the desperately poor people who had little alternative but to use the natural resources around them. The fact that their poverty was very often a result of the oppression unleashed on them by the same elements that were also asking them to conserve nature, made the call of conservation all the more suspect.

As usually happens, when large scale violations of the law started taking place, people started questioning the very basis of the law and whether there was any justification for it. The will of Gods, as the sole reason, could obviously not stop this process of questioning for long. Therefore, other reasons started being invented. Sankaran, in her case study from Mexico (case 23), observes that among the Huastec families "The real owners of the land and forest are divine beings and spirits (including ancestors). Another way of expressing this relationship is that the Earth

(with its resources) is a member of the community, and the community has the obligation to treat the Earth and all other community members with respect and concern for their continued well-being. In other words, ownership means that the human community has a moral responsibility to maintain the land, its resources, and society in good condition."

In the initial stages, the justification very often continued to be in the supernatural realm, but was made more personalised. For example, the earlier explanation that these forests were the abode of the Gods gradually transformed into or began to include spirits of the ancestors. This meant that anyone who was violating the rules of conservation and protection was showing disrespect not only to the Gods but to his or her ancestors, and was making "life after death" of his or her father or mother more uncomfortable, even hellish. For a while this personalisation of the rationale effectively re-imposed the checks and balances sought to be established. However, in many places, sooner or later, there developed more worldly justifications for conservation.

These came in the form of the principles of sustainability which, in varying forms and with some transformations, have survived till today. Linkages were sought to be established between climate, especially rainfall and other aspects of the hydrological cycle, and the conservation of specific ecosystems. To a humanity almost entirely dependent for its survival on rain-fed agriculture, these were very powerful arguments for conservation. The fact that many of these arguments might not have stood up to scientific, or even an in-depth, scrutiny did not necessarily detract from their persuasive value. This was partly because the notion of a general, all powerful, multi-disciplinary, God was transformed into subject specific Gods. So, there was a God of rainfall, a God for rivers and streams, and a God for lakes and ponds, all of whom desired the conservation of ecosystems in order to continue to be benignly and fully functional. The gaps in the knowledge and understanding of the time were cemented over in this manner. But, as knowledge increased, it replaced myths.

4.2 SOCIAL EVOLUTION

Most societies have moved from traditional, authority based, structures to those that demand greater transparency, rationality and accountability. Conservation imperatives have also accordingly adjusted. Therefore, the third and final phase in terms of the motivating principles for conservation can be seen as the phase where economic incentives become pre-dominant. There is perhaps a fourth phase where certain societies, usually the well to do, have developed an ability to meet their own economic needs through utilisation of natural resources belonging to other social groups, usually

the less powerful ones. For such societies, conservation imperatives come at least partly from a fear of closing future possibilities and opportunities for their own opulent and exploitative lifestyles. However, such motivations seem to be mostly missing from traditional societies, especially given the limited ability of such societies to reach out and utilise other people's resources.

For societies solely or primarily dependent on the renewability of their immediate ecosystem for their survival, the need to conserve these was paramount. This was especially so because such societies had little ability to either manipulate natural ecosystems or to use resources which were not in their geographic vicinity.

Among the Melshegu's in Ghana, the eldest male (in rare circumstances females) of the first occupants is appointed *Tindana*, who is the community landlord as well as the political and spiritual or religious head. Malshegu's *Tindana* is a woman, but she, however, has delegated her functions, especially the cultural and religious ones, to the male religious leader, the *kpalna*. Traditional religious beliefs and practices have resulted in the preserving of sacred groves throughout Ghana, especially in the Savana regions, because of the degraded vegetation. The sacred groves are protected, conserved and maintained through a combination of taboos, prohibitions, beliefs and restrictions. In almost all cases burning, tree cutting and fuelwood gathering is prohibited in the sacred groves. There are sanctions against those who contravene the taboos.

The Malshegu ancestors settled here in the early 18th century. Initially, they were individual families, one of whose elders became the leader by being custodian of the fetish god *Kpalevorgu*.

The early settlers had to fight the onslaught of Arab slave traders. The success in warding off the invaders was attributed to the support from *kpalevorgu*, symbolized in the form of a boulder, placed under a baobab tree. Its sanctuary and dwelling place was selected on a high ground on the outskirts. Since the desire was to give the oracle a quiet, peaceful and shady place, the land around the baobab tree was demarcated and set aside. Now it has grown into an open canopy forest. The direct responsibility for the grove is assumed by the *kpalna*, though all the people consider themselves as joint custodians. The Malshegu grove is therefore one of the few remaining examples of non-riverine, closed canopy forests in the savannah.

Inhabitants are allowed entry into only the buffer zone of the grove, and that too only during the biannual festival held in honour of the

fetish. Some hunting and collection of forest resources is allowed on these special occasions. The buffer fetish lands are surrounded by a strip of protective land on which only grazing is permitted. At the conclusion of the festivals, the male participants clear a three meter wide fire belt around the grove to protect the grove from bush fires. Even under the present harsh conditions of fuelwood shortage, women practice restraint and refrain from collecting fuelwood from the grove. Every member is responsible for policing the grove, it is therefore almost impossible for anybody to enter without being detected. [Sankaran case 5]

4.3 NOMADISM AND SHIFTING CULTIVATION

One response to the limited carrying capacities of certain ecosystems was to adopt a nomadic way of life. Interestingly, in most ecosystems with limited productivity, like deserts and some mountain ecosystems, traditional societies very often adopted nomadism as a strategy for survival. This in effect significantly widened the area that they could use for meeting their needs and therefore allowed them to use nature and natural resources more intensively than would have been otherwise possible. Most nomadic cycles were also in harmony with natural cycles, so that ecosystems were used at a time when they were least vulnerable and, as the nomads moved on, there was adequate time for these ecosystems to regenerate themselves.

Many non nomadic communities, also developed similar conservation strategies. They developed a system by which the areas being used for agriculture or grazing were changed from time to time so that no particular area was overused and degraded beyond recovery. A good example of this is the traditional system of shifting or slash and burn cultivation, practised in many such areas. The shifting cultivation cycle was usually two to three years, after which the area was abandoned and allowed to regenerate. It was many years before the community came back to the same site, and this only when the site had fully regenerated.

As is well known, both nomadism and shifting cultivation became progressively unsustainable as wilderness areas shrunk, populations grew and land use patterns changed drastically. Today, much of the shifting cultivation the world over is unsustainable because of the shortened cycles and the resultant inability of an area to regenerate before it is cultivated again. Added to this is the fact that the losses incurred due to shifting cultivation are no longer considered acceptable because the extent of forests has shrunk drastically.

Similarly, the nomadic wanderings of traditional groups is no longer thought to be sustainable, as most traditional nomadic routes no longer

exist. The land use in areas that they used to visit has often changed drastically and is no longer able to support their needs. There are also multiple demands on the natural resources along these routes and the growing populations in these areas are no longer willing to let the nomads have access to these resources.

In some cases, changing circumstances have forced erstwhile nomads to give up their nomadic ways and to settle in one location. This has made their interaction with their immediate natural surrounds less sustainable.

4.4 SETTLED AGRICULTURE

However, in many countries, the traditional method of habitation for the last nearly three thousand years was settled habitation in a specific site. For communities that practised settled agriculture, their very survival was dependent on developing a strategy that allowed them to use natural resources without destroying or exhausting them. This was especially so in the period before they had the technology to immunise themselves at least partially against the vagaries of nature and to access resources that were not located near them. Most of these communities practised rain-fed agriculture, which was also their main economic activity. Other economic activities included animal husbandry, and manufacture of goods by artisans, using mainly primary natural resources.

For their agricultural activities, the availability of water and of good soil was of primary importance. As ability to access ground water, especially deep aquifers, was very limited, their major dependence was on surface water bodies and on rainfall. There was, therefore, very early understanding of the linkage between vegetation and forest cover on the one hand, and sustainable flows in rivers, streams and springs, on the other. There was also some understanding of the linkage between forest and vegetative cover and rainfall patterns, but this was much less developed and was more a matter of belief than of direct knowledge. Use of green manure in the field to replenish the soils was also an important reason for ensuring that there was adequate vegetation in the vicinity of agricultural areas.

There are many recorded instances where village communities protected specific patches of forests or watersheds because they saw them as being critical to their water supplies. In many cases, the watersheds critical to a particular community were located at a great distance and perhaps nearer to another community. In such cases, very elaborate arrangements were arrived at between the communities to ensure that riparian rights of each community were adequately protected. There was a belief, in many parts of the world, that the stoppage or contamination of water was among the greatest sins that anyone could commit.

Though this was the general ethos, this did not prevent conflicts and even wars between communities over water. Clearly, though there was the wisdom to understand how critical water was for their survival, there was also the all too human greed to grab as much as one could for oneself. Historically, as today, the control of natural resources finally vested in the strong and the more ruthless, and there are many instances of whole communities being wiped out, or becoming subservient, because they lost the battle for control over natural resources.

4.5 HUNTER GATHERERS

In many parts of the world, especially where soils were poor and agriculture was not enough to sustain the communities, hunting of animals and gathering of wild species of edible plants was again critical for survival. Here, again, traditional communities developed strategies to ensure that critical species were not over hunted or over collected.

Communities also ensured that seed banks for plants and animals were protected by, among other things, closing some areas from hunting and gathering, or by banning the killing of animals in certain seasons.

4.6 SUSTAINABILITY

There are numerous recorded strategies where conservation of areas or specific species have been taken up with a clear understanding that such conservation was essential if the concerned individuals (on private property) or communities (in community areas) were to continue to have the ability to survive. What is not totally clear is whether this understanding was adequate for people to behave rationally or was the critical condition the imposition of religious or social taboos.

Clearly, such strategies worked for communities only where the community groups were small enough for every individual to suffer if the community suffered as a whole. It also had greater chances of working where the community was small enough to be able to identify violators of the law. As human communities grew, the advantage of violating a law, to an individual, became far greater than the individual's share in the loss that his or her action caused to the whole community. This became even truer where the size of the society made it difficult for the detractors to be identified or punished. Arguably, therefore, many of these traditional strategies for conservation were effective only where communities were small.

Another factor that supported the efficacy of such strategies was the inability of individuals or communities to substantially change their lifestyles or to integrate with other community groups having drastically different

standards. In the modern context, it is possible for communities or individuals to destroy or allow the destruction of the natural resources they were dependent on, as long as such a destruction gives them a basis for an alternate, preferred, life style. As an example, in many parts of the world where natural resources were owned and responsibly managed by local communities for hundreds of years, they are now being auctioned to the highest bidder as the people want to change their lifestyles from essentially rural, agricultural, ones to urban ones. The sale of natural resource has therefore been used to generate the money that is required to effect this change. The fact that such a change might not be collectively sustainable, or sustainable over a long term, does not always appear to be an adequate deterrent.

These were, perhaps fortunately, options that were not available to most of the traditional societies. There were cases where a community would willingly hand over its natural resources to another and in its place get a means of transporting itself to some other geographic location. However, the new community would also look after these natural resources, as the very survival of the new owners also depended on the protection and renewal of these resources. Besides, these resources had little other commercial value, except perhaps exchange value, which depended on their being well maintained.

With the advent of industrial technology and industrialisation, much of these equations changed. Natural resources acquired new and distinct uses and the demand for them justified the cost of transportation over large distances. It also became possible to totally destroy parts of the landscape and to go on to some other place and live a different life there. Consequently, whereas in the past the protection and conservation of natural resources was the only way to survive, modern technology gave, at least for a short time and to some people, other options.

Along with giving an incentive to destroy natural resources, modern technology also increasingly provided the wherewithal to do it. Better and better methods and technologies for cutting forests, diverting and damming rivers, changing land-use, fishing and dredging, and for removing whole mountains, were developed. Unfortunately, there was no parallel growth in the technology for conservation and regeneration. This has created the modern world and it is not clear how many of the strategies that were effective in the past can still work.

4.7 ECOSYSTEM SPECIFIC STRATEGIES

Conservation strategies developed over time in a manner that was appropriate to the ecosystems within which they had to be applied. A broad

survey of traditional strategies suggests that special strategies evolved for each of the following ecosystems:

- Deserts and other arid zones
- Mountains and alpine pastures
- Lakes, rivers and other water bodies
- Coastal and marine areas
- Forested areas

These strategies took into consideration the ecological requirements of each type of ecosystem. In deserts and other arid zones, given the low productivity of the habitat, conservation strategies were geared at spreading the ecological impact of habitation and sustenance over as wide an area as possible. This was also true of the higher mountain ranges. In coastal regions, as also in areas with lakes, river and other water bodies, the focus was on conserving spawning grounds of the fish and preventing over-fishing. There were also efforts to ensure that pollutants did not affect the fish and other marine or aquatic life. The case studies (given later) from Phang Nga and Pattani, in Thailand, support these points.

In forest areas, the major thrust was on continuation and regeneration of forests, and on ensuring that no essential species became extinct.

4.8 RESPECT FOR NATURE

Human beings have the ability to respect, or be in awe of something, without fearing it. Such a relationship is exemplified in an attitude where the qualities or achievements of something or somebody are admired to a level where there is motivation to support the maintenance and furtherance of that which one admires. Occasionally, in traditional strategies, there are examples that indicate that certain strategies were a result of such respect for nature or for specific elements of nature, and not out of fear or economic self-interest.

Closely linked to these are strategies that evolve out of respect for the teachings or wishes of a revered individual. Though, invariably, the teachings themselves give many reasons why an area or resource needs to be conserved, however, in these particular cases, it seems likely that it is not the content of the teaching as much as whose teachings they were, that motivated action for conservation.

An interesting example of this is the work of the ecology monk Phrakhrú Pitak Nantakhun of Thailand. He used his religious standing to motivate villagers of nan province in Thailand to take up the conservation of trees and even ordained a tree (case 1).

There are also examples of communities developing love and affection for specific elements of nature and thereby conserving them.

4.9 ETHNOCENTRIC STRATEGIES

More recently, conservation strategies have begun to take the character of strategies for the well being of human beings. Cultivation of plants and domestication of animals, which started over two thousand years ago, were the beginnings of a strategy for mastering and modifying nature in order to better serve human interests. With the dawn of the industrial age, the harnessing and modification of nature and natural resources got a major fillip. This was possible because of the growing, dominant, philosophy emerging from the Christian world which argued that the world was created for human beings and that all other creatures or life forms existed only to serve human interests. This all-pervading philosophy of the world soon swarmed the more symbiotic philosophies that existed among traditional, local, communities the world over.

The traditional awe, respect and even fear for different elements of nature was replaced by a centralised imperative for human survival and well being. The supremacy of human beings was argued to be a conscious act of the Gods and destruction of nature and of other species, for human benefit, was shown to have divine sanction.

The growth of science and technology and the resultant sense of power and control that human beings developed over their natural surroundings and destiny made this irreverent attitude possible.

Despite a vocal and committed movement for animal rights and for the rights of nature, the predominant attitude towards nature continues to be ethnocentric. Imperatives for conserving nature, in so far as they exist, are mostly motivated by imperatives for human well being. The only difference is that there is a growing realisation that human societies cannot survive unless nature survives. Though, essentially, an anthropomorphic philosophy of the world predominates today, in the last thirty years or so our understanding of what is in human interests has undergone a drastic change.

This has launched us into an era of "sustainable development", with occasional forays into biodiversity conservation or environment protection. Essentially, it is a period where the world community is becoming aware of the dangers that humanity faces if nature and natural resources continue to be destroyed at the present rate.

However, though the fears may be real, they do not by themselves result in adequate and appropriate action from the masses. Even national governments, though aware of the medium to long-term risks and dangers, are often unable or unwilling to make the short-term sacrifices required. Therefore, society is again faced with the dilemma that though it knows what needs to be done, it does not know how to get it done.

In this century, we have entered a new phase where conservation is attempted through a series of social or legal contracts, within or between nations, where there are incentives for compliance and punishments for violation. Where threat perceptions are not adequate to mobilise public support, there is a falling back upon recreational and aesthetic values to motivate at least the better off; who have the freedom and the resources to pay for the preservation of their recreation and scenic values.

Though much of the battle for conservation still has, as its primary enemy, ignorance and greed, these are fast being replaced by immediate survival needs and demands for social justice. In an increasing proportion of a growing number of countries across the world, short-term survival of the poor and the disempowered is becoming a critical issue. As richer countries, and the rich in the poorer countries, refuse to share their resources with the masses, the only, perhaps the last, resort of these masses is nature. Their last resource is the world that they share with those who are even less empowered than they are, namely the plants and other animals.

CHAPTER 5

SOME CRITICAL ISSUES IN COMMUNITY PARTICIPATION

As already mentioned earlier, the most critical of the issues that determine the appropriateness of community based conservation approaches and, consequently, their prospects for success are:

- The nature of community participation
- The objectives of conservation, especially the levels of protection required.
- The incentives and disincentives for conservation.
- The historical, cultural, economic and administrative linkages of the adopted conservation strategies.
- Community structures

What follows is a discussion of each of these issues in the context of the cases studied.

5.1 NATURE OF COMMUNITY PARTICIPATION

The term community participation has meant different things in different situations and at different times. The spectrum of meanings has been summarised on the next page.

Each of these forms of participation, one or more, are found in various countries. In some cases different forms exist in relation to different types of resources or for areas with different conservation objectives.

All things being equal, the effectiveness of community based conservation strategies increases as the nature of participation progresses from level one to level six.

5.2 OBJECTIVES AND LEVELS OF PROTECTION

One of the major difficulties with community participation in areas that are being protected with the objective of conserving biodiversity is the high

TYPES OF PARTICIPATION

| <i>Level of participation</i> | <i>Nature of participation</i> | <i>Remarks</i> |
|--|---|---|
| 1. Provision of free labour | There was a change from forcing communities to provide free labour to persuading them to provide free labour or other inputs in cash and kind for public projects, especially those designed by others to be for 'the community's benefit'. | This practice still continues today. Many rural development and other projects and activities have a component of 'beneficiary contribution'. It is assumed that apart from lowering costs, such an approach brings about a greater sense of ownership towards the 'assets' so created, among beneficiary communities. There is no consultation, approval or even prior information regarding the project or activity. The appropriateness of the project or activity is not determined in consultation with the people. |
| 2. Prior information about the project/ activity | This involves informing the affected people, losers and gainers, of the impending project or activity that will have an impact on their lives. | This is designed to give the people a 'sense of involvement' in the project or activity and to give time to those who would be adversely affected to make the best of it. In some countries, like India, people have first to be informed about the intention of the government to constitute an area into a national park or sanctuary and those who would be adversely affected have to be given the opportunity of seeking compensation. Consultation with or approval of the community is not, however, required, nor are any inputs about the appropriateness of the project/activity. |
| 3. Public hearings | This involves communicating to the affected people, in advance, details of the proposed activity or project and giving them an | This is designed to give people an opportunity to clear their misgivings about the proposed activity or project and to bring to the notice of the authorities |

(Contd.)

| <i>Level of participation</i> | <i>Nature of participation</i> | <i>Remarks</i> |
|---|--|---|
| | opportunity to express their views on the impacts of the project. | the adverse impacts these would have on the affected people. However, there is usually no mechanism to ensure that the views expressed by the people are taken into consideration while making final decisions. In some countries there is a requirement to hold such hearings prior to the final approval of those projects that would have adverse impacts on local people or the environment. |
| 4. Consulting the people | This involves discussing with the people the sorts of interventions required to address the problems that they are facing. | This is designed to give the people an opportunity to suggest the projects or activities that they would prefer. Such a process is usually limited to those projects or activities which are designed to meet the needs of specific communities, rather than for commercial or infrastructure interventions designed for larger benefits. There is, again, no certainty that the views of the people would prevail. |
| 5. Sharing control with the people (joint management) | This involves the seeking of the community's approval before activities or projects are initiated in their defined area. | This is designed to empower the local people to have a say in the way in which their resources are managed. In such a process, neither the government or other agencies nor the community can by itself approve any action. There has to be a joint approval. |
| 6. Absolute control | This involves the community solely having the power to decide on the management and use of a resource. | This is designed to totally empower a community with regards to the natural resources acknowledged as being under its control. |

levels of protection that are usually postulated. Unlike conservation efforts aimed at the sustainable utilisation of natural resources, where varying amounts of use and manipulation of the ecosystem are permitted, in most cases biodiversity conservation requires human use to be severely restricted or all together curtailed. The total protection of an entire area, without any human use, usually conflicts with the needs of the local community to extract resources from the area. Mander, in his Mexican case study (28) surmises: "The second important lesson from the UZACHI experience is that even for indigenous communities with strong traditional cultural bonds with the natural environment, the major motor energising the community to establish control over and manage its forests, is the desire to preserve the potential of the forests for profits and livelihoods. In other words, except in rare circumstances, it is unlikely to expect rural communities, even indigenous communities, to be impelled to preserve the bio-diversity of which they are immediate custodians, only for the sake of promoting goals of conservation. They are much more likely to be motivated by goals of sustainable extraction."

The level of protection required determines to a large extent the level of inclination and ability of local communities to protect the area. Whereas, sustainable use is an objective that is widely accepted, it does not by itself imply biodiversity conservation. The average villager or forest dweller knows and values those species of plants and animals that are of some direct use. Some animals are good food, others control common pests, and others can be domesticated. Plants serve as food, medicines, ornaments and help build houses, boats and other implements. There is little problem in motivating the local communities to conserve such species. In fact, often they require no external motivation at all. However, the problem arises when they are asked to expend time and effort conserving those species that they perceive as being of no direct use or benefit to them. The problem becomes worse when they are also expected to conserve those species that raid their crops, attack them and their livestock or otherwise adversely affect them. But, if biodiversity is to be conserved, all these must also be conserved. Therefore, whereas sustainable use would focus on ensuring that the plants and animals that are of use do not degrade or become extinct, biodiversity conservation implies the protection of all plants and animals. The types of conflicts that emerge, given different conservation objectives, different levels of protection and varying field realities, are summarised below.

Efficacy of Community Based Conservation Strategies

| Objective: Sustainable use by the community; Level of protection: Partial. Only regulation of use. | | | |
|--|---|-----------------|--|
| <i>Situation</i> | <i>Nature of conflicts</i> | <i>Efficacy</i> | <i>Remarks</i> |
| 1. Local communities are exclusively using the area to meet their own needs | Conflicts between the needs of the local community and the need for sustainable utilisation | High | If communities feel a sense of ownership over a resource they are usually very adept at ensuring that it is sustainably used, with no adverse impacts except, sometimes, an inequitable distribution of resources within the community. Might not offer adequate protection for biodiversity. |
| 2. Local communities are exclusively using the area to meet their own needs, however there are conflicting needs of different sections of the local community | Conflicts between diverse demands within the community | Medium | Most often the powerful among the community get preference. Might not offer adequate protection to biodiversity. |
| 3. Though the objective of conserving the area has been to allow sustainable use by the community, commercial and/or infrastructure demands are introduced, with benefits flowing to the local community | Conflict between meeting the biomass needs of the local communities and the temptation of financial and economic benefits | Low | In many cases, if the returns are high and allow the community to change their patterns of dependence on natural resources, there would be a tendency to allow these other demands. Adverse impacts on biodiversity. |
| 4. The same as above, but with benefits not flowing to the community | Conflicts between the needs of the community and the demands of commercial exploitation or for infrastructure projects | Medium | In this case the community would have a high level of motivation to protect the area. As the objective of the area is sustainable use but the community, the law would also be in their favour. However, their ability to fight against powerful external forces is questionable. Adverse impacts on both the community and biodiversity |

| Objective: To Conserve Biodiversity; Level of Protection: High. Very limited or no human use or activity allowed | | | |
|--|---|-----------------|--|
| <i>Situation</i> | <i>Nature of conflicts</i> | <i>Efficacy</i> | <i>Remarks</i> |
| 5. None or very limited human use, determined by the requirements of biodiversity conservation. No alternatives provided | Conflicts between the imperatives of biodiversity conservation and the needs of the local communities | Low | Most communities would not be willing or able to sacrifice their own requirements for biodiversity conservation. Would have an adverse impact on biodiversity. |
| 6. Same as above, but with adequate alternatives or incentives provided. | Conflict between the community's interest to conserve and some individual inclinations to exploit | High | Fundamentally, most communities would like to conserve biodiversity if they have a real choice and such conservation does not threaten their survival. No adverse impact on biodiversity. |
| 7. Area designated for biodiversity conservation but infrastructure or commercial pressures introduced with financial, economic or other benefits flowing to the community | Conflicts between the imperatives of biodiversity conservation and the temptation for financial and economic returns. | Low | It is usually difficult for relatively poor rural communities to forego the financial, economic and other benefits that such a situation would provide, especially if the area allows them little access. This would have a bad effect on biodiversity. |
| 8. The same as above, but with benefits not flowing to the community. | Conflicts between the urge to conserve biodiversity and the dangers and difficulties in opposing commercial/ infrastructure interests | Medium | In this case the community would have some incentive to protect the area, though not much as they have no control over, and little access to, the area. However, their ability to protect the area against powerful external forces would be questionable. Adverse impacts on both the community and biodiversity. |
| 9. Traditionally conserved area, conserved as a sacred site, with complete control of the community. | Conflicts between the cultural/religious beliefs of the community and the local needs for biomass and incomes or the prospect of financial and/or economic gains due to external exploitation | High | Traditionally, cultural and religious beliefs have proved strong enough to overcome needs and temptations. |

From the above, it would seem that community based conservation efforts are very effective where the area is managed for meeting community needs sustainably and there are little or no conflicts within the community over resource use (category 1 above). The case studies from Thailand (Worha et al) conclude that "One of the important factors for success has been social cohesion. Almost all the small-scale fishermen are Muslims and are bound through ties of kinship even with geographically scattered communities. This religious and social homogeneity has made it easier for community groups to understand and work with each other with minimal conflicts. The strong and mutually supportive social structure has provided a foundation for enabling the network to function together rather than as a number of scattered initiatives with different objectives and strategies" (case 29).

When conflicts emerge within the community (2 above), then the ability of the community to conserve gets compromised. Intra community conflicts make it difficult for the community to regulate its own use or protect the area from others.

In Pakhasukjai village, in Thailand, Sankaran states that "It is difficult for village committees to enforce village agreements with people who are kin of committee member, or those who are economically weak and therefore cannot afford to give up marginal lands for afforestation. Boundary disputes have also cropped up" (case 3). Similarly, in Duru-Haitemba forest in Tanzania "Not all villages are enthusiastic about local forest management, and there are and will continue to be problems to solve. Resident timber sawers were angry at the majority decision to close the forest to harvesting, especially as the local Forest Officer had 'allowed' it. Some of the poorer households lost their source of income from charcoal burning and selling or the sale of fuelwood, now banned in all three villages in favour of retaining the resource for subsistence use. At the other end of the social hierarchy, the larger livestock owners are frustrated at the loss of forest grazing. For their part, some of the patrolmen now feel they should be paid for their work, an issue the concerned village is considering" (case 20). In Central Nepal "When project staff suggested to villagers that it would be possible to increase forest use and that the Forest Department could approve this, the villagers showed a surprising lack of enthusiasm. Investigation showed that members of a small sub-lineage of relatively wealthy Brahmins within the village had been largely responsible for initiating protection. Some poorer villagers objected that this dominant sub-group refused to allow increased use of the forests. Members of the dominant group controlled relatively large numbers of trees on their private land. Without access to trees on common land, poorer farmers depended on these people for timber,

enabling the dominant group to control agricultural labour" (case 21).

However, some communities develop effective mechanisms for resolving internal conflicts. "Among the Huastec and Totonec communities of Mexico, disputes over land borders and harvest rights are common and can disrupt congenial relationships between families within a community. Accusations of witchcraft are made against those who attempt to appropriate resources for private gain. A belief in witchcraft provides a strong social sanction against actions that go against conservative use of resources and a commitment to the corporate group. Traditional curers reinforce socially appropriate behavior during their interactions with patients, looking for causes of illness in the patient's or others' misuse of resources. Here the importance of the relationship between the divine powers and land comes into play, as well as the relationship between people. Clearing a private forest along a community watershed, for example, would result in strong pressure (including witchcraft accusations) against the family, as well as be interpreted by the curer as causing illness or misfortune because the person went against religious sanctions about protecting water (ecologically unwise). Hence, ecologically-sound land use is supported by cultural values and a belief in the ethical commitments made between people and spiritual powers, when people make land use decisions. The tenurial shell created by the state supports the traditional belief structure, which in turn supports ecologically-sustainable land use" (case 23).

In Thailand, among fisherfolk, another approach is attempted. "The approach of the Fishermen's Clubs and the NGOs to external conflicts and internal dissensions has essentially been one of non-confrontation. Because of the 'democratic' nature of the Clubs, with elected representatives, conflicts over leadership have been minimal. Similarly, internal dissensions within members of the Fishermens' Clubs are of low frequency and intensity as they have formed the Clubs because of common interests in the first place. Conflicts are more common at the village level between Club members and villagers who are not members (often village level political leaders). In such situations, a number of strategies are adopted: non-members are engaged in "other" activities to bring them into discussions; information (especially success stories) is shared and discussed widely within the village; credit is given to village leaders at all times and "loss of face" is avoided. When confronted with external vested interests and pressures, communities and NGOs use their "contacts" at higher levels to put "subtle" pressure on the outsiders; raise the profile of the issue by inviting dignitaries without vested interests to support initiatives; and use press and information campaigns to highlight the problems. In general, by focusing on a non-confrontational approach, working from the 'outside' and letting the results

speak for themselves, conflicts and pressures have been manageable" (case 29).

When there are external demands (commercial or infrastructure) which, however, promise no benefits to the community (4 above), then the ability to conserve goes down. In this case, though the motivation of the community to save the area might be high, for otherwise they would lose their source of biomass and incomes, their ability to fight against powerful commercial or infrastructure interests is limited. Therefore, in most cases they lose out. This happens when they have little or no control over the area or where this control can be superseded by the government. It also happens when powerful commercial interests use terror tactics to subjugate their resistance. In Bangladesh, for example: "Groups involved in forest protection usually meet severe opposition from local timber traders, land owners and other local influential groups who are involved in the timber trade. In many cases, ownership claims to land have been forged to take over the protected forest. Protection committee members have been physically threatened by these individuals, which in some cases has led to physical confrontation. False cases have also been filed against women group members in an effort to ostracize them in the village. When violence has failed, the traders have tried to bribe individuals in the forest protection committees as a way of creating disharmony within the committee. Local villagers tend to be initially sceptical of forest protection activities. Villagers feel that since the forest belongs to the State, everyone in the village has an equal right of access to the forest and its products. Once the forest protection committee's credibility is established, this scepticism changes and the villagers assist the group in protecting the Sal forest. The local forest officials demonstrate mixed reactions to protection activities in their areas. Some are cooperative and assist the committees in the protection activity, other feel that the committees are interfering with their mandate and try to discourage them from undertaking protection activities....In 1990 the Paikpara Forest Protection Area was attacked by local landowners and timber traders. The groups resisted this attempt and several members were injured. A village court was held to resolve the dispute and the local school teacher and forest official acted as mediators. The problem was not resolved, and the Proshika headquarters staff had to intervene and bring in journalists from Dhaka to write about the incident. This had a major effect on the local community, who saw that protection activities were receiving wide coverage. The problem was resolved temporarily. A year later, however, the protection area no longer existed. The FPC in the area could not with stand the local pressures to cut-down the forest, which finally ended up in the cutting-down of the regenerated forest" (case 22).

The diverting of forests and other lands for the construction of dams is one glaring example world-wide. Despite strong protest movements around many of the large dams being constructed in different parts of the world, the state invariably persists with the project, destroying thousands of hectares of forests and agricultural land and displacing hundreds of thousands of people. The might of the local communities against the huge commercial and bureaucratic interests that fuel dams, is rarely effective.

The local community's motivation to conserve the area is low where external demands also promise them financial and/or economic returns to the local community (3 above). This is because, in such a case, the promise of financial and economic gains, especially where they are significant, can wean a community away from its dependence on local natural resources and, as such, can lower their inclination to conserve the area and block the external demands. This happens most often in cases where the community owns or controls the resources and is approached by the government or by corporations and commercial interests who want to divert their resources for mining, timber extraction, tourism, industry, or some other such purpose.

In the various case studies given later, examples of this are common. Conservation efforts in Dongda Village, Yunan Province, China have changed because "with the introduction of cash crops and inclusion of this area in the tourism development zone, people's perceptions have changed. Presently, there is a decline in the spirit and practice of forest protection" (Case 2). Similarly, in the case of the Loliondo Game Controlled Area, Kenya and Tanzania, the offer to the local community, for sharing the revenues, by a commercial safari company has tempted the local communities (case 9). Similar is the experience in the Dande Communal Land of Zimbabwe (case 10).

Experiences in Senegal show that the decentralisation of authority to issue timber cutting permits has not resulted in economic justice, democratic decision making, or sustainable resource management (Ribot 1995). Similarly, experiences from some Caribbean and Latin American countries show that where local communities have a right to determine the uses that local resources should be put to, they are as susceptible as national governments to the temptation of financial profits, even if it means the destruction of natural resources. However, the main difference is that the payments (in the form of royalties or licence fees) from such utilisation devolve to the local community rather than to national governments. In India, the experience of some of the states in the tribal belt of the north-east has been similar. Here, the tribal communities own and control a large part of the forest. However, despite this, or perhaps because of it, there has been a heavy loss of forests in this region, mainly due to commercial felling.

For areas where biodiversity conservation is the conservation objective, it implies very little or no access for the local communities to the natural resources. As already mentioned, sustainable use of an area, whatever its strategic advantages, does not necessarily result in biodiversity conservation. This is especially true of terrestrial ecosystems. Commenting about the success of community conservation efforts for marine resources in Thailand, Worha et al admit that "Some unique features of marine ecosystems and resources have contributed to the success of the initiative. Marine ecosystems recover rapidly on protection, allowing sustainable harvesting of resources to occur within a relatively short time. This is not feasible for most terrestrial ecosystems, where the time frames for recovery are longer and investments often higher. This means that often, where communities are very poor and cannot wait for several years for returns, their interest in conservation is likely to be low unless other direct benefits can be developed.

"Communities dependent on marine resources are often more willing to set up "closed" areas for limited or no use of resources than communities dependent on forest resources. This could be because they are aware that conservation of coastal and marine habitat is important for increasing numbers of economically important species which can easily be harvested once they move out of these areas. In essence "closed areas" in marine systems will mean more resources for harvesting within a relatively short time whereas the same in terrestrial systems might be perceived as "lost" resources.

"While the initiative has succeeded in rehabilitating and conserving once-depleted marine biodiversity to a great extent, it can be argued that continued use of the resources, whether sustainable or not, might compromise overall biodiversity values. While this is possibly true, it can also be argued that in similar situations, this might be the most effective strategy for biodiversity conservation. "Traditional" biodiversity conservation strategies such as setting up strict Protected Areas with no use of resources permitted tend to have a limited applicability in marine situations. This is because most marine species are highly mobile and will certainly be exploited once they move outside the Protected Area. For conservation of coastal/marine biodiversity, it might be more important to ensure that critical breeding and feeding habitats are protected (turtle nesting beaches, mangrove forests, sea grass beds, coral reefs)." (case 29).

Whereas, such an approach might work tolerably for marine areas, it is difficult to justify it in terrestrial areas. In fact, conservation of terrestrial biodiversity often seems to conflict with human use imperatives. For example, "In much of the Maasailand area [in Kenya] there is a history of conflict between the interests of the Maasai and the wildlife authorities,

over access to water, grazing, and poaching. Prior to 1930, there was no attempt to curtail the traditional use of the area by local Maasai pastoralists. Later, however, the colonial government increasingly emphasized the protection of wildlife, establishing national parks which excluded local populations and their herds, and prohibited hunting" (case 8).

Similarly, in Sri Lanka "The [Human-Elephant Conflict] project has not been able to significantly change the incentives currently in place with respect to elephant management. For villagers, the fact that the compensation scheme for elephant-related damage is almost ineffective, is an incentive to kill or injure elephants. Since they do not get compensated for the damage incurred, villagers' want to make sure that it does not happen again. Hence, the compensation scheme is a "negative" incentive for elephant protection. If the compensation scheme was working (if it paid villagers the amount claimed within a reasonable time), this would neutralise the incentive to kill or injure elephants. It is, admittedly, hard to try to build "positive" incentives for elephant protection in a community which derives no benefits from the existence of elephants. Nevertheless, more emphasis must be placed on trying to neutralise the incentive to destroy elephants" (case 18).

In such cases, the motivation and ability of the community to protect the area is low when either no alternatives or incentives are being provided to them or where there are external commercial and/or infrastructure demands which promise them significant financial and/or economic returns (5 and 7 above). In the first instance, the communities stand to gain nothing from the area and, conversely, stand to lose nothing by its destruction. Therefore, there is little incentive for spending time and effort to protect it. In the second case, the prospect of significant financial and economic benefits in return for an area that has little direct value for them is too tempting an offer for poor rural communities to reject. In the case of Darlaghat sanctuary, in India, a part of the area was denotified by the government to allow the setting up of a private sector cement factory. However, as the area was not accessible to the local communities and as they were promised jobs in the proposed factory, there was little or no local opposition to the move.

However, in those cases where external pressures threaten to destroy the area without offering any financial or economic returns to the local communities (8 above), there can be a motivation to protect the area, mainly because most rural communities would like to protect nature and natural resources. Though their ability to fight external powers might be limited, especially if they get no outside support. In Phillipines, for example, 'In 1986, a small group of communitiy members encouraged by the local priest took a more direct approach by barricading the road to block the movement

of logging trucks through the valley. They succeeded, encouraging the priest to request the Environmental Research Division (ERD) of the Manila Observatory (an NGO) to assist the communities with longer-term diagnostic studies to explore more sustainable ways to manage the fragile watershed.

"The combination of detailed studies, community meetings, and consistent interactions brought into sharper focus many of the watersheds' human and resource management conflicts. ERD regarded the context as well intentioned on both community and government sides, but hindered by poor mutual understanding. Early activities involved the identification of conflict situations and social instabilities through interdisciplinary analysis and evaluation. Progress to resolve user group disputes was slow, and other events intervened. An earthquake in 1990 caused massive landslides. A resurgence of illegal logging later that year forced the community once again to barricade the logging road and send off a protest delegation to the DENR in Manila. DENR has refused to revoke mining and timber concessions in the area" (case 13).

There is, however, a strong inclination and ability to protect the area when there are few external pressures and adequate alternatives or incentives have been provided to the local community, with their continuation linked to the ecological health of the area (6 above). This is a situation in which there are few conflicts as the basic needs of the local community are being adequately met through the provision of alternatives. The community has to, in return, police itself and ensure that individuals within it do not violate the norms laid down.

Similarly, there has been a strong inclination and ability to protect sites that are considered culturally or religiously sacred (9 above). However, the inclination of communities to do this depends on how strong their traditional cultural and religious beliefs are. Their ability to do so depends partly on their economic circumstances and partly on the level of control they have over the area.

On the face of it, such an assessment might appear to be too cynical. It is open to the charge that all human motivations have been reduced to self-interest (except perhaps in 9 above), and that this is not a correct view of the World. This is the sort of objection that usually emanates from the relatively well to do segments of the society who have the economic freedom to pursue 'higher' interests because their basic needs are adequately looked after. However, for most rural communities who are in the front-line of the battle to conserve biodiversity, such options are not real. The most basic human and social instinct is the instinct to survive. Where other instincts come into conflict, the instinct for survival must prevail.

Mander, for example, describing the Mexico experience (case 28), says

“Although the paramount motor for the community efforts was no doubt to ensure revenues and livelihoods from the forests, the decisions of the UZACHI in the short period since they have assumed control of their forests have been extremely responsible and professional. The volume of timber to be harvested every year is discussed in the assemblies, along with the community organizations and specific responsibilities for control of fires and surveillance of the forests. This is more intensive and effective than the system of protection in government forests in Mexico today. “

Even in the case of sacred sites, it can be argued that in many societies it was the fear of the wrath of Gods that led to its conservation. Therefore, even there, very often conservation was motivated by an instinct for self preservation. The only difference was that the imperatives of immediate economic survival were subsidiary to their fear of annihilation by the Gods.

That is not to say that there is no sense of sacredness distinct from fear. However, if societies were to put the sacred before self-survival, then most would become extinct.

But there is also the converse, where self interest and material well being become the only things that are sacred. Clearly, the desirable social paradigm lies somewhere in between. Perhaps what is required is for each society and, within each society, every community to have freedom from hunger, poverty, disease and injustice. Out of such freedom, not out of opulence, can emerge the new notion of sacred where nature and all that is natural is admired and respected for its own sake and not because of the transient and tangible utility it might have for the human race.

5.3 INCENTIVES AND MOTIVATIONS

Perhaps the spectrum of possible motivations for biodiversity conservation can be classified as follows. Biodiversity can be conserved out of:

- Fear of an external agency
- Rational self interest
- Ethical values

Each of these need a detailed discussion.

(i) Fear of an external agency

The earlier discussion on the history of community efforts at biodiversity conservation suggests that traditional efforts at conservation were often motivated by fear of the wrath of Gods or of ancestors and spirits. This was gradually supplemented by the fear of social and religious entities or institutions, democratic or autocratic. In the modern era, with the advent of political governments, there has been an effort to replace these by fear of

the law.

However, for fear of external agencies to be an adequate motivation for conservation, certain objective conditions must prevail. First, the punishment that is the basis of the fear must be severe enough to create the required amount of fear. It must be severe enough to make the possible gains of disobedience seem trivial in comparison. Second, the concerned agency must be seen to have the power and the inclination to inflict such a punishment. Where the concerned agency is too soft or otherwise incapable of imposing the punishment, then the deterrent effect of such punishment disappears. In many situations, strong laws are undermined by poor enforcement. The probability of getting caught for violating the law is so low that violation becomes a low risk and high return activity.

Third, these laws and punishments must be seen to have some basis. A law that seems totally unjust will inspire so much opposition that even the strongest enforcement agency will have to finally back down. And when this happens, there would be a reaction and in a short time much of the biodiversity would be destroyed.

Fourth, the people must have the ability to obey the law. If the law makes demands that the people cannot fulfil, given their economic and social circumstances, then they would have no real option but to disobey it, whatever the consequences. Therefore, communities whose very survival is threatened by a law, will have no choice but to disregard it, even if the punishment for doing so is harsh and certain.

Judging by these standards, it is not difficult to see why the efficacy of fear as a motivation for effecting biodiversity conservation has rapidly declined. Traditional societies were very much better at keeping fear alive. They threatened those who disobeyed the will of the Gods with the direst punishment. Gods were all-powerful and known to be willing and able to impose the harshest of punishments. The fact that the laws were made by the Gods meant that they must be justified and could not be questioned. And, most traditional conservation strategies had safety clauses to ensure that conservation imperatives did not clash with the needs for basic survival.

However, in the modern state, the situation changed. Very harsh punishments became increasingly unacceptable in most 'civilised' societies. Whereas divine cruelty, such as it was, could be justified, human cruelty certainly could not. The ability of the state to detect violations could not match the powers of the Gods, who were all knowing and all seeing. In many cases, the laws relating to biodiversity were increasingly seen as being unjust, as elitist, as insensitive to the survival interests of the poor, especially as political consciousness and the recognition of human and individual rights grew within the society. The centralised and impersonal nature of modern

governance also made it impossible for laws to be flexible and to be selectively applied only where they were justified. So, conflicts between laws and survival imperatives became common.

Though most nation states still have laws relating to biodiversity conservation and a fair amount of enforcement still takes place, the infirmities in such a system of forced conservation are becoming all too obvious.

(ii) Rational self interest

From the fact that the fear of divine dictums and human laws permeated societies from the beginnings of time, it does not follow that all conservation was due to these. Even while fear based conservation was being rigorously practised, there were groups and communities who began realising that conservation also served their own interests.

Of course, one interpretation of even the fear based dictums was that these were constructed by the few wise people in a society who recognised that conserving certain critical areas and species was in the long term interests of the community. However, as they were not confident that this by itself would result in the required levels of conservation, divine or spiritual dictums were invented to supplement their authority. Perhaps this did happen in some of the cases, but it is difficult to argue that it happened in every case.

In any case, in the fear based model most or all of the people who actually curtailed their use and interaction with nature did not do it because they saw a rational self interest but because they feared the consequences of not doing so. On the other hand, in the second type of instance, people themselves saw the utility of conservation and therefore adopted it as a way of life.

It can also be argued that in both types of models, people were acting out of self-interest. In the first case, their self-interest lay in not annoying the spirits or Gods, otherwise horrible punishments would be visited upon them. In the second case, their self interest lay in conserving resources, otherwise they would have significant deprivations in the future. However, the difference between the two is the content of 'rationality'. From a contemporary perspective, their fear of the Gods and spirits seems irrational. We now 'know' that discases and natural disasters have earthly causes and are not the expressions of divine anger. We also recognise the rationality of protecting areas that were watersheds, or habitats of medicinal plants, of other raw material, or of useful animals and plants.

Direct and immediate Utility

However, for such rational self-interest to operate, certain conditions had to be satisfied. For one, the incentive to conserve was in direct proportion to the direct utility of the area or species. In the Thailand case study, "When questioned as to what keeps the communities working together against huge odds and powerful competing interests, one of the replies is "we can see positive impacts immediately". The resiliency and rapid recovery rate of marine ecosystems has played an important role in maintaining and strengthening community interest in conservation. After only a year of enforcing regulations and establishing Conservation Areas, the regeneration of ecosystems and resources was clearly visible. Communities could begin sustainable harvesting of these resources within a very short time and incomes began increasing within the first year of protection. This is obviously a great incentive for communities to continue and expand their conservation initiatives.

"The direct link between biodiversity conservation and the existing livelihoods of small-scale fishermen is probably the single most important factor for the high level of community involvement (in fact, for communities taking the lead) in this initiative. Fishing is the only source of income for most of the small-scale fishermen. Therefore the loss of biodiversity through over fishing and destructive fishing by 'outsiders' has an immediate negative impact on their social and economic well-being. Again, this provides a strong incentive for them to act towards reversing this loss of biodiversity, maximising recovery and ensuring that resources are used sustainably in the long term" (case 29).

Therefore, areas or species whose conservation had immediate and direct benefits and whose degradation, conversely, had immediate and direct negative impacts, were naturally the most likely to be conserved. As the conservation utility got further in time and less direct, the incentive became less. This was, however, qualified by the severity of the positive or adverse impact. It was also dependent on the levels of awareness in the community on the impacts that the conservation of a species or an area would have on their lives. So, for example, immediate watersheds were easily identified as being critical for local water availability. However, distant water sheds or ground water recharge areas where the lineaments were not obvious, were not that easy to recognise. Mander, commenting on the conservation efforts of the UUZACHI in Mexico, confirms that direct utility was the first and most important motivation of the local community to conserve.

"It must be stated at the outset unambiguously that the primary motor that has energised the local communities to organise themselves and to struggle so resolutely to regain control of their lands, and has sustained

them in their highly professional forest management decisions during the past decade since the formation of the union, has been their concern to ensure sustainable profits and livelihoods from the exploitation of the timber wealth of their forests. They are not motivated primarily to preserve the bio-diversity of these forests for its own sake, even though culturally they have a reverence for forests and living things" (case 28).

Similarly, plants or animals that were directly of use were easy to appreciate. However, the utility of other animals that might have significant but indirect benefits, like snakes eating rodents which would otherwise attack grain or spread disease, or birds eating pests that would otherwise attack crops, were more difficult to identify. Then there were other connections that were so subtle that even modern science has not been able to fully unravel them. So, for example, the 'web linkage' between all species was relatively rarely recognised in such models of conservation. Consequently, even today, as discussed earlier, it is easier to motivate local communities to conserve those species that they recognise to have direct beneficial effects rather than those which indirectly contribute to these effects.

Of course, rational self-interest also dictated that they should exterminate those species that had direct and immediate adverse impacts on them. Therefore, animal species that attacked human beings or their livestock and crops were attacked. Also, plants that had adverse impacts were exterminated. Besides, self-interest also dictated that animals that could be eaten or whose parts could be used for decoration or for other purposes should be trapped and killed. Apologists for traditional cultures argue that this was no threat to conservation as these plants and animals were in great abundance. Even if this was so then, the situation has changed today and not only are many of these species endangered but hunting and trapping in itself is increasingly being frowned upon. Interestingly, even neo-traditional societies recognised the conflicts that emerged when fear based conservation metamorphosed into conservation out of rational self-interest. Besides, in the former, whole areas could be completely protected without having to demonstrate their immediate and direct utility, but this became difficult as reason replaced fear. Similarly, whereas, earlier, many species could be accorded divine protection, the advent of reason threatened to remove the protection that many of them enjoyed. Therefore, new strategies were thought up to continue the protective cover over at least some of the species.

Many animals were projected as having admirable qualities that deserved respect. Therefore, qualities like speed, strength, courage, loyalty, beauty, or even craftiness or virility were projected. There was, in a sense, an effort to anthropomorphise animals (and plants) and establish for them a

right of life because they had in abundance human-like qualities. This did work to some extent, but also had in some cases the opposite effect. Therefore, in many traditional and not so traditional societies it became a mark of courage to kill a 'noble beast' that was strong, swift, and courageous. In others, the bones of the 'virile' tiger began to be used as ingredients of aphrodisiacs.

Sense of Ownership

The second condition that needed to be satisfied if rational self-interest was to operate was the sense of ownership or tenure over the resources that were to be conserved. Clearly, rational self-interest would only operate if the local community were reasonably certain that the costs of degrading and the benefits of conserving would flow back to the community. In any other case, the incentive to conserve would become very weak. In Thailand one of the lessons learnt was that " 'community ownership' over the process and outcomes is an important factor for success and sustainability. In this case, community groups were able to design, manage and implement conservation and development strategies including what areas to 'close', what restrictions to impose on use, what quotas to allow for harvesting, etc. This would not be feasible in most legal Protected Areas which severely curtail access to and use of resources by communities, let alone developing management strategies for the area and resources. This strategy therefore, may only be applicable for areas of high conservation value that are not *legally* protected. Alternately, elements of the strategy could be applied to PAs that include multiple-use zones or "buffer" zones" (case 29).

Perhaps more than any thing else, the non-fulfilment of this condition has been responsible for large-scale degradation and destruction across the world. Local communities in many countries and cultures have been accused of degrading and destroying public forests and other wilderness areas. This has been used as evidence to support the contention that most communities are environmentally insensitive and essentially destructive. However, by taking away from the local communities the control over these resources and opening them up for possible exploitation by external forces, the public custodians of these resources effectively violated the conditions under which the community's rational self-interest motivated them to conserve. By making the community's continued access to these resources uncertain and by creating a situation where these resources could be allocated to others, the objective conditions were changed. They were changed to an extent where the community's rational self-interest dictated that they salvage whatever resources they can from these areas, before some one else got them. In Duru- Haitemba, Tanzania, the local people reacted to the arrival

of a government survey team that had come to demarcate the forests. According to the village Chairman "we heard they were putting in boundaries. We rushed to claim as much of the forest as we could. We started burning the forest for charcoal and cutting as many poles as we could before they would stop us entering there" (case 20).

The Nature of Self-Interest

Such a manifestation of rational self-interest is not peculiar to local communities or traditional societies. All individuals and groups fundamentally act in this way. However, the scope of what is seen as self-interest varies from group to group and from circumstance to circumstance. The debate on human needs and their hierarchies is well known and need not be repeated here. However, suffice it to say that physical survival is usually the most basic of needs that supersedes all others. Therefore, when the survival of a community or an individual is at stake, self-interest will dictate that all other needs and sensibilities be put aside. Beyond this, the hierarchy of needs is determined by social and cultural factors and by the perceptions one has of reality. However, by and large, individuals and social groups, including nation states, compete with each other for access to resources. Nations wage economic or military wars against each other for these.

Most, perhaps all, social groups try and reach positions of maximum advantage for themselves. What orders society is the perception that one's own rational self-interests are better served by conforming to the social order rather than by violating it. Therefore, a motorist on the road tends to follow traffic signals if there is a high likelihood that everybody else would also follow them. For, then, the rational self interest of the motorist is best served by conforming. However, if no one is following traffic signals, then the self-interest of the motorist would also be best served by creating and exploiting whatever advantages s/he can for herself. Similarly, as long as members of a community believe that all those using the natural resources would follow the principles of sustainable utilisation and equitable access, then it is in their self-interest to do so. However, as soon as these principles are abandoned, then it becomes in their self-interest to also grab whatever they can.

There is also the opportunity cost of conservation. Where the direct and immediate returns from conservation are higher than the opportunity costs in terms of time and labour, conservation has a good chance of surviving. For example, in Masai Mara in Kenya, "Thanks to tourism revenues, the Mara County Council remains the most financially stable in the country. A blanket viewing levy on overnight visitors currently yields over one million Ksh/month, providing a gross revenue far in excess of the

annual incomes derived from livestock for all families in the area. The traditional Maasai custom of maximizing the number of cattle kept has begun to change, and local Maasai have been heard to say that the wildlife has become as important to them as cattle, if not more so, because wildlife revenues continue to come in during times of drought or floods. Poaching and expenditure on anti poaching efforts have reportedly dropped to negligible levels" (case 8).

Also, where alternate uses of the land or other natural resources do not offer better 'opportunities', conservation will prevail. However, when the opportunity costs become too high, then most communities would be inclined to go where their rational self-interest leads them: to where the best returns are available. In Ghana, for example, "Though the local inhabitants recognize that trees have economic, medicinal and ecological value, they feel that large scale afforestation would reduce the land available for food crops" (case 5). Similarly, even in the very successful marine conservation initiative of Thailand, "the existing livelihood strategies of the small-scale fishermen are compatible with conservation values. However, the question remains about how long these livelihoods will remain small-scale, traditional and conservation oriented in the face of massive development pressures. In addition to pressures related to large-scale and destructive fishing, the small-scale fishermen are also facing pressures from expanding shrimp cultivation, tourism and pollution. Given these pressures and the rapidly changing external environment, there is always a likelihood that lifestyles traditionally based around sustainable fishing will change and many of the conservation benefits of the last few years will be undone. This is an issue that can undermine many conservation approaches based around maintaining traditional lifestyles and needs careful consideration when developing a strategy. In this particular case, while some small-scale fishermen began using push nets when faced with dwindling catches from traditional methods, they soon returned to traditional fishing after enforcement was effective and catches started increasing. When discussions on this issue are initiated, the fishermen are adamant that they will maintain their traditional lifestyle as long as they can make an adequate living from it. Based on evidence to support this, (traditional lifestyles have survived in the face of incredible external pressures) it seems likely that this will remain true at least for the immediate future" (case 29).

Where basic survival needs are assured, rational self-interest begins to encompass other needs and facets of life. It is here that the differences between traditional and modern societies, and between rural and urban groups, begin to show. Whereas in less monetised societies, survival needs were followed by cultural, social, aesthetic, recreational and moral needs

(not necessarily in that order), in more monetised societies there is at least an initial tendency to maximise financial wealth at the cost or neglect of all other facets. This accounts for the oft observed phenomenon where societies, as they become economically wealthier, show less rather than more concern for the natural environment. Pollution and environmental degradation are usually at their worst in 'nouveau rich' societies or among groups who have new found wealth to consume.

This fact of social transformation has led many to argue that only frugal societies, usually meaning economically poor societies, care for nature and natural resources. However, this might not be entirely true. It has been observed that the adverse impacts on nature and natural resources tend to increase as the economic wealth of the society increases. This is at least partly due to the fact that this economic wealth is mainly due to increased economic activities which use natural resources and also adversely affect them by their by-products. The increasing wealth of a society also invariably results in increasing levels of consumption, including the consumption of natural resources. However, a point comes when the need for increase in economic wealth becomes less important than the need for sustainability and for improved quality of life.

Both these, then, become the basis of a new conservation culture that focuses financial and intellectual resources at protecting and regenerating the environment. How quickly this happens and whether it happens quickly enough to prevent permanent and irreversible damage to nature, depends partly on the cultural ethos of the society, partly on the path that the process of development adopts and partly on the state of the natural resources. The first determines how quickly people recognise the importance of other values over material wealth. The second determines the nature and extent of environmental damage that is caused before such a realisation comes and the third determines the capacity of nature to regenerate. Of course, all this is exacerbated when societies and segments of societies have the ability to transfer the costs of environmental degradation to others while keeping the benefits for themselves. However, in the ultimate analysis, most societies evolve towards an environmental equilibrium.

(iii) Ethical Values

An often unacknowledged but nevertheless basic human need is the need to act ethically. The history of moral philosophy is rich with debates on what is ethical, and by and large constraints imposed by epistemological dilemmas ensure that this question can never be definitively answered. However, the very strong instinct among human beings to act in accordance with whatever they consider ethical is easy to observe. Psychologists confirm

that feelings of guilt and inadequacy are the two most common basis of human unhappiness in affluent societies. Both these, at least partly, come out of a belief that legitimate ethical norms have been violated. Therapy as often involves the questioning of the legitimacy of these ethical norms as it does the questioning of the culpability and responsibility of the patient.

Traditional societies were characterised by strong ethical beliefs, derived partly from cultural and religious doctrines and partly from rational social practices. Most traditional value systems were social with liberal sprinkling of 'other worldly' values. The interests of the society or of others were usually placed higher than self-interest. Perhaps ethical systems cleverly sought to counteract the natural human tendencies to seek the maximisation of their own interests.

However, with the advent of hedonism (and its derivative, utilitarianism) as an ethical doctrine, this began to gradually change. Though, as a social doctrine, utilitarianism advocated 'the greatest amount of happiness for the greatest number of people' as the ultimate social value, in practice this got interpreted as maximising one's own pleasure, as an individual or a group. Racial, ethnic, social and economic differences made it possible for the society to define 'people' to mean 'those like them'. Apart from the social implications this had, it also had a profound impact on the use of natural resources. It justified a form of resource colonialism that earlier moral systems would have frowned upon. It also left at a disadvantage those societies that still operated out of more 'other worldly' moral systems and, therefore, had little sanction to exploit the resources that were not theirs. The greatest casualty of this moral transformation, at least from the perspective of the environment, was the abandonment of sacredness as a value. The sacred was something that was revered for itself and not necessarily because of any utility it had for human beings. The notion of sacredness had served the cause of conservation well for thousands of years, before its final abandonment at the altar of hedonism.

Perhaps the twentieth century was significant because it catalysed a new morality. A people fed up with wars, with pollution and degradation, with stark inequities, with hollow claims of racial and ethnic superiority, and with the prospects of a bleaker future, once again began debating the fundamental values on which the edifice of modern civilisation rested. Equality of all human beings and the sustainability of the economic and social processes have become two of the explicitly stated, though not yet internalised, social values. Though, fundamentally, self-interest still rules the roost, these moral upheavals threaten to widen the gamut of self-interest to include equity and sustainability as ethical imperatives and, consequently, as elements of ethical self-interest.

5.4 HISTORICAL, CULTURAL, ECONOMIC AND ADMINISTRATIVE LINKAGES

Conservation strategies cannot evolve and survive in isolation. They are inextricably linked to the larger cultural, economic and administrative environment and to the forces of historical continuity. This implies that in order to determine whether community based conservation strategies are likely to succeed, it is important to understand the various external and historical factors that impact on it. Among these factors are the historical, cultural, economic and administrative linkages that the conservation strategies have.

(i) Historical and Cultural Linkages

As already described earlier, in many societies there was a historical tradition of conservation. However, with the advent of colonial rule in many countries and the emergence of 'modern conservation strategies' from the middle of the nineteenth century, many of these traditions were forgotten. A significant example is India, where there were estimated to be 5000 major sacred sites at the beginning of the twentieth century. However, most of them fell into neglect as their control was taken away from local communities, or the traditional social institutions that maintained them became defunct. Around the same time, various protected areas were set up but without any conscious effort to link them up with traditional conservation sites, which already had a high level of social acceptance and support. Apart from the fact that many of these sacred sites were among the best-preserved sites in the country, the protection accorded to them had proved to be sustainable over hundreds of years. The new network of protected areas was set up without any consultation with the local people and often despite their protests. This has resulted in confrontations that have been detrimental both to conservation and to the well being of the local communities.

Also, the methods of conservation adopted and the institutional structures created were foreign to local cultures. Outside 'recruits' were transplanted to these areas to regulate access and use. These 'regulators' saw themselves as 'superiors' and were seen by the community as being apart, without any moral authority to regulate them. The legal authority that they came with was little understood in the local context and they were seen as bullies, who had the power to punish. The fact that some of them indulged in corrupt practices and demanded bribes to permit otherwise forbidden access or even legitimate activities, made their position in the eyes of the local people even more untenable. The Duru-Haitemba experience from Tanzania is interesting in this regard.

"A great deal of the forest has been systematically drawn out of the public domain and into the 'protective' hands of the State, through gazettment as state-owned and controlled Forest Reserves. Today there are some 13 million hectares of Forest Reserve in Tanzania. Uniformed guards patrol these forests and stringent rules operate, which have generally favoured the commercial timber merchant who could afford the required Government permits. On the whole, traditional or local forest use is either forbidden or seriously constrained.

"The area has a long history of habitation. Today, elders recall how their forefathers effectively 'managed' the use of forest resources through a series of socio-economic rules-a code of ethics that outlined appropriate behaviour which included, among other things, sustainable use of forest resources.

"In these circumstances, it is not suprising that the villages of Duru-Haitemba viewed with dismay attempts to 'take away' their forest through reservation, however benign the origins.

Their first intimation of this trend came with the deployment of a Dwana Msitu (Forestry Guard) in the area, in the early eighties. He began regulating forest use, as the sole authority to permit grazing, pole-cutting, clearing, felling, or indeed even, in theory, the collection of dried fuel wood. The fact that this particular junior officer appeared to pocket 'fees', was erratic in the determination and issue of permits, and increasingly authorised considerable forest clearing for charcoal burning and farming, contrary to traditional practice, served to seriously undermine local commitment to forest conservation" (case 20). Such were the beginnings of the antagonism that continues till this day, between many rural communities and government agencies.

The advantages of utilising historical traditions has been highlighted by Mander in his Mexico case study of the UZACHI union (case 28). He says "The union was able to build an elaborate structure for on-going forest management, comprising honorary community leaders and delegates on the one hand, and paid technical hands on the other. The former successfully built on the pre-Hispanic Indian tradition of life-long obligations for volunteer service, and the latter on systematic and highly successful capacity building by the NGO. Both these wings of the union structure are performing their duties with high professionalism and self confidence, and increasing autonomy from the NGO."

Similar is the experience from the costal regions of Southern Thailand. "The fact that external organisations did not enter the area by focusing on weaknesses, blaming communities for the degradation of biodiversity, or with predetermined solutions has played a key role in the overall success

of the initiative. Instead, the focus was on building on the strengths of the communities: their existing networks; their social cohesion; their traditional knowledge; their local institutions; and, their common vision. This allowed communities to be in the "driving seat" giving them full ownership of the process and the results. In the long term, this will ensure that the initiatives and process will continue even if external agents withdraw. In fact, with their current level of skills and capacity, communities feel confident that they can continue to work for improved conservation of coastal resources with or without the help of the NGOs and with or without the support of the government.

"This implies that external agents, be they NGOs or donors or governments need to "step back" and play a supporting and facilitating role rather than a controlling and implementing role. They should help create the "space" or environment that can allow local institutions to function effectively and reach their potential. In many cases external agents, while well-meaning, can actually stifle or destroy local institutions by coming in with large funds, pre-conceived decisions and strong ideological biases. In this case, however, NGOs worked with communities and existing institutions, both formal and informal, to identify areas where support or facilitation was needed. They provided this support in a way that helped communities take control of decision-making processes. Once the necessary "space" was created communities were quick to take the initiative and work towards collaborative priorities" (case 29).

Another case study from Nigeria highlights that the success of community conservation efforts in Oboto was due to four elements: "strong adherence to traditional village organization, with its clear chain of command and distribution of duties; a high level of respect for traditional law; increasing understanding of local ecology and conditions, incorporating this understanding into local land use, game hunting and conservation practices; and a high value attached to medicinal plants" (case 4).

In not building upon the network of sacred sites, governments, national and colonial, all over the world lost a great opportunity. If, instead of setting up an artificial and alien network of protected areas, efforts had been made to support and supplement traditional conservation efforts, the costs to biodiversity and to the poor people of the world, would have been much less. Sponsel et al (1998) echo similar sentiments when they observe, of Thailand, that "Sacred places in nature function simultaneously to humanise nature and to naturalise humans...Government protected areas and community based sacred and secular protected areas may be considered mutually complementary, and a crucial part of Thailand's life support system."

Even today, the trend is to disregard local conservation priorities and strategies as being 'unscientific' and impose external 'scientific' options. Whereas, in some cases this might be necessary, the value of nevertheless accepting local choices and supporting them has been ignored. India, for example, is currently in the process of amending its Wild Life Protection Law to provide for protected areas managed by the local people. These would be apart from and in addition to those managed by the state and would reflect the conservation priorities and aspirations of the local people rather than of 'government scientists'. There is little doubt that such areas would not only significantly promote biodiversity conservation but also re-establish among the Indian masses the culture of conservation.

Today, most individuals in rural and urban areas, are brought up in an environment where conservation is never talked about, leave alone practised, and where the primary imperative is to extract whatever one is able to before some one else gets to it. Contrast this with traditional cultures where conservation education was a part of every day life. The case study from Nigeria records that "For centuries, the people have observed the unwritten guidelines that restrict landuse in and around the grove. Women, as traditional educators, pass on the information to their daughters and other young girls, to prepare them for participation in annual festivals. Mothers and elderly women caution their daughters against collecting fuelwood from the grove. In many instances, these lessons are taught through stories, threats and by narrating personal experiences" (case 5).

To expect individuals who have no personal experience of conservation to grow up recognising the significance of conservation and frugal use as a way of life, is unrealistic. However, if rural and urban communities were allowed and encouraged to conserve even small patches of wilderness areas, apart from the net conservation hundreds of thousands of such conservation sites would imply, these would also be the training grounds of the children of those communities. It is here that they could learn the value of conservation and make it a part of their way of life.

(ii) Economic Linkages

Again, many of the aspects that constitute the economic factors relevant to community based conservation have been described earlier. Essentially, it has to be ensured that communities have the *real choice* to conserve. Such a real choice is only there when conservation imperatives do not conflict with their survival imperatives.

Where the levels of protection required allow such real choices to be provided through the sustainable use of the area to be conserved, the task is easier. However, where the levels of protection required do not allow

this, then the basic needs of the local communities have to be met from elsewhere. And as biodiversity conservation benefits all of humanity, the costs of providing such alternatives must also be borne by all of humanity and not just by the local community.

The second important factor is that of equity. If the economic benefits of conservation are distributed inequitably within the conserving community or between the conserving community and the larger community, then the success of the conservation strategy becomes doubtful. Internal inequity is often a result of social stratification within a community. However, inequity in relation to the larger society can be due to many reasons.

For one, there is the process of value addition to natural products and resources. Traditionally, even where the local communities got paid for the natural resources extracted, the payments were very little and much of the profits were made by outsiders who added value to these products. Sometimes this was because the manufacturing process was external to the local community but mostly it was because the traders and middle-men and women were exploitative. The trade in medicinal herbs or in silk cocoons, in India, is notorious in this regard. While the poor villagers who collect the herbs or the cocoons get a pittance, the traders and processors make huge profits. In such a situation, the local community finds it difficult to keep the harvest to a sustainable level, because the returns they get are not adequate for survival.

Secondly, efforts to break the control of middle persons are often frustrated because of the local community's lack of access to markets. Ribot, for example, argues this in the context of forest resources in Senegal.

"In the district of Makacoulibantang in Eastern Senegal scores of villages are actively blocking urban-based woodfuel merchants and their migrant woodcutters from working in surrounding forests. Their rebellion is partly to stop the destruction of a resource on which they depend for daily needs, and partly to reap some of the benefits from woodfuel production and commerce. Local villagers cannot enter the woodfuel (firewood and charcoal) trade since, as it now stands, urban-based merchants employ migrant woodcutters and use state allocated licenses and permits to control access to urban markets where the woodfuels are sold and consumed. Forest villagers have resorted to blocking direct access to forests, since this is about the only influence rural populations have on the woodfuel sector. But, while villagers can control forest access, without access to markets and forest labor opportunities, they reap few benefits from forest exploitation. They can keep others out of surrounding forests, but they cannot enter forest commerce themselves. In short, the fact that forest villages can control direct access to forests does not give them access to

the benefits that flow from forest commerce...

"The story of Makacoulbantang illustrates a [key] point: control over forest resources - via property rights, threats of violence, or any other means - does not in itself confer benefits on local populations. Access to markets and labor opportunities are also necessary. Instituting local (or community) property rights, a common prescription in participatory development projects, is not in itself a sufficient policy tool for establishing local or community "participation" in forest benefits. Property rights are often presented as a means of giving communities or individuals access to the benefits from the resources around them. But property is fetishized to the exclusion of inspecting the many other dynamics involved in the devolution of benefits to local communities....

"Indeed, if there is really an interest in transferring benefits and decision-making powers to forest villages, policy analysts should be inquiring into who controls the markets and labor opportunities (and how they control them), rather than solely on who controls forests..." (Ribot, *in press*).

Similarly, Mander, in his case study of forest exploitation in Mexico (case 28) states: "What is important to note here was that despite community ownership of forest lands, the federal government started from a position of intense, and corrupt regulation, that in practice meant handing over control of even community lands to private and often foreign paper and lumber companies, whose objectives tended to be extremely short term and recklessly extractive. In 1980, practically all community forests of commercial value were under the 'concessionary' control of private industry."

(iii) Administrative linkages

For community based conservation strategies to succeed, they need external legal, policy and administrative support or, at the very least, non-interference. Where laws empower local communities to conserve their resources, the task of the local community becomes much easier.

A revealing example of how the larger administrative policies impact on the prospects of conservation comes from Costa Rica. Till recently, the laws in Costa Rica postulated that any one who cleared forest land had the right to claim title to it. Also, the law provided that forestland was taxed at a higher rate than cleared land, giving a very strong motivation to the local communities to clear forest lands. However, the destruction that this unleashed, and the experiments carried out by CATIE, the Tropical Agricultural Research and Training Centre in Turrialba, Costa Rica, resulted in the laws being changed. Today, legal title to the land can be obtained in exchange for conserving the forests (personal conversations).

Writing about the Costa Rican experience, Cruz (1999) says "If we compare the situation today with earlier systems of land use in Costa Rica, we can appreciate that the impact on the environment of indigenous cultures was imperceptible. This was partly because of low population density, but mainly because of a pattern of use that demonstrated respect for the variety of ecosystems. This made the impact light, distributed between several ecosystems with just a small tendency towards modification of the composition and structure of the forest. In this pre-Columbian period of the impact never reached 1 per cent of the whole landscape. Later, with the arrival of the Spanish colonisation, the establishment of *chacras* (small rural and family holdings) was based on open-field agriculture instead of forest. During more than 400 years, however, no more than 15 per cent of the original forest was disturbed.

"It is important to note that the massive destruction of forests has taken place in the last 30 years. Deforestation has been promoted by successive governments to extend cattle raising for beef consumption, with incentives granted to burn the natural forest. The system of granting land titles required that claims to land ownership were substantiated with proof that the land was occupied and worked. This triggered unprecedented clearing of forest. Thus political and economic forces have promoted the erosion of ancient indigenous cultures, as well as the systems of traditional agriculture and agroforestry of the past four centuries. This situation has resulted in the widespread elimination of communal or tribal systems of forestry protection, including valuable knowledge about the use of local biodiversity."

Similar experiences have been reported from various other parts of the world. Take, for example, the case of Dong Yai, Thailand. "In 1989, a national logging ban was imposed. The RFD decided to maintain Dong Yai as a reserve forest. Legally, reserve forests fall under the tenurial and management jurisdiction of the RFD. The designation curtails villagers' rights to certain benefits and their authority to make decisions regarding forest use. However, in this case, the RFD regional officers encouraged the villagers to cooperate with the protection objectives of the reserve forest. With the support of the village council, the general village committees informally requested each village family to assume responsibility for forest protection of small patches." (case 14).

Otherwise, the ability of the community to stop the exploitation and destruction of the resources is minimal, especially when the exploiter or destroyer is from outside the community. The Thailand case study of Phang Nga illustrates this. It concludes that "Individual 'successes' can often be undermined by external threats unless reinforced and supported by wider policy. While supportive policy is not the ultimate safeguard, it can help

strengthen and dramatically scale up impacts. For example the persistent lobbying against push netters in Pattani by the small-scale fishermen, combined with the many activities undertaken to show the positive impacts of sustainable, small-scale fishing has resulted in a policy to ban all push netting in the entire province. As mentioned previously, almost all activities have a policy link and the Fishermens' Clubs and the Network in particular spend a large proportion of their time in advocacy and lobbying for policy change" (case 29).

Where such policy support is not forthcoming, various problems emerge. For example, in the same Thailand case study it is described how "Patrolling has always been a difficult activity not only because of the time and resources involved but because the illegal encroachers are often armed. In 1997, a fisherman from Phang Nga was shot and killed, while patrolling, by a trawler that was illegally operating within the 3000m boundary. Such armed conflicts are not unusual and the small-scale fishermen are usually the losers. In addition, enforcement was difficult because the fishermen did not have any legal authority to arrest encroachers and official complaints against them usually had little effect." (case 29).

In other cases, the government withdraws and lets the community get on with the task of conserving its own resources. Here, of course, the community cannot make use of the law and government agencies, but at least it does not have to battle against them. Examples of such arrangements are found in Mexico. "In Mexico, the best thing that the government did to enable community control over forests, seems to have been to withdraw, or what may be described as its *de facto* policy of complete decentralisation and deregulation. This has resulted in the last decade and a half in Mexico in what some experts describe as the biggest experiment with community based forestry in the world (Bray, 1995). It has been estimated that over 2,000 rural communities principally on the central and southern portions of Mexico are involved in some kind of environmentally motivated action (Toledo, 1998)" (case 28).

However, the withdrawal of the state can also cause many problems. Mander goes on to say "The virtual disappearance of the state from the sector of bio-diversity conservation in Mexico, is possibly at least in part the result of neo-liberal economic policies that are holding sway worldwide. Even though this had the unintended effect of uncashing such major community initiatives, it is our conviction that the state can and must play a role in bio-diversity conservation, not of the corrupt controls and collaboration with the lumber industry of the past, but an active role in leveling the playing field for local communities, supporting them with funds, with technical inputs, and in striking strategic links with NGOs and

universities, in negotiating globalised markets, and with legislation.

"This withdrawal of the state from the forestry sector meant that local peasant communities were left to their own devices entirely to manage their forests, which constitute 70 per cent of the country's forest wealth. Local communities had to take their own initiative and find their own resources, to engage technical consultants to prepare their forest management plans, to run their forest production units, and to negotiate the globalised markets for their products. There were some communities, like the UZACHI, which were conscious, proud, capable of establishing strategic links with NGOs and universities, and handling world markets, while maintaining their own world-view. But there are a large number of counter-examples where communities lacked both these competencies and strategic support from external agents, and because of the passivity of the state, the danger is a very real one that powerful corrupt national and foreign interests can again seize control over the community-owned bio-diversity of poor peasant communities of Mexico, albeit through the back door. Thus, neo-liberal policies have two faces, one of which facilitates decentralisation and community control, another which creates an enabling environment for re-entry and effective control by powerful globalised industry" (case 28).

Of course, external linkages are not only with governments but also with NGOs, experts and expert institutions and with the media. They all play an important role in ensuring the success of community based conservation movements. "The third important lesson from the study of the Mexican experience has been with regard to the role of the external agent. Again, in the first case of the Sierra de Manantlan Biosphere Reserve, leadership was provided by an activist university which played a role similar to that of an NGO, to establish conservation goals, to work with government to establish the legal and administrative mechanism to enforce these conservation goals, and to educate the community and win its support for these conservation objectives. By contrast, the UZACHI achieved far greater success because the initiative for the ecological movement arose genuinely and suo-moto from the community, and the NGO, ERA, was invited in later as a partner and technical consultant.

"However, the fact that in case of the UZACHI the NGO did not play a leadership role, does not mean that its contribution was not critical. On the contrary, the replicability of the UZACHI experience is limited because there are not many NGOs that combine the high degree of technical professionalism with the conscious detachment achieved by ERA.

"The greatest success of ERA, which is a model for all external agents seeking to facilitate rural community management of bio-diversity and in fact all other kinds of community empowerment work, is that it so effectively

provided its critical inputs of technical information and choices, but without creating dependencies. Instead, from the first stage of preparing the forest and socio-economic inventories, through the subsequent stages of negotiations with stake-holders and preparation of the land-use plans, it worked through local persons, often high-school educated men and women, whose capacities they systematically built in the course of these activities. As a result, in just a decade of this collaboration, both the community leaders and technical personnel are handling their responsibilities autonomously with high professionalism and self-confidence, and the NGO is in an advanced stage of withdrawal from its supportive work in the community" (case 28).

Similarly, the role of the media in publicising issues is also sometimes very critical to the success of a conservation movement. In Bangladesh, for example,

"Forest protection committees have strengthened their activities through a series of "Social Actions". In the initial stages, social action comprised of resisting local pressure by organizing villagers to protect the forest. "Shammolons" or local public meetings were also organized by the groups to build up popular support and publicize the protection efforts. These popular meetings are attended by all the local villagers and groups from the neighboring Upazillas and are a useful forum for disseminating information. Such "Forest Protection" rallies have been reported in several national daily newspapers, which has further strengthened the protection committee's credibility in the area. For example, in September 1990, local landowners and timber traders attacked the forest protection committee of Paikpara to stop the initiative. When the FPC members resisted the attempt, they were assaulted and injured. The Dhaka office of Proshika brought journalists from several news agencies to interview the protection groups. The media attention had an immediate impact and stopped further attacks on the protection areas. Senior officials of the Ministry of Forest and Environment have also visited the protection activities. These visits have helped the protection committees gain "official recognition" for their activities. Though the groups continue to work in the absence of any legal contract with the Forest Department, the high-level visits and media exposure provide the groups with enough "official recognition" to give legitimacy to their work" (case 22).

5.5 COMMUNITY STRUCTURES

Community based conservation is likely to succeed only if it is a joint effort by the whole community. If the community is itself divided on the issue, too much energy would be spent on resolving intra community conflicts and

the ability of the community to stand together against external pressures would be compromised. Also, its ability to regulate its own uses would also be significantly weakened.

Consequently, non-stratified and homogenous communities are best suited for conserving nature. Unfortunately, most such are found among tribal and indigenous people across the world. Though this is their advantage, they are usually also the most isolated and disempowered and therefore face many other significant disadvantages when dealing with the larger world. Mander, in his Mexico case study (28) records that though some of the local communities were able to organise themselves, on their own, to deal with the external world, many were incapable of doing so and were, therefore, left at the mercy of national and multi-national corporations and unscrupulous traders.

In many parts of the world, tribal people still practice slash and burn agriculture and ritual and subsistence hunting. They are only marginally, if at all, participants in monetised economic activities. Their ability to trade on equal terms with outside traders and merchants is limited and often they are culturally ill prepared to deal with outside influences. An interesting example comes from Ghana, where the Malshegus traditionally believed that trees were gifts from the Gods and therefore their growing by humans was taboo. Therefore, for a long time no afforestation work was carried out even in the degraded areas (case 5).

On the other hand, non-tribal stratified societies have other problems. Interesting examples of this are found in countries across the world. In India, the much acclaimed joint forest management (JFM) initiative has often come up against the social barrier. Whereas, JFM works on the principal that every village family contributes to the protection of the forest and, in return, gets a share of the forest produce and income, in many areas the landed class of rich farmers had prior rights on the forest produce. They, therefore, claim these rights, which might often be more than their equitable share of the resources. Also, in return they are not willing to contribute to the protection activities, as their rights preceded the JFM agreement and were independent of any inputs from them. This leads to the unsatisfactory situation where the poorer villagers, who can least afford it, spend their time protecting the forests, while the richer ones, without lifting a finger, get a disproportionate share of the benefits. Efforts to annul past rights not only run into legal tangles but create such potent local conflicts, that conservation becomes impossible.

Similar conflicts occur between men and women. The curtailing of grazing and firewood collection activities make the life of the women harder who invariably are responsible for these activities. They now have to travel

longer distances to collect firewood and fodder and generally work even harder than they already did. Yet, when the benefits are distributed, they often come in the form of money, which goes to the men. The men do not spend this money in ways that make the women's life easier by, for example, purchasing fuel or fodder. As a result the women feel that they are now worse off. Mander records of Mexico that: "securing the full and genuine support of poor local communities continues to be dogged by several problems. Most importantly, the assemblies of the *ejidos* are not genuinely representative of all sections of the community and includes only the heads of families which have land-rights in the *ejidos*. This excludes on the one hand families without land rights, the underprivileged *avecindados*, and on the other hand women, except when they are of single-women headed households." He goes on to say that "At the apex of the UZACHI is the assembly of the four communities. The heads of all families, whether with or without land rights, are members of each assembly. In this way, the assembly is much more representative than that of the *ejidos* of non-indigenous land communities, which as we have seen in the context of the first case study, excluded those without land rights. However, it remains unrepresentative of women, unless they head the households" (case 28). Similarly, experiences from Thailand (case 3) and Nigeria (case 4) also suggest that men make most of the decisions.

CHAPTER 6

CONCLUSIONS

The objective of this study was to isolate and analyse those factors that made community based conservation strategies effective. A study of various cases around the world suggest that, broadly speaking, there are two types of factors that are critical to the success of such strategies. The first type of factors are those that motivate the community to conserve and the second are those that empower it to conserve.

6.1 MOTIVATIONAL FACTORS

A short answer to the question 'what motivates community's to conserve?' can be 'self-interest'. A universal 'truth' that emerges from all the case studies is that unless communities perceive that their own interests are served by conserving an area, they are unlikely to conserve it. However, there are many factors that determine whether or not a community considers it in its interest to conserve an area.

- (i) **Religious and ethical imperatives.** Where conservation fulfils religious and ethical imperatives, the motivation to conserve is very high.
- (ii) **Direct and immediate financial returns.** Where there are direct and immediate financial returns to the community, because of conservation, the motivation to conserve is very high. The levels of motivation are usually in direct proportion to the quantum and immediacy of returns.
- (iii) **Availability of natural resources.** Where conservation activities result in the increased availability of natural resources like fuel-wood, fodder, medicinal plants, edible plants and animals, other NTFP, timber, etc, to the community, the motivation is also high.
- (iv) **Provision of ecological services.** Where conservation results in the enhancement of essential ecological services relevant to the community, like watershed functions, stabilisation of hill-sides, climate and rainfall stabilisation, etc., there is a motive to conserve.
- (v) **Fulfilment of aesthetic and recreational needs.** Where conservation maintains or enhances the aesthetic or recreational value of an area, as perceived by the community, there is a motive to conserve.

- (vi) **Provision of future requirements.** Where conservation secures availability of resources to meet future community needs, sometimes emergent needs, there is a motivation to conserve.
- (vii) **Fear of earthly external agencies.** Where laws or forces external to the community, but not divine or religious, can and do punish environmentally destructive behaviour, there is a (negative) motivation to conserve.
- (viii) **For wider ecological security.** Where communities understand the regional, national and global significance of conservation, there can be a motivation to conserve to that end.

However, there is a seemingly implicit hierarchy of motivations. Whereas religious and ethical imperatives did, and to a lesser extent still do, take precedence over all other needs and values, the next are direct and immediate financial and economic returns, followed by immediate though somewhat indirect ecological services. Aesthetic and recreational needs, long term security, fear of external agencies and conservation for larger benefits follow, in that order.

In other words, the motivational value of a perceived benefit (or loss) is directly proportionate to

- Its quantum
- Its immediacy
- Its relevance to, and impact on, the community
- Its certainty, and
- Its sustainability

This is as can be expected. It also highlights some of the other factors that influence the levels of motivation that a community has for conservation.

- The first of these is **opportunity costs**. The quantum of financial and economic inflows to a community, as a result of it conserving an area, have to be balanced against the opportunity costs of conservation. On the one hand, there are the opportunity costs of the time and labour the community puts in for conservation. On the other hand, there are the opportunity costs of alternate uses of the area being conserved. This always keeps the sustainability of community based conservation efforts open, for opportunities change and what is an acceptable opportunity cost today might not be so tomorrow.
- The second of these is **ownership or tenure**. Whereas exploitation of natural resources is fuelled by the anticipation of financial and economic returns, their sustainable use and, consequently, their conservation, is only possible if the beneficiaries have confidence that the benefits of conservation (and the consequent costs of

destruction) would certainly be theirs, and for perpetuity. This does not necessarily mean that they must own the land or resources but only that they must feel secure regarding their access to it. A sense of ownership also brings about a sense responsibility towards one's own asset.

- The third of these is **equitable distribution of costs and benefits**. Where some members of a community benefit from conservation more than others, or pay less costs than others, then the community's motivation to conserve is less. Similarly. When the costs and benefits of conservation are inequitably shared between the community and the larger society, to the disadvantage of the community, then the motivation to conserve is reduced.
- The fourth is **the availability of a real choice to conserve**. Where a community is so impoverished that its immediate survival is in conflict with the requirements for sustainable use, it is unlikely that the community will have the motive to conserve.
- The fifth is the **awareness of the scientific and social value of conservation**. Where the basic needs of a community are being met, the scope of what the community considers to be in its self-interest can be widened by making the community aware of issues with larger geographical and social impacts and with impacts beyond the immediate time frame. Though communities are concerned about their own future, when they start being concerned about the future of all humankind then they begin to see their contribution at securing it to also be in their own self-interest.

6.2 EMPOWERMENT FACTORS

Most of the factors that motivate also empower, for motivation by itself is a form of empowerment. However, apart from these, there are various other factors that contribute to the ability of the community to conserve.

- (i) **Nature and level of community participation.** The ability of the community to conserve is in direct proportion to the say it has in deciding the objectives and strategies of conservation and, indeed, the location and extent of conservation areas. The community is far better at implementing its own strategies, based on its own abilities and understanding, than those designed and imposed by others. It is also far better at conserving those areas that it has determined can be conserved than those determined by others to be areas that must be conserved, whether they realistically can or not.
- (ii) **The absence of conflicts.** Conflicts within the community, or with

external forces and agencies, inhibit the ability of the community to conserve.

- (iii) **External support.** However high the motivation to conserve, it is not always within the ability of the community to effectively conserve without external support. Such support can be of at least four types. First, it can be the support of benign government policies and laws and of government agencies in securing the community's right to conserve and use the resources and in facilitating the regulation or prohibition of intervention by external forces. Secondly, it can be the support of technical institutions and agencies in the form of scientific and technological inputs and capacity building. Third, it can be economic support, both towards defraying the costs of conservation and by having economic policies, including market conditions, that are beneficial to community conservation efforts. Fourthly, it can be in the form of solidarity and support from other community groups, from NGOs, from the media and from the society at large, especially when conflicts arise.
- (iv) **Historical and cultural linkages.** The community's ability to conserve is usually heightened if it has the freedom to structure its conservation strategies in conformity with its traditional cultural and social ethos. Where its historical values are strongly for conservation, its task becomes easier.

6.3 COMMUNITY BASED EFFORTS AT BIODIVERSITY CONSERVATION

Given the fact that these factors determine the efficacy of community based conservation strategies, how do they affect community based strategies for the conservation of biodiversity.

The major problem, in this context, regarding strategies for biodiversity conservation is that they require levels of protection that are usually higher than those required by strategies for sustainable use of ecosystems. As a result, if biodiversity is to be conserved, it usually means that nature has to be left alone without any human use or disturbance. This does not give much scope for meeting the direct and immediate financial and economic needs of local communities.

Of course, where biodiversity conservation does not imply this, for example in marine ecosystems or where a 'hands off' approach to biodiversity conservation is not insisted upon, such a problem does not arise. However, in most terrestrial ecosystems there is still a predominant belief that the "hands off" system is the only really effective system. The fact that traditional sacred sites were often maintained in a "hands off"

fashion lends credence to this view. Besides, as discussed earlier, the debate about what it takes to conserve biodiversity is still not definitively over. Therefore, there is some merit in being safe now rather than sorry when it is too late.

When communities are well to do and their basic needs are well met, then there is little problem in their closing up some areas for biodiversity conservation. However, in countries of the South, such is rarely the case. By and large, rural communities are dependent for their very survival on the resources that they extract from wilderness areas. Whereas such a dependence gives them a very high level of incentive to use it sustainably, if they are able, it gives them no incentive to close it off from human use altogether. So, how is this contradiction to be resolved? What, then, is the answer?

6.4 TOWARDS NEW AND INNOVATIVE SOLUTIONS

There are many reasons why absolute rights to the natural resources that happen to be located in the geographical proximity of a community cannot be granted exclusively to that community. This would not only undermine the very nature of a state or a 'commonwealth', but also be inimical to biodiversity conservation. However, the right to survival that is guaranteed to every individual in a modern liberal state implies, for a significant proportion of the population of many countries, a right to the continued access to local natural resources. Considering that most centralised governments, especially in countries of the south, have miserably failed to safeguard such access or even to provide viable alternatives, it is difficult to distinguish between the right to survival and the right to local resources.

There is the argument that democratic institutions like Parliaments and Legislatures are the right place to resolve the *prima facie* conflict between a community's right to survive and the nation state's right to use and allocate resources in the larger 'public interest', whenever such a conflict occurs. If they are bypassed, then there is a real danger of their getting marginalised and, consequently, of anarchy. Representatives of the people, rather than the people themselves, should deliberate on such conflicts and come up with just and workable solutions. However, the history of the modern world belies this expectation.

As already mentioned, such conflicts are rarely resolved keeping the interests of the local communities in mind. Therefore, the demand to move from a representative democracy to a participatory one, is not unreasonable.

In practice, in most contemporary nation states, traditional access and control over natural resources of local communities has been withdrawn, or substantially abridged, by the state. The dominant legal regimen, which

regulates natural resources in most countries today, is that of the 'eminent domain' of the state. In simple language, the state is deemed to be the ultimate owner of all resources of land, water, forests or minerals, which are located within its jurisdiction.

The major ideological rationale for exclusive state control over natural resources has been the alleged irresponsibility of local communities in their access over natural resources. It is suggested that unless these communities are kept on a tight rein, all restraint would be thrown to the winds, and short-term acquisitiveness, greed, and striving for accumulation would predominate bio-diversity use. This assumption has fuelled the burgeoning of powerful forest departments in many countries, backed by draconian laws severely barring local access over natural resources, even for bare survival.

This study records that if local communities are enabled, motivated and empowered, they can act collectively as responsible custodians of the bio-diversity that is situated in the vicinity of their physical locations. This observation is supported by a large body of historical and contemporary empirical data, including that which is included in this volume.

However, it has also been observed that such responsible community behavior in relation to bio-diversity is neither uniform nor universal. This study has attempted to identify certain conditions that would facilitate and nurture protection and conservation of natural resources by communities.

The implications of these conclusions, when taken together, are that if local communities are entrusted with the protection of bio-diversity, in an appropriate facilitating environment and with the fulfillment of certain conditions, the results are likely to be favourable. But, at the same time, it is not the case that local communities in all circumstances respond optimally if entrusted with unrestricted access to local bio-diversity. It therefore also cannot be the case that the goals of bio-diversity conservation would be best met, if local communities are entrusted with absolute, unmediated, entirely unregulated control over bio-diversity resources.

The answer appears to be in Buddha's 'golden mean', a partnership of the state and local communities in jointly managing and accessing natural resources. Recent thinking on this issue has thrown up the idea of a 'negotiated and contractual management of biodiversity'. According to Ignacy Sachs "...the negotiated and contractual approach goes far beyond the management of biodiversity... it could become the cornerstone of democratic middle-way regimes, as a creative response to the present crisis of paradigms – the collapse of real socialism, the running out of steam of welfare states, the unfulfilled promises of the neo-liberal counter-revolution..." (Sachs 2000).

The specific contours of an alternative political blueprint are still blurred, but in its goals of equity and basic rights are to be achieved not by representative regimes or ideologically driven vanguard political parties, but by communities themselves. The foundations of this new politics is that justice can never be achieved, and preserved, by people without their own participation. Seen in this light, participation is not an optional instrument of governance; it is a basic right and a necessary condition for achieving justice.

In the context of bio-diversity, it may be useful at this stage to 'unpack', so to speak, the goals of ecological equity. It is common to restrict our understanding of equity to intra-generational equity, or equity between human beings at a particular point of time. This may be within communities (such as of gender, class, caste, race, age and so on), between communities, between regions within a nation state, between nation-states and so on.

However, especially in the context of ecological equity, it is important to bear in mind the imperatives of inter-species equity, and inter-generational equity. There is no philosophical basis to assume that the human species have superior rights over this planet than other species. Likewise, there is no equity if the exploitation of natural resources by the current generation of human beings, compromises or diminishes the access to these resources by our children, and unborn generations after them. These two aspects of equity are also sometimes subsumed under the concept of sustainability.

6.5 TOWARDS NEGOTIATED AND CONTRACTUAL MANAGEMENT

Historically, no institution has renounced power, unless social and political processes compel it to do so. The state is no exception to this rule. Therefore, it would be both futile and misleading to expect the state to loosen its monopoly control over natural resources unless certain conditions are fulfilled. What these conditions are is a matter of independent and extensive research, beyond the scope of this limited study. However, an attempt has been made here to begin this debate and to derive some preliminary and tentative conclusions from the few case-studies that have been looked at as a part of this study.

(i) Joint Forest Management

In many parts of the world there are already experiments going on using, in one form or another, a 'negotiated and contractual' approach to bio-diversity conservation (see box). Essentially this involves the state or the official conservation agency negotiating with the local communities and coming to an agreement on their rights and obligations regarding the conservation of bio-diversity or natural resources in their area. In its most common form, it

involves the formalisation of an agreement between the government and the local community, where the local communities agree to curtail their own use of the area to be conserved to within acceptable levels and to protect it from other pressures. In return,, the community is assured a share of the natural resources harvested from the area and also a share of the income from the area. Sometimes the share can be 100%, but usually it is only a part of the resources and income. This is essentially the model that is being followed in the joint forest management (JFM) initiatives in India and much of South Asia.

However, for obvious reasons, such an approach can only work in areas where some human use and extraction is acceptable. For, otherwise, there would be no harvest or income for the communities to share.

(ii) Eco-development

In areas where human use is severely restricted or totally prohibited, like in sanctuaries, national parks and other wildlife protected areas (PAs) the 'negotiated and contractual' approach is somewhat different. This model, called eco-development, also involves formalising an agreement with local communities. However, in return for curbing their own use and protecting the area from other pressures, the communities are helped to develop alternate means of getting the required biomass, resources and incomes. The initial investments required are provided by the state and the objective is to make such alternate sources of biomass, or alternate income generation activities, self sufficient in a few years. The processes of formulating the detailed, micro-level, plans, and of implementing them, are participatory and have the inputs and concurrence of the local community (Singh 1996).

BOX: "ECODEVELOPMENT IN MAASAI MARA"

In fairness to the Maasai inhabitants and in consideration of the potential for success in conserving the areas, it was felt that they should have a status which protected them but which also provided benefits from that protection to the Maasai. The rationale, very innovative for the time, was that if the areas were to be conserved for the benefit of the country and posterity, they would have to be supported by the people who lived near them. To accomplish this, these people would receive a share of the tangible benefits of the area and, in return, would participate fully in the creation and management of the national parks.

The concept of the Maasai District Game Reserve was originally put forward by Major Temple-Boreham. The idea was further developed and debated through many meetings with the Maasai in the area, the

Narok District Council, and the government authorities in Nairobi. After about two years of negotiations, the proposal for the Maasai Mara Game Reserve appeared in its final form. Final approval was reached and the areas were gazetted in 1961.

In the Mara an area of some 700 sq. miles adjoining the Tanganyika border and the Serengeti National Park was gazetted as the Maasai Mara Game Reserve. The central portion of this area, between the Telek River and the border, was to be maintained inviolate, with no grazing or human use other than development of appropriate facilities for tourists. The administration of the area was wholly the responsibility of the Narok Africa District Council. The Council passed ADC by-laws for the management of the area, including control of grazing and burning. The Council provided a warden, rangers and other staff to maintain the area and the Game Department provided training for them. The Council agreed to develop (by itself or through concessions) the necessary roads and tourists facilities, and it was to establish and collect entry and any other appropriate fees. These fees were to go to the Council for the use of the Masai, with the intention that a certain portion would be distributed to the families adjacent to the reserve and the rest would go to development projects agreed upon by the Council. In such cases, appropriate signs were to be placed informing the people that the Mara Reserve was the source of the funds which made development possible. In addition to the Reserve itself, the adjacent, and nearby areas of grazing land were divided into a series of shooting and photographic blocks. The District Council could set appropriate fees for visitor's use of these facilities, including campaign, vehicle entry and trophy fees (the latter being incremental to the Kenya Government's game license fees). While these fees were to be collected by the District Council, the intent was that they would primarily benefit the families or villages in whose areas the shooting or photographic block were located.

Unit his death, a few years after the establishment of the Maasai Mara Reserve, Major Temple-Boreham continued to work closely with the Maasi, providing training, advice and assistance. The Narok ADC provided strong protection against poaching, leaving spectacular wildlife migrations largely undisturbed. The Reserve prospered and was considered a complete success. The Maasai adhered to their side of the agreements, maintaining the area as totally free of grazing. They received considerable and constantly expanding revenues from the increasingly numbers of tourists. The early revenues went to Council activities including mobile and fixed dispensaries and schools, all of which bore signs crediting the Reserve for their establishment. [case 8]

(iii) Joint Protected Area Management

Another version of the 'negotiated and contractual' approach being promoted for use in relation to protected areas is what is called joint protected area management (JPAM). In this approach, the basic principles of JFM are extended to protected areas. The local communities are encouraged to jointly manage protected areas and, in return, get a share of the income, biomass, and other resources like medicinal plants, that can be got from the PA (Kothari et al. 1997). The assumption here seems to be that PAs should be so managed that some resources can be harvested for the benefit of local communities. Revenues from tourism and the few other acceptable activities should also flow to local communities. However, whether PAs should allow human use activities and, if so, to what extent, are still open questions. Whether income from tourism and other activities in PAs, along with the small amount of harvesting that might become acceptable, would be adequate to sustain JPAM, is another open question.

6.6. SOME PRELIMINARY CONCLUSIONS

From a study of the successes, as also the limitations, of these three types of case-studies, as also others examined in this volume, we arrive at a preliminary set of conclusions regarding successful partnerships of the state with local communities for the conservation of biodiversity. One fact that stands out is that community based efforts at biodiversity conservation cannot succeed in isolation. Their greatest chance of success is when they are a part of a larger, enlightened, scheme of natural resource management. Where the basic needs of local communities are catered for through models of resource management that empower them, and where they are allowed the economic and social space to care for their natural heritage, then the discipline and self denial often required from local communities, if biodiversity is to be conserved, might be forthcoming. The elements of such a natural resource management system is described below.

(i) Full usufructory rights over natural resources

Local communities must have full usufructory rights over adequate natural resources, located at an accessible distance, so that their basic needs are fulfilled. It is futile and self-defeating to follow a policy of debarring communities from access to the resources that they require for their bare survival. Such a policy would only alienate and criminalise them, render them vulnerable to seasonal hunger, to the rapacity of the moneylender, and the predations of powerful exploiters. It has been seen that except where religious sanctions are powerful – and these are weakening everywhere in

the contemporary era - communities are most motivated to preserve those natural resources that they need to meet their basic needs.

Apart from these instrumental reasons for ensuring community access to local natural resources, there are more fundamental ethical concerns, of equity, justice and rights of these communities. In most parts of the world it is the very poor, often indigenous, communities which have lived in the midst of rich and valuable bio-diversity concentrations. It cannot be held that this entitles these communities to exclusive rights over this bio-diversity. But at the same time, any policy which results in the expropriation of these natural resources for the exclusive or dominant consumption of powerful classes and nations, to the exclusion of poor local communities, contradicts principles of intra-generational equity and cannot be supported.

(ii) Right to Information and Free Negotiated Settlements

Even after ensuring full survival needs of local communities, further revenues earned from sustainable extraction of natural resources must be equitably shared with local communities, on the basis of free negotiated settlements, or contracts. These contracts would also clearly lay down the obligations and duties of both the state and the community.

There are several conditions that need to be fulfilled for a genuinely free and equitable process of negotiations between the state and local communities. One of these is respect for the rights, aspirations and traditional wisdom of communities, especially those that have been historical custodians of bio-diversity.

Another is the full and comprehensive right to information of all technical and other aspects which are relevant in arriving at a decisions. Legal and institutional mechanisms, and appropriate checks and balances, would have to be set in place to guarantee this. State authorities would be required not merely to share this information formally and nominally, but to demystify and actively disseminate all relevant information for informed decision-making.

(iii) Ensuring Intra-Community Equity in Decision-Making

There are a variety of institutions, both traditional and statutory, which may be used to enable community decision-making regarding bio-diversity conservation. In the case of India, reference has already been made to Joint Forest Management Committees. In addition, the traditional *gram sabha* or village assembly of all village residents has recently been given statutory status in India and given legal ownership of non-timber forest produce in areas of tribal concentration. In Mexico, in the case-study of the UZACHI, it has been observed that the paramount institution for decision making is

the assembly of four indigenous communities.

However, it is important in the design of such institutions to bear in mind the stratified character of most communities, typically with unequal distribution of power based on gender, class, caste, ethnicity or age. Therefore, care must be taken to ensure that decision-making in the name of the community is not done by powerful elements or groups, to the open or tacit exclusion of less powerful groups of people. This principle is easier to state than implement, and would require processes of organisation of these disadvantaged groups within each community. But if such intra-community equity in decision-making is not assured, even participatory modes of ecological management would fail to deliver equity.

(iv) Compensating Communities for Restriction to Biodiversity Use

There may be situations in which even sustainable extraction of bio-diversity resources may not be sufficient to preserve bio-diversity. In these cases, considerations of inter-species and inter-generational equity may require complete restrictions on bio-diversity extraction.

It has been observed that in the large majority of cases, communities in the vicinity of precious biodiversity are usually themselves precariously placed from the perspective of survival. Decisions therefore to fully restrict their access to bio-diversity must be rare, and must be taken with utmost care and transparency. The rationale for this decision must be shared both with independent experts and (in fully comprehensible idiom) with the affected communities. They must be given full opportunity to challenge this rationale.

In the event that bio-diversity access is restricted or barred, the state must be legally bound to provide alternative livelihoods, and resources for food security, fuel, fodder and shelter, which is not less than prior to barring of access, and which would also raise the communities above the poverty line. As a mandatory social security measure, a food-for-work employment guarantee programme must be a non-negotiable statutory requirement to be operated by the state for all local communities whose traditional access to bio-diversity is restricted in the larger interests of ecological equity. In the medium to long term, it is not enough to just ensure that such communities have not become economically worse off. Any effort at compensating and rehabilitating them must also provide realistic opportunities to them for improving their economic lot and for having a chance to achieve their aspirations.

(v) Future Directions

In conclusion, it can be said that perhaps the 'negotiated and contractual' approach is the only way to ensure that both the objectives of biodiversity conservation (representing inter-generational and inter-species equity) and protection of the livelihoods of local communities (representing intra-generational equity) are fulfilled. On the one hand, it ensures a continued access of communities to local natural resources, thereby safeguarding their survival rights. On the other, it safeguards the right of a State to use, protect and allocate natural resources in a manner that is in the larger public interest. What is required is for the State to:

- Share its conservation concerns and aspirations with the community
- Understand the conservation concerns and aspirations of the local communities
- Develop conservation objectives and strategies and the resultant conservation plans in a manner such that they meet with the requirements of science and of ethics and are participatory and effective.
- Understand the costs that the community would have to pay in order to implement such a conservation plan
- Negotiate with them the best way to defray these costs
- Enter into a contract where the obligations and duties of both the state and the community are clearly defined and agreed upon
- Ensure that the contract is not violated by any of the parties involved

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CASE STUDIES

CASE STUDIES 1 TO 27

Thailand, China, Nigeria, Ghana, Brazil, Kenya, Zimbabwe, Phillipines, India, Sri Lanka, Tanzania, Nepal, Bangladesh, Mexico.

Compiled by

Vasumathi Sankaran*

*Indian Institute of Public Administration, New Delhi

CASE STUDY 1

NOT ONLY PREACHING: THE WORK OF THE ECOLOGY MONK PHRAKHURU PITAK NANTAKHUN OF THAILAND*

LOCATION

The site is located in Santisuk district of Nan province, Northern Thailand.

ECOLOGICAL VALUE

Although mountainous and officially classified as national forest land, Santisuk is the driest and poorest region of Nan. It is the catchment of the Nan River which eventually feeds into the Chao Priya, the main river of Thailand.

PROBLEMS

Phrakhru Pitak Nantakhun of Nan province in Thailand is the abbot of Wat Aranyawat. Giew Muang village, located in Santisuk district of Nan Province, has seen rapid and severe deforestation in the past two decades. Two of its rivers have dried and people migrate to find work.

Phrakhru Pitak belongs to this place and his childhood experiences of the suffering humans can cause wildlife made him take up the cause of conservation. He began preaching conservation but he also realised that he also had to practice conservation actively.

PEOPLE'S RESPONSES

In 1989, Phrakhru Pitak established an organization to bring together people from various walks of life who were concerned with environmental preservation. 'The Love Nan Province Association' (Klum Hak Myang Nan) was thus born. The group tackles environmental problems and promotes community forests throughout the province. Phrakhru Pitak encourages integrated and natural agriculture which provides villagers with alternatives

* Darlington 1997.

to cutting forests. He also promotes the traditional culture of Nan which fosters local pride.

In 1990, Phrakhru Pitak visited Phrakhru Manas of Payao Province, the first monk to perform tree ordination to raise awareness of the value of forests. That year he helped the villagers of Giew Muang to formally establish a community forest of 400 acres around their village. The community forest was officially consecrated by the ordination of the largest remaining tree. The villagers performed another ceremony requesting the local tutelary spirit to help them protect the forest and wildlife. It is forbidden to cut trees or hunt within the community forest, which has now become a model and attracts visitors from all over.

In 1991, a large community forest was ordained protecting the forested areas of 10 villages in Santisuk district. In 1993, Phakhru Pitak sponsored the ceremony to preserve and lengthen the life of Nan River in order to highlight the problem of desiccation and pollution of water ways. According to him the rituals themselves are not the main aspects of conservation work. They only serve as a focal point to emphasise the urgency of conservation and teach the inter relationship between Buddhism and nature. Before each ritual, the group build up awareness of the concerned villages for about two to three months.

CASE STUDY 2

INNOVATIVE FOREST MANAGEMENT BY THE LOCAL COMMUNITY IN DONGDA VILLAGE, YUNAN PROVINCE*, CHINA

LOCATION

The Dongda village is located to the east of Kunming in the Subtropical area of Yunan Province in China. It is inhabited by the Han people.

ECOLOGICAL VALUE

The forests of Dongda are dominated by Oak and Pine. The people are aware of the ecological importance of a standing forest. The good forests of Dongda protected the water source that was a spring and also provided a good habitat for wildlife. They also met the NTFP needs of the villagers.

PROBLEMS

The condition of the village forest was not good prior to 1947.

PEOPLE'S RESPONSES

The villagers began to reforest the land with government support. Earlier there were both private and public forests. Private forests were managed by family elders while public forests were managed by village elders. In mid 1950s all private forest was made village collective forests and village committees started managing them. By popular choice the fundamental conservation responsibility was borne by the Village Committee (V.C.). It is also the legal executive agency to implement and enforce relevant regulations. According to the people, to have a forest nearby means the site's *fengshui* is good, also it gave certain ecological benefits. *Fengshui* - which is a well developed science like the Indian *Vastu Shashtra*, means, the geographical advantage of the site will be able to fulfil certain needs of the people.

In 1960, the village leadership developed the rules for forest use. The forest was not allowed to be cut individually for sale. The quantity of forest extraction was also limited and only the community had the right to sell wood products. The role of the forest in providing short term benefits was also explored, especially NTFP and bamboo. Bamboo was planted by them for extraction and a male forest guard was appointed. Also, forest regulations were formulated by the V.C. and passed in a village meeting. These regulations are still in force and are as follows:

- No cutting of trees in watershed forests, only collection of fallen branches allowed.
- All the wood cutting activities by individuals has to be approved by the V.C.
- Firewood is not allowed to be sold individually.
- The cutting of trees without permission is subject to a fine.

The laws were and are observed by all including the V.C. The local governments' regulation on forest use were used as the base document for framing rules. The quota set by them for timber extraction was followed to ensure the proper use. For example, the 1980 forest policy stipulated that the collective forests were to be divided into two parts *Zerenshan* (responsible hill) and *Ziliushan* (self use hill). The *Zerenshan* belonged to the entire community to protect and use. If the individual farmers wanted, they could buy the *Ziliushan* forest lots from the state for their private benefit. However, individual households in the village did not have of the money to buy *Ziliushan* forests, so they decided to take over the management of *Zerenshan* forests. They decided to allocate portions to individual farmer households, with appropriate rules to monitor management activities. For efficient use of the wood, all cutting quantity has to be ratified by the village committee before harvest. The V.C. appoints the forest guard to take care of the need of individual households and mark the tree to be cut. A symbolic amount is deposited in the community fund by the beneficiary. The work done by the forest guard is summarized in the village meeting and suggestions are asked for, so that people have a say in the management. The committee is supported and given its authority in such meetings. All regulations decided by the committee are made known to the villagers at the village meetings. The villagers' opinions are asked for and incorporated.

The villagers have developed an efficient way to deal with conflicts and conserve forest. Intra-village conflicts are usually over the sharing of forest produce. These are usually settled within the family, with the village committee as a mediator.

Inter-village conflicts are over boundary demarcation and changing

patterns of village settlement. In such cases, participation of local government officials in conflict resolution is solicited. The V.C. visit each other by turns to solve the problem through discussions. In case it could not be settled then the government official was requested to give the final solution.

With the introduction of cash crops and inclusion of this area in the tourism development zone, people's perceptions have changed. Presently, there is a decline in the spirit and practice of forest protection.

CASE STUDY 3

FROM IMPERATA GRASS FOREST TO COMMUNITY FOREST: THE CASE OF PAKHASUKJAI*, THAILAND

LOCATION

In 1976 a group of Loi Mi Akha families left their homes and fields, along the troubled Thai Burma border, to seek a safer, more settled, life in Thailand's Chiangrai Province. Fifteen kilometers from the border they founded the village of 'Pakhasukjai', on land that had been cleared, cultivated and left fallow by an earlier group.

ECOLOGICAL VALUE

The Mae-chan watershed in which Pakhasukjai was situated was once a flourishing forest and forests were also an integral part of the Akha world. So the deforestation they confronted in their new abode was a problem.

PROBLEMS

When Akha arrived, the land was mainly in Imperata Cylindrica and bamboo succession with small forest patches and scattered large trees. A fire swept through the grass fields every year, which gave little opportunity for trees to root and stems to coppice. Soon the villagers decided to set aside an area where forest regeneration could occur.

PEOPLE'S RESPONSES

The population of Pakhasukjai was growing and farmland was limited. Yet the villagers decided to set aside land on the mountain top and ridges around the village, for community forest (C.F.). Their traditional agricultural practice facilitate regeneration. When forest is cleared for farming, tree roots and stumps are left in the ground. The fields are not ploughed and generally cultivated for one to three years, thus minimising soil disturbance. The tree

*Durno 1996

species that survive cutting and pruning begin to coppice. The nearby forests act as the seed bank for the fallow fields.

Akha custom prohibited tree cutting in and around religious sites, burial grounds, and shrines of the lords of land and water. Trees could also not be cut around the village gate and "pure water sources" from which water for ceremonies is drawn. Earlier the presence of large forests did not necessitate the enforcing of these rules. Now, with a smaller forest, new rules had to be enforced. Any tree cut without permission would be a punishable offence. In order to prevent fires threatening the village and the regenerating forests, every year before dry season the Pakhasukjai villagers cleared a fire break around the perimeter of the forest. The villagers formed community work groups with one labourer from each family to cut firebreaks and to fight any fire that threatened the village. Any family which did not contribute labour was fined.

As things stand, the area under community forest has increased. The decision to add more land to the forest was made at village meetings through discussions and consensus among the male heads of households. Today the forest area is approximately 579 ha. The C.F. is heavily used by both villagers and domestic animals. All villagers have an impressive knowledge of the forest species. Access to forest is on a first-come-first served basis. At present, the catchment pools that provide drinking water for the village are fenced and roofed in an attempt to keep the water clean. However, the scarcity of animals and birds, which are important agents of seed dispersal, threatens the long term survival of many tree species in the C.F. Only a few of the smaller mammals such as squirrels and rats are still to be found in the Pakhasukjai forest. While there are a number of bird species, the larger fruit eating birds such as hornbills have disappeared.

The forest management system continues to evolve; the most notable changes involve fire prevention methods, and growing interest in agro-forestry and reforestation. For several years now the villagers have no longer found it necessary to cut fire breaks around the forests. A demonstrable increase in forest cover on village lands is a crucial bargaining point for negotiating for citizenship and land rights based on the villagers ability to sustainably manage the watershed.

However, there are also some problems. It is difficult for village committees to enforce village agreements with people who are kin of committee member, or these who are economically weak and therefore cannot afford to give up marginal lands for afforestation. Boundary disputes have also cropped up.

CASE STUDY 4

RESOURCE CONSERVATION IN OBOTO, NIGERIA*

LOCATION

Oboto lies well within Nigeria's moist lowland forest zone, where the annual rainfall rate is 2000 mm. It is about 195 km. north-east of Lagos. The community was founded around 1780 by Prince Logbemiwa. The pioneers were the Ondo natives. They were agriculturalists. It became a permanent settlement around 1890. Many former world war ex-service men also returned and settled down here by 1945.

ECOLOGICAL VALUE

A moist low land zone and part of an important watershed.

PROBLEMS

Around 1910, timber was extracted from community forests (C.F.) to build the oba's palace in Onda. This opened up the forests for extraction by the colonial masters. More shifting cultivation started, cocoa production was introduced in 1939. Slowly plantations replaced forests. Feeder roads led to more exploitation till the forests, wildlife and subsequently the ecological function of water catchment suffered to a considerable extent.

PEOPLE'S RESPONSES

These calamities awakened the community to the folly of uncontrolled destruction. In 1945, the *baale* of Oboto, prince Adabusuyi, revived the traditional taboos and forms of worship. The oracles decreed that three forest reserves were to be set aside for effective protection. First one was *Igbo-Itmafo*, where all the Oboto gods were deposited. Traditional chiefs and medicinemen enter this forest only once in a year, during the annual festival. Another area was *Igbo-Orisa*, around the partially silted main stream. A third forest-*Orisagogoro*, was set aside primarily because of its

*Okali & Amubode 1995

rough terrain and the difficulty of working it, with traditional farm implements, during shifting cultivation. Bye-laws were passed forbidding entry into the three special areas, except at specified times.

The *baale* is the head and represents the interests of the *oba* of Ondo, to whom Oboto owes its allegiance. Recently the *baale* was upgraded to be a titled chief, *oloja*. Immediately under the *baale* are the traditional chiefs usually selected from elders, irrespective of their sex. The rituals in *odo-orisa* are led by women. It is protected as a watershed and fishing is prohibited to ensure that water is clean for domestic use. However, the application of indigenous knowledge in conserving these resources is led by men, and traditional decision-making processes are dominated by them.

Hunting is men's work, done during the dry season, which is declared as open season. It takes place mainly in *orisagogoro*. The practice of disposing of kills openly, in collection centres, and of women processing the kills, in some way deters the hunters from contravening hunting regulations. The main regulations are against off-season hunting, killing immature or pregnant animals, and control of bag size.

Oboto's effective management of flora and fauna is attributed to four core elements: strong adherence to traditional village organization, with its clear chain of command and distribution of duties; a high level of respect for traditional law; increasing understanding of local ecology and conditions, incorporating this understanding into local land use, game hunting and conservation practices; and a high value attached to medicinal plants.

CASE STUDY 5

THE MALSHEGU SACRED GROVE GHANA*

LOCATION

Melshegu's Kpalevorgu Sacred grove is six kilometers north of Tamale, the northern region's administrative capital in Ghana. The settlement is subdivided into two sections: Kumbuyili, the old settlement, and the new Malshegu. The sacred grove lies along the motor road directly opposite Kumbuyili. No Surface river flows near Malshegu, though some untapped, shallow, ground water resources exist.

ECOLOGICAL VALUE

The grove is of significant ecological importance since it has developed into a small, but vital, refuge and repository of numerous indigenous species, not found elsewhere in the area in such large concentrations. The grove is an important source of seed, as seed dispersal is vital to traditional shifting cultivation practices, and of herbs for medicinal use.

PROBLEMS

Leaders and selected Malshegu citizens clearly indicate that they are aware of the deterioration to the environment. The removal of stunted vegetation, soil erosion, increasing droughts, the decreasing duration of rain and prolongation of dry seasons have all affected the citizen's ability to produce enough for themselves. For the majority of northern Ghana's ethnic communities, it is taboo for any person to plant a tree. Trees are regarded as a gift of God and must be allowed to grow for themselves. Though the local inhabitants recognize that trees have economic, medicinal and ecological value, they feel that large scale afforestation would reduce the land available for food crops. Traditional religious beliefs and practices, however, have resulted in preserving the sacred groves throughout Ghana, especially in the Savanah regions.

PEOPLE'S RESPONSES

The eldest male (in rare circumstances females) of the first occupants is

*Dorm-Adzobu & Agyei 1995

appointed Tindana, who is the community landlord as well as the political and spiritual or religious head. Malshegu's *Tindana* is a woman, but she, however, has delegated her functions, especially the cultural and religious ones, to the male religious leader, the *kpalna*. Traditional religious beliefs and practices have resulted in the preserving of sacred groves throughout Ghana, especially in the Savana regions, because of the degraded vegetation. The sacred groves are protected, conserved and maintained through a combination of taboos, prohibitions, beliefs and restrictions. In almost all cases burning, tree cutting and fuelwood gathering is prohibited in the sacred groves. There are sanctions against those who contravene the taboos.

The Malshegu ancestors settled here in the early 18th century. Initially, they were individual families, one of whose elders became the leader by being custodian of the fetish god *Kpalevorgu*.

The early settlers had to fight the onslaught of Arab slave traders. The success in warding off the invaders was attributed to the support from *kpalevorgu*, symbolized in the form of a boulder, placed under a baobab tree. Its sanctuary and dwelling place was selected on a high ground on the outskirts. Since the desire was to give the oracle a quiet, peaceful and shady place, the land around the baobab tree was demarcated and set aside. Now it has grown into an open canopy forest. The direct responsibility for the grove is assumed by the *kpalna*, though all the people consider themselves as joint custodians. The Malshegu grove is therefore one of the few remaining examples of non-riverine, closed canopy forests in the savannah.

Inhabitants are allowed entry into only the buffer zone of the grove, and that too only during the biannual festival held in honour of the *fetish*. Some hunting and collection of forest resources is allowed on these special occasions. The buffer fetish lands are surrounded by a strip of protective land on which only grazing is permitted. At the conclusion of the festivals, the male participants clear a three meter wide fire belt around the grove to protect the grove from bush fires. Even under the present harsh conditions of fuelwood shortage, women practice restraint and refrain from collecting fuelwood from the grove. Every member is responsible for policing the grove, it is therefore almost impossible for anybody to enter without being detected. Activities in protecting the Malshegu grove include a ban on farming, grazing, infrastructural development, bushfire and collecting fuelwood in the grove. For centuries, the people have observed the unwritten guidelines that restrict land use in and around the grove. Women, as traditional educators, pass on the information to their daughters and other young girls, to prepare them for participation in annual festivals. Mothers and elderly women caution their daughters against collecting fuelwood from the grove. In many instances, these lessons are taught through stories, threats and by narrating personal experiences.

CASE STUDY 6

EXTRACTIVE RESERVE OF ALTO JURUA, BRAZIL*

LOCATION

The Alto Jurua extractive reserve was set up by Decree No.93.863 of 23 January 1990, with an area covering approximately 506, 186 hectares. It is located at the western tip of Brazil in the state of Acre.

ECOLOGICAL VALUE

The area of the extractive reserve of Alto Jurua is part of a biome which, from a macro-ecological point of view, includes at least four types of dry land tropical forests, which are never flooded.

The dense tropical forest appears distributed in patches in the central and eastern region, surrounded by open tropical forest, this latter formation occurring more frequently.

The ecological rhythms of the region are very much marked by the rainfall, with an annual total exceeding 2200 mm; the rainiest quarter is December, January and February, while the driest is June, July and August.

PROBLEMS

The occupation of Acre, as of all of the Amazon region, began with the search for forest products that could be sold abroad.

In the 19th century, latex began to be extracted by the Indians in the lower Jurua and in the Purus. This rubber was sold to merchants in Manaus and Belem. These merchants travelled on the rivers, also buying *erva-doce* (canary grass), cinnamon, turtle oil, *copaiba* oil, cocoa and sarsaparilla. However, with the drought in the north east, in 1877 and 1880, thousands of north-eastern rural workers decided to try their luck in the rubber plantations of Amazonia.

After the bankruptcy of the rubber barons and of the import-export companies of Manaus and Belem, the former employees and managers began

*Lima 1995

to operate an itinerant trade as local bosses, some of them taking up residence in the area where they used to work previously. The rubber tappers began to have larger families, taking up hunting, fishing and the gathering of other forest products. These were sold either through local bosses or through the *regatoes* (itinerant traders).

In 1985, the rubber growers of the region began to show an interest in timber extraction. This made the rubber tappers very apprehensive, especially because of the preliminary contracts given for installing the necessary infrastructure. This was the immediate background for setting up an extractive reserve in the area, an idea which was ventilated for the first time in 1987.

PEOPLE'S RESPONSES

Jurua valley, has 865 houses with a population of 5821 persons, which gives an average of 6.73 persons per family, in 325 settlements (*colocacoes*) and 10 farms.

Most of the residents were born on the rubber plantations, and only a few, mainly on the banks of the Jurua river, were born in towns. Most are from the north east or descendants of north-eastern migrants, who arrived in the region during the first cycle (1885-1912) or during World War II (1939-1945).

The area which is now the extractive reserve was inhabited until the last decade of the 19th century by indigenous peoples of the Pano language family, represented by the Kaximinawa, Jaminawa, Amoaca and other tribes.

A 1991 socio-economic survey indicated that 53% of the reserve territory was appropriated as an extraction area, while 47% served either as a buffer between settlements or consisted of uninhabited areas between rivers. Places with permanent inhabitants were identified by small clearings opened in the forest for the main housing or for small fields or pasture lands. The reserve territory was divided as follows: 1) areas with strong human activity; 2) degraded areas with pioneer vegetation; 3) forest areas with extractive user and regular hunting; and 4) areas with very low and irregular human activity.

Even today, migration within the reserve is observed to be very low. Families have been living in the same rubber growing areas for more than 20 years and in the same settlements for more than 10 years. Moves, when they occur, may be due to a number of causes, such as marriage, pressure on natural resources or the increasing number of houses within a settlement, perhaps the wish to live closer to relatives, or the need for schooling or medical support, or even for better transport facilities.

All transport is by boat or by canoe. There are no roads, not even for pack animals. Communication within the areas is by trails which are maintained by the residents themselves. The journey from the most distant points of the reserve to the headquarters of the association might take up to two days by canoe, not counting the stretches which have to be covered on foot.

It should be emphasized that once an area has been expropriated, it becomes State property and the usufruct thereof is granted to local extractive residents through their associations, which is a way of avoiding fragmentation of the land. The precondition for making the concession effective is approval of the utilization plan. The association, which is responsible for administering the reserve's natural resources, has the right to supervise the conservation of the rubber trails, the stock of palm trees and other resources, in accordance with the "Utilization Plan" previously approved in a general meeting. The association is also responsible, with the support of the National Council of Rubber Tappers, for planning and implementing development strategies favouring conservation. They are also responsible for strengthening the association itself, with the help of equipment, infrastructure and the recruitment of technical staff. A number of projects are currently underway to support the extractive reserve of Alto Jurua.

CASE STUDY 7

MARINE EXTRACTIVE RESERVE OF PIRAJUBAE, BRAZIL*

LOCATION

The reserve, totalling 1444 hectares, includes 700 hectares of marine bay and 744 hectares of mangrove. It is located within the urban area of the town of Florianopolis, in the southern state of Santa Catarina, which has around 1 million inhabitants, and constitutes the largest area of mangrove trees which are still preserved on the island of Santa Catarina.

The reserve was established on 20 May, 1992.

ECOLOGICAL VALUE

This is the first extractive reserve to be established outside the limits of legal Amazonia and also the first marine reserve. The area is part of one of the most extensive mangrove flats of south Brazil.

As such, the reserve is essential for the maintenance of fisheries in the southern bay of Florianopolis, because the mangrove flats provide a habitat and a breeding ground for the main economically valuable marine species of the region (fishes, crustaceans and molluscs).

The marine environment of the reserve, which is made up of mangrove flats and shoals (baixio, a sandbank in shallow water) is energetically interrelated through the export of organic material from the mangroves to the sea, and also by the use of the mangrove trees by typical species living in the shoals and bay waters. Apart from species living among the mangroves, a large number of visiting species enter the area occasionally in their juvenile stages and use it as a breeding ground.

PROBLEMS

On the basis of existing studies and experiments, coordinated by IBAMA (Brazilian Institute for Environment and Renewable Natural Resources) with

*Von-Behr 1995

the help of fishermen, the reserve was set up for the purpose of working out a proposal for managing and exploiting one of the marine species in the area, a type of bivalve mollusc known locally as the "berbigao" (*Anomalocardia brasiliensis*). The species is known in the country under other names, such as the "sarnambi" (in Bahia), vongoi (in Sao Paulo), etc.. This type of mollusc breeds in the shoals adjacent to the mangrove flats.

Other species of marine fauna of economic value occur in the reserve, such as the pink and white prawn, fishes, which include the mullet (tainha or parati), small cods (pescadinha), croaker (corvina), catfish (bagre), and some crustaceans, such as crab and shellfish.

The post-larval shrimps move among the mangroves, where they remain for four or five months, later continuing to migrate into the shoals and into the open sea, to complete their life cycle, in which the mangrove plays a fundamental role for the reproduction of the species.

The reserve area belongs to the Federal Government (mangrove flats and shoals). In this sense, the legalization of the reserve from the land point of view has already been completed, since no cost was incurred to expropriate the land or to compensate for any improvements.

Owing to its environmental value for the bay, a great part of the reserve's mangrove area had to be marked off (by means of canals) before the reserve was set up, in order to prevent the area from being destroyed as a result of the intense urbanization currently going on around the reserve.

In 1988, the SUDEPE (Superintendencia do Desenvolvimento da Pesca, or Fisheries Development Office), now part of IBAMA, seeing the need to regulate the exploitation of *berbigao* shellfish, which were being withdrawn haphazardly, with a corresponding risk for their reproduction, undertook a scientific study for the experimental establishment of a marine *berbigao* farm in the form of a pilot project. The project was coordinated by the marine biologist Ernesto Tremel. The cooperation of the fishermen was also sought, with a view to regulating the exploitation of the very large quantities of *berbigao* molluscs, which were being extracted from the area without any planning and with a serious risk of jeopardizing the ecological equilibrium of the area. The major problems were seen to be:

1. Invasion of the reserve area by fishing boats from other regions.
2. Increase in the numbers of fishermen engaging in small-scale fishing.
3. Spread of urbanization in mangrove areas of the reserve which have not yet been marked out.
4. Inadequate organization of fishermen that do not extract *berbigoes*.

PEOPLE'S RESPONSES

In 1992, in order to guarantee access to the area, to enable the project to continue and to obtain the necessary financial and technical support, the fishermen, backed by the IBAMA office in Santa Catarina, asked the CNPT (National Centre for Sustained Development of Traditional Communities) for a study to be made of the possibility of transforming part of the bay and the adjacent mangrove flats into an extractive reserve, on the grounds that the area lent itself to the collective use of natural resources.

Out of the 115 families which depend on the marine resources of the reserve, about 15 families, with IBAMA's authorization, extract *berbigao*, while approximately 100 exploit other marine resources of the reserve, such as fish, shrimps, oysters, crabs and other molluscs, in such a way as to guarantee the conservation of these resources.

The beneficiaries of the reserve live next to it, 5 km outside the centre of Florianopolis, in the Costeira do Pirajubae neighbourhood, a densely populated urban area. This means that all the public services of a large town are available, such as shops, schools, leisure amenities, dispensaries, supermarkets, etc.. It should be emphasised that, despite the high population density close to the reserve, the number of fishermen actually extracting *berbigao* is small in order to guarantee the reproduction of the species in the area.

Fishing is the main source of income of the reserve's beneficiaries, although 40% of them engage in secondary activities, working as construction workers or in the shopping areas close to the reserve. Nevertheless, all of them extract marine resources for their subsistence, from the mangroves, the sandbank and the bay itself.

A small company was set up in the reserve to market the produce of the extractive workers. An authorization for the extraction of *berbigao* is issued by IBAMA every six months, on the basis of the volume of production, for which data are collected and supplied by the fishermen to the trader under IBAMA's supervision. This is to ensure sound management of the reserve's marine resources.

The families benefiting from the reserve have accumulated knowledge and considerable experience concerning the handling of marine resources. Their tradition has given rise to the development of some highly specialised fishing tools and practices. Preserving the cultural traditions of small-scale fishing, in accordance with the wishes of the local population, is now a priority both for the social scientists and for the environmentalists.

The marine extractive reserve of Pirajubae, as both an area and a legal instrument, is intended as a means of preserving these traditions. It is an essential part of the effort to introduce viable practical measures in support

of the sustainable extraction of natural marine resources.

The type of extractivism practiced in the reserve depends on integrating the mangroves, sandbanks and the bay. It represents a significant component of the local economy and cultural traditions. The reserve guarantees the continued integration of traditional communities in the environment.

The *berbigao* shellfish are caught in accordance with a set of scientific criteria, in order to ensure that the existing population of molluscs is preserved indefinitely. Limits are also set on both the number of fishermen and on the volume of production. In recent years, existing stocks on the sandbank of the bay were threatened by disorderly capture, even of small molluscs, which had not yet had time to reproduce.

The solution to this problem was worked out with the help of a piece of equipment used in the extraction which is similar to a rake (*gancho*), and acts like a plough, leaving behind the younger individuals which have not yet reproduced. The "rake" operates the selection. Molluscs measuring less than 17 cm slip through the grid, together with impurities. These rakes, are of a simple design and manufactured by the workers themselves from soldered strips of iron. Apart from these, the only other rustic tools used are 18 kg oil cans, used as a measure, and a few sacks.

Alongside the above measures, a scientific study has been initiated made to monitor the catches and to keep a statistical record of the average dimensions of each load. This work is being undertaken by Dr. Ernesto Tremel, and it said to be a first in Brazil.

The tide is an all-important consideration for the extractivists, who have to fill the quota allowed by the utilization plan before the water rises.

Briefly, the extractive system is based on three principles: selective capture, sparing the youngest specimens; rotation in the fishing grounds; and continuous repopulation.

CASE STUDY 8

THE MAASAI MARA AND AMBOSELI RESERVES, KENYA*

LOCATION

The Mara is the northern portion of the Serengeti-Mara ecosystem. Bounded on the west and north by the Isuria and Mau Escarpments and on the south by the Serengeti National Park of Tanzania.

Prior to 1961, the part of the Mara west of the Mara River had the status of a National Reserve within the Royal National Parks of Kenya. While formally under the jurisdiction of the National Parks Department, in practice it was managed by the Game Department, which also administered wildlife in the remainder of the area. Hunting was prohibited in the central area, and strictly limited elsewhere. Safari tent camping was allowed in the Mara under strict regulations.

ECOLOGICAL VALUE

It is a rolling area of mixed open grassland, interspersed with riverine forests and hilly bush or woodland areas

This area is located in Maasailand. Mara area is administered by the Narok Maasai ADC (African District Council). ADC areas were used as open grazing lands for the livestock of the Maasai pastoralists.

PROBLEMS

In much of the Maasailand area there is a history of conflict between the interests of the Maasai and the wildlife authorities, over access to water, grazing, and poaching. Prior to 1930, there was no attempt to curtail the traditional use of the area by local Maasai pastoralists. Later, however, the colonial government increasingly emphasized the protection of wildlife, establishing national parks which excluded local populations and their herds, and prohibited hunting.

PEOPLE'S RESPONSES

The earliest major effort in Africa to embody the principle of community participation in conservation was in the establishment of the Maasai Mara and Amboseli District Council Game Reserves. They were conceived, negotiated and established nearly thirty years ago with the specific objective of involving the local communities.

In the Mara, the Mara River and its tributaries also provided the Narok District Maasai with water and grazing in the dry season, but here there is no history of conflict. Much of the Mara area was infested with the tsetse fly, which effectively excluded cattle while leaving the wildlife unaffected. However, year by year the tsetse infested area was reduced by Maasai fires and brush cutting, which destroyed the habitat needed by the fly. By 1959, the part of the Mara still infested was limited largely to the southern area near the Tanzanian border.

This second reason for the good relationship between the local people and the wildlife authorities was the Narok District Game Warden himself. **Major Lynn Temple-Boreham** had been warden since 1946. He exercised a very strong control over wildlife matters in the Mara Region, but he respected the local people and their needs and customs, and he was just and equitable in his relations with them. For example, recognizing the central role of hunting in the life of the small group of Wanderobo, a hunter-gatherer people living in the area, he allowed them to harvest whatever wildlife they needed so long as it was by traditional methods and did not involve rare or endangered species. In the same way, he respected the Maasai and their customs and assisted them in whatever way he could. As a result, his relationship with them was very good and they provided invaluable cooperation to him in exercising his wildlife related duties.

The government of the Kenya Colony recognized the outstanding conservation value of these two areas, and also their fragility and the probability that without special protection they would become severely overgrazed and their wealth of wildlife would be lost. Accordingly, in the late 1950's the Royal National Parks of Kenya proposed that these areas should become national parks.

In fairness to the Maasai inhabitants and in consideration of the potential for success in conserving the areas, it was felt that they should have a status which protected them but which also provided benefits from that protection to the Maasai. The rationale, very innovative for the time, was that if the areas were to be conserved for the benefit of the country and posterity, they would have to be supported by the people who lived near them. To accomplish this, these people would receive a share of the tangible benefits of the area and, in return, would participate fully in the creation and

management of the national parks.

The concept of the Maasai District Game Reserve was originally put forward by Major Temple-Boreham. The idea was further developed and debated through many meetings with the Maasai in the area, the Narok District Council, and the government authorities in Nairobi. After about two years of negotiations, the proposal for the Maasai Mara Game Reserve appeared in its final form. Final approval was reached and the areas were gazetted in 1961.

In the Mara an area of some 700 sq. miles adjoining the Tanganyika border and the Serengeti National Park was gazetted as the Maasai Mara Game Reserve. The central portion of this area, between the Telek River and the border, was to be maintained inviolate, with no grazing or human use other than development of appropriate facilities for tourists. The administration of the area was wholly the responsibility of the Narok African District Council. The Council passed ADC by-laws for the management of the area, including control of grazing and burning. The Council provided a warden, rangers and other staff to maintain the area and the Game Department provided training for them. The Council agreed to develop (by itself or through concessions) the necessary roads and tourist facilities, and it was to establish and collect entry and any other appropriate fees. These fees were to go to the Council for the use of the Masai, with the intention that a certain portion would be distributed to the families adjacent to the reserve and the rest would go to development projects agreed upon by the Council. In such cases, appropriate signs were to be placed informing the people that the Mara Reserve was the source of the funds which made development possible.

In addition to the Reserve itself, the adjacent and nearby areas of grazing land were divided into a series of shooting and photographic blocks. The District Council could set appropriate fees for visitors' use of these facilities, including camping, vehicle entry and trophy fees (the latter being incremental to the Kenya Government's game license fees). While these fees were to be collected by the District Council, the intent was that they would primarily benefit the families or villages in whose areas the shooting or photographic blocks were located.

Until his death, a few years after the establishment of the Maasai Mara Reserve, Major Temple-Boreham continued to work closely with the Maasai, providing training, advice and assistance. The Narok ADC provided strong protection against poaching, leaving spectacular wildlife migrations largely undisturbed. The Reserve prospered and was considered a complete success. The Maasai adhered to their side of the agreements, maintaining the area as totally free of grazing. They received considerable and constantly expanding

revenues from the increasing numbers of tourists. The early revenues went to Council activities including mobile and fixed dispensaries and schools, all of which bore signs crediting the Reserve for their establishment.

By the end of the first decade, following the Reserve's establishment, the Mara was recognized internationally as one of the world's foremost wildlife sanctuaries and was a mainstay of Kenya's tourist industry. The revenues from tourists were so high and constant that the Mara African District Council (known as the Mara County Council after independence) became and has since remained financially the most stable County Council in Kenya.

In 1977, in response to pressures from conservationists and to international public opinion, the government of Kenya imposed a ban on all hunting in the country. This had a significant effect on the community-based wildlife schemes because revenues from hunting on communal land adjacent to parks ceased. To compensate, Kenya began a concerted effort to promote photographic and viewing tourism.

More recently, extensive meetings between the Wildlife Department, local County Councils, tour operators and lodge managers have also resulted in more equitable distribution of tourist facilities, benefiting communities who own land in dispersal areas and thus bear wildlife costs. One element was an increase in viewing fees in all wildlife areas, with the increment being set aside for the direct benefit of local communities living in the immediate vicinity of the Parks and Reserves. These decisions have been credited with significantly improved local attitudes to wildlife in these areas.

Thanks to tourism revenues, the Mara County Council remains the most financially stable in the country. A blanket viewing levy on overnight visitors currently yields over one million Ksh/month, providing a gross revenue far in excess of the annual incomes derived from livestock for all families in the area. The traditional Maasai custom of maximizing the number of cattle kept has begun to change, and local Maasai have been heard to say the wildlife has become as important to them as cattle, if not more so, because wildlife revenues continue to come in during times of drought or floods. Poaching and expenditure on antipoaching efforts have reportedly dropped to negligible levels.

However, right from the beginning, the modalities of the transfer to local administration differed in the two areas. In the Mara area, Major Temple-Boreham remained involved for several years until his death, and helped to guide the process. In accordance with his habitual sensitivity to Maasai culture, he helped to ensure that the negotiation process followed the traditional Maasai system of community meetings and direct involvement

of the Maasai Elders as well as the officials of the Narok District Council. He was helped by the fact that there had been little externally supported development in the area and so the traditional cultural system was relatively intact.

When it came to distribution of benefits, the Mara region Maasai knew what they were owed and were in a position to demand it, unlike those in Amboseli. In the Mara, funds were distributed directly to the Maasai in the areas adjacent to the reserve, and visible community development projects were implemented, all with signs identifying them as funded by revenues from the Reserve.

Another significant difference is that, in the case of the Mara Reserve, the transition process was carefully planned and training was provided for Narok District Council staff assigned to manage and run the Reserve.

CASE STUDY 9

KENYA AND TANZANIA*

LOCATION

The area selected for the pilot project is adjacent to the northeastern boundary of the Serengeti National Park in the Loliondo Game Controlled area. The project area is the Soisambu Ward of Loliondo Division and incorporates three villages: Olosoikwan, Soisambu and Oloipiri.

Loliondo is a sparsely populated region inhabited mainly by Maasai pastoralists who keep cattle, sheep, and goats and engage in very limited cultivation. Because of its location adjacent to an international border and a national park, the area has received little development attention. However, like many other rangeland areas, Loliondo is under increasing pressure for conversion to commercial ranching and large-scale cultivation of cereals.

ECOLOGICAL VALUE

Within its 945,000 sq. km., Tanzania has a remarkable diversity of ecosystems, supporting an abundance of wildlife. The conservation of these areas yields rich benefits, direct and indirect, to the country. The principal direct economic benefits derive from wildlife tourism (mainly in the parks), safari hunting (mainly in the reserves), and consumptive utilization by local people in the game controlled areas and in the extensive remaining unprotected wildlife areas.

PROBLEMS

The aim of the first phase was to establish a dialogue with the local community, elucidate their concerns and interests and those of the park authorities, and identify common ground. The first step in the project was to collect information about the structure and composition of the communities and the local leadership. This was accomplished through village meetings attended by Tanzania National Parks (TANAPA) staff and a

*Snelson & Lembuya 1990

community survey conducted by the Project Forest Officer (PFO).

The meetings and survey revealed a number of issues which concern the people living in this area adjacent to the Serengeti National park:

- There is an atmosphere of instability arising from large-scale cattle raiding, affecting two of the villages. The raiders pass through the northern part of the park to make their raids and then drive the stolen cattle back across the park. These cattle raids represent a serious threat to the food security of these pastoralists and their way of life.
- The commercial safari company which operates a hunting camp located within the buffer zone has indicated that it is prepared to make an agreement with one of the villages to share some of the revenues arising from their utilization of the wildlife resources. The terms of this agreement need to be negotiated.
- There is much local concern over the prospect of an imminent lease for commercial ranching and cultivation for a large area of land. This land was traditionally used for dry season pasture but has not been used in recent years because of the cattle raids. The new managers are offering alleged benefits to the local villages, and this offer needs to be assessed.

Because the Maasai do not traditionally hunt, the lack of access to hunting in the park and the buffer zones is not an issue of contention. However, one possible cost to the community in engaging in this partnership would be restrictions on the setting of fires to generate new pastures and to control ticks. An additional potential cost is that increased presence of wildbeest around calving time might result in greater incidence of malignant catarrh fever (MCF) in cattle.

PEOPLE'S RESPONSES

The primary objective of the Tanzania project was to establish the community conservation approach within TANAPA. It thus emphasized awareness-building, training, and institution building within the TANAPA system. A small pilot project was initiated as a vehicle for introducing the concept of village-based community relations work and for developing methodologies for TANAPA staff to establish a dialogue with local communities and initiate a partnership for conservation and management of natural resources.

The general interests of TANAPA lie in ensuring buffer zone, to accommodate the regular movements of wildlife in the area, within 10-15 km of the park boundary, and in maintaining the integrity of the park itself. Traditional livestock grazing by the Maasai has not presented a threat to

this wildlife movement so far, but the imminent development of commercial farming and ranching does. Therefore the future of the area as a buffer zone is central to TANAPA's focus in community- relations work. This objective is consistent with the interests of the local Maasai to hold on to their land and maintain their preferred lifestyle.

TANAPA named the Zonal Warden Lobo, of the park zone nearest to the selected area, as the project field officer (PFO). The PFO comes from the project area and is of the same clan of the Maasai tribe as the inhabitants of two of the three villages of the Soitsambu Ward. He was therefore acceptable to the local communities and able to communicate with them easily. The PFO had also received some training in community relations at a training workshop on extension techniques. His task was to integrate the community relations work in the villages with his regular park management functions.

To establish a close working relationship with the local government, the Director of TANAPA introduced district leaders and local political party leaders to the project and the PFO at an early stage. The district commissioner appointed the divisional officer as government liaison to the project. This government counterpart helped the PFO introduce himself and the project to the third village, which is composed of a different clan.

At community meetings organized by the PFO, it was decided that each village would appoint a wildlife committee for continued dialogue with the TANAPA authorities and to serve as liaison and communications channel between the park and the local people.

Better communication and partnership between the local community and TANAPA staff is the key. Recently TANAPA wardens have been notified immediately when cattle raids were in progress and were able to help stop the raids and reclaim stolen cattle. There is a proposal for establishment of a TANAPA ranger post in the area to assist with this. This facility would also double as a community center.

One key point under discussion is mechanisms for revenue sharing by the district council with the local communities. There is also interest in developing tourism and other commercial activities to generate local employment. Refining and developing this aspect will be the concern of the newly formed wildlife committees in the three villages, in collaboration with the PFO.

On the institutional side, the objective during the second phase will be to promote integration of wildlife development options with the help of different government agencies, including liaison with the National Land Use Planning Commission, as it prepares to produce a report on the Loliondo district. Similarly, the project will seek to coordinate with rural development

agencies in the area and try to interest others in working to promote rural development for the Maasai community.

Finally, the project will provide environmentally related teaching materials for teachers and pupils in local schools.

The second phase of the project will also support community conservation wardens at two additional parks, Arusha and Tarangira.

The first phase of the pilot project accomplished the goals of local and governmental institutional development through creation of village wildlife committees and establishment of a Community Conservation Service which are poised to expand their activities, based on the methodologies developed in the pilot project.

CASE STUDY 10

ZIMBABWE WINDFALL AND CAMPFIRE*

LOCATION

Zimbabwe's land area is about 38.7 million ha, supporting a population of well over 9 million inhabitants.

The Dande Communal Land is located in Guruve District in the extreme north of Zimbabwe in the Zambezi Valley bordering Mozambique. The project area covers approximately 3000 sq.km., occupying the entire eastern and central block of the communal land bounded on the east by the Msengezi River and on the West by the Angwa River. The area between the Manyame and Msengezi Rivers is covered by the Mid-Zambezi Rural Development Project (MZVRDP).

ECOLOGICAL VALUE

The MZVRDP project area encompasses two zones with substantial differences in ecological conditions, making different approaches to land use necessary. In the northern zone, human settlement density is low, tsetse levels are high, and the ecology is fragile. Therefore, in the north, MZVRDP intervention is limited to wildlife management and to promoting self-sufficiency in food crops.

PROBLEMS

Wildlife had the status of "King's Game" and was brought under state regulation so that legal exploitation and conservation were the exclusive domain of the state. The indigenous communities suffered, in effect, a double expropriation: they were forbidden to use indigenous wildlife resources and also progressively excluded from half of the country's landbase.¹ Increasingly, they were confined to communal lands where human populations and agricultural pressure on the land reduced the economic potential of wildlife. Alienation of wildlife resources and reduced access to

*Murindagomo 1990

land changed the cultural perspectives of an earlier era when rural populations used wildlife resources on a sustainable basis. Except to be hunted illegally for meat, wildlife became a liability and nuisance.

The major constraint against generating local support and participation for the wildlife component was the restriction on expanding crops and livestock into communal resource areas. This represents an opportunity cost in terms of agricultural production, although the actual magnitude of that cost is difficult to determine. It was regarded as negligible for the first 10 years of the project since, at current growth levels, it would probably take more than 10 years before cattle would require the communal resource areas for domestic grazing. After that, local people might see that, although the opportunity cost is high, the project area has low potential for productive agriculture and livestock husbandry.

Another potential cost would be the revenue lost through curtailing the sale of livestock products. This is based on the belief that wildlife carry and transmit diseases to livestock, making the meat ineligible for export.

PEOPLE'S RESPONSES

A new, more successful, wildlife philosophy based on economic incentives began in 1960, with the passing of the Wildlife Conservation Act, and culminated in 1975 with the Parks and Wildlife Act. The 1975 act gave landholders the right to manage wildlife for their own benefit, thus providing an economic rationale to reinforce the scientific, aesthetic, and moral justification for wildlife conservation.

The Department of National Parks and Wildlife Management (DNPWLM), encouraged by the new government's commitment to localized planning and implementation, developed the CAMPFIRE Program (Communal Areas Management Program for Indigenous Resources) to give full control of wildlife management to rural communities. The theory behind CAMPFIRE is that communities will invest in environmental conservation if they can exploit these resources on a sustainable basis for their own benefit.

CAMPFIRE is based on creating appropriate institutions under which resources can be legitimately managed and exploited by the resident communities.

Objectives of the Wildlife Management Component of MZVRDP

1. to conserve the fragile ecosystem and sustain the economic viability of the area through wildlife utilization.
2. to eliminate conflict between agricultural development and wildlife management (through improved crop and household protection);

3. to provide increased income to the local people and involve them in the sustained economic use of and benefits from their rich wildlife heritage;
4. to serve as a pilot demonstration for an alternative resettlement model, for the drier areas of Zimbabwe, promoting wildlife management as an alternative land use from which communities may expect returns comparable to or better than those from conventional agriculture (which is in general, uneconomical in this semi-arid environment);
5. to improve nutrition in the area by making game readily and lawfully available to the local population;
6. to improve the economic aspects of wildlife utilization in the area, encouraging more rural communities to adopt wildlife utilization on a commercial scale;
7. to improve and master management techniques for communal wildlife management;
8. to create local institutions, involving active local participation and communal decision making, for management and development of communally owned natural resources (thereby encouraging economic development of such resources).

Rather than create a new local institutional framework, it was proposed that the project could strengthen the managerial, planning, and development capabilities of the existing Village Development Committees (VIDCOs) and Ward Development Committees (WADCOS), which were instituted in 1984 to implement the government's policy to decentralize decision-making, planning, and development.

Local participation was based on the establishment of a District Wildlife Committee (DWC), providing immediate representation for the chairmen of the VADCOS. The DWC was established to enable joint operations, as the individual wards had insufficient resources to carry out separate viable wildlife ventures. This arrangement also facilitated participation of the district council, which is legally the appropriate authority for communal land and the natural resources therein.

To strengthen grass-roots participation, it was decided that the chairperson of the DWC should be elected from among the member chairpersons of ward management committees. The other members of the DWC were ward councilors from wards which had opted to establish communal resource areas and from the district council, the chairperson, chief executive officer and executive officers from finance and administration. The role of the district council members was to coordinate the administration of hunting and the disbursement of hunting revenues to ward management committees, based on the recommendations of the DWC.

Ward management committees are composed of elected members from the VIDCOs of the six villages which make up the ward.

Ward management committees are composed of elected members from the VIDCOs of the six villages which make up the ward.

Safari hunting became the base of the project because it provided the greatest earning capacity with the least prospect for environmental degradation (as it does not depend on high stocking levels). The potential for viewing tourism is low because the area is remote from the main tourist centers and routes. The DWC was designated to run safari operations on behalf of member wards, employing professional hunters and a project manager. In this way, marketing margins previously captured by private safari operators would accrue to the DWC and, through it, to the community. It was also intended as a way to provide training to some members of the community in the managerial and entrepreneurial skills needed for these ventures.

Distribution of revenues from safari hunting is an important aspect of the DWC's responsibility. In principle, each participating ward is to receive payments for animals shot in its communal resources area. This can be determined by hunting return forms filed by the professional hunters (and available to each ward committee). In addition, a member selected by the ward committee accompanies safari hunts in the ward's area.

The meat from animals shot is to be distributed to the villagers nearest to where the animal is taken (as the sport hunter himself generally does not want much of it). This may dissuade individuals from hunting illegally in this protein-deficient area. The management framework set by each ward can also provide for cropping or individual hunting by permits. These would be issued by the committee on the basis of quotas set by the DNPWLM, in consultation with the DWC. The wards also have the responsibility to decide who should carry out hunts of problem animals, to decide how individuals should be compensated for crop damage or livestock losses caused by wildlife, and to organize anti-poaching operations with the assistance of their locally trained rangers.

The first project hunting season was 1989. Total projected revenues available for distribution through the Gurube District Council equaled Z\$334,645. Three of the seven wards received substantial income from sport hunting. In Kanyurira Ward, the majority of the Z\$47,000 was earmarked for community projects, such as a clinic, but each household was also expected to receive Z\$200 in cash.

The hunting quotas were set relatively low to ensure a high trophy quality. Quotas are well below the maximum sustainable offtake from the existing populations, thus leaving room for an additional yield of non-trophy

animals for meat and hides. Thus, until the protection strategies produce higher populations, cropping has been limited to problem animals (especially elephants and buffalo which damage crops).

One of the major benefits of the project has been the strengthening of the VIDCOs and WADCOs. Since their formation in 1984, these institutions have performed inadequately. Low educational levels and poor managerial abilities of members, as well as a weak economic base, curbed any meaningful decision making, planning or implementation of development plan.

The Wildlife Management Committees created under the project were incorporated into the VIDCOs and WADCOs as sub-committees. These subcommittees are the economic institutions responsible for the management, marketing and conservation of the Wards' wildlife resources. As wildlife revenues (from safari hunting) have been substantial, the existence of these wildlife management committees have, for the first time, given VIDCOs and WADCOs a sound economic base from which to work.

The use of the wildlife income is decided at the village level - an important feature in generating interest in wildlife conservation among villagers. It is also the part of the project which generated intense conflict between the VIDCOs and the district council. The council argued that the wildlife resources belonged to the entire district, even though its distribution within the district is uneven. And, as the *de facto* appropriate authority over natural resources in the district, it is the council's right to decide on the conservation and exploitation of the resource and the distribution of the benefits. Representatives of the Dande communities argued that, since they are unable to keep cattle (because of the tsetse fly), wildlife comprises their major asset. The agricultural potential in their area is poor, they claimed, and they suffered most from the depredations of wildlife. Moreover, they pointed to the past history of wildlife exploitation in their areas which failed to provide them with direct benefits. They are convinced that the greater part of past revenues was used to benefit areas without wildlife.

In a sense, this conflict worked to the advantage of the project. The Dande communities became convinced that the projects' objectives coincided with theirs, i.e. to gain greater control over the wildlife resources which they considered their own. The district council recognized wildlife as an increasingly important source of revenue and thus wanted to capture it and was seeking the status of appropriate authority for wildlife of the Dande Communal land. Meanwhile, DNPWLM (Department of National Parks and Wildlife Management) was convinced that natural resource conservation in Dande and other communities would succeed only if the resident communities became involved in a sustainable program of resource exploitation, that benefited them directly.

The impasse was resolved administratively when DNPWLM, in granting appropriate authority status to the district council, stipulated that the council should administer the wildlife through the DWC and that the council should ensure that households in the Dande Communal Land receive the maximum direct benefits in proportion to the amount earned in each ward from the exploitation of wildlife.

The experiences of the Dande project have shown the need to examine the socio-cultural and socio-economic perspectives of the target communities toward wildlife management as an alternative form of land use - as well as the effect that different approaches of decentralisation can have on local perceptions.

CASE STUDY 11

TOWARDS FOREST CO-MANAGEMENT IN NAM SA, NORTHERN THAILAND*

LOCATION

The Nam Sa subwatershed is in the Sam Mun mountains, 75 km northwest of Chiang Mai in Northern Thailand.

The Nam Sa subwatershed encompasses five distinct microwatersheds, with an average area of 20-30 km² per microwatershed. Nam Sa is inhabited by 10 small villages—one inhabited by the Hmongs, one Lisus, and eight by Karens, with a total population of 2,000.

ECOLOGICAL VALUE

This area is an example of areas with traditional Karen techniques combining midland rotational swidden and lowland irrigated paddy cultivation. The Karen move less frequently due to their permanent lowland paddy in the valley bottoms and periodic return to swidden falloffs. They protect the headwater forest to ensure topsoil stability and a consistent supply of water to their lowland paddy fields. In swidden field preparation, they take care to minimize disruption by controlling burning and leaving coppicing stumps and mother seed trees in an effort to assist the natural regeneration of the forest.

Over time, many have come to better understand the ecological sensitivity of the uplands, the relationships between ecosystems and given the growing population pressures—the need to practice more sustainable settled agriculture.

The entire Nam Sa subwatershed is designated reserve forest, and the hill people are fully aware of the basic insecurity of tenure this implies. Should they choose not to cooperate with the authorities, the villagers fear they may face forced relocation, a policy pursued until recently by the government during the forest resettlement programs in the North and

*Quist-Hoffmann 1995

Northeast. In contrast to this conventional resettlement approach of moving communities, leaving the watershed unprotected, and vulnerable to disturbance from outside forces, the Nam Sa project approach—while requiring compromise from all parties—has been able to respond to both environmental and community needs.

Local leadership, dedicated community organizers, supportive scientists, and government officials were essential in creating a climate of communication among community user groups and better understanding about needs and priorities. Initially the community organizers from the project were instrumental in helping villagers construct maps, understand watershed linkages, organize committees and cooperate with each other. But now, most of the Village Land Use Committees in Nam Sa have become self-reliant, actively pursuing solutions to their management problems.

PROBLEMS

Uncle Chan, an old Karen farmer who lived here, recalls how life in the once-remote area has changed during the past two decades. Opium trafficking, commercial logging, in-migration, and the commercialization of agricultural systems have all influenced the area and resulted in deforestation, severe soil erosion, and fires which have rapidly destroyed the environmental stability and productivity of the uplands. Shortly after the opening of the area by a road in 1985, the entire subwatershed was designated national reserve forest under the jurisdiction of the Royal Forest Department (RFD).

Uncle Chan recalls how members of the midland Karen were increasingly distressed about the negative impact of upstream deforestation resulting from Hmong and Lisu (ethnic groups) clearing fields on ridge tops and steep slopes for the cultivation of opium. Deforestation in the upper watershed was threatening the Karens' agricultural systems in the valleys and generating conflict among the different ethnic communities.

PEOPLE'S RESPONSES

Being illegal settlers without rights to the land and forest resources, the Hmong, the Lisu, and the Karen were all concerned that the government might try to resettle them outside the subwatershed. The official policy to prohibit settlement in reserve forest watersheds and the implementation of resettlement programs posed threats to the villagers' tenure security. On that basis, the communities chose to cooperate with the RFD and other agencies to develop co-management strategies which would reduce the possibility of their resettlement outside the area.

The Sam Mum watershed project adopted the strategy to give the

communities rights and responsibilities to manage the rapidly degrading forest environment while stabilizing their income through alternative cultivation practices and reducing the growing social and resource problems.

Uncle Chan, like most Karen in the area, was forced to shorten the traditional eight-to-ten-year cycle to five years. As a result of the increasing pressure on his swidden fields, he has increased the time and work on his homegarden and the nearby forest. He now grows more than 70 vegetable, herb, and fruit species in his homegarden. In the surrounding natural forest he underplants bamboo and rattan shoots and collects more than 20 types of medicinal plants as well as a variety of mushrooms, fruits, and other forest products to enrich the family diet. To provide cash income, Chan's family raises silkworms fed from mulberry plants intercropped between the upland rice.

Based on his success, Chan has become a demonstration farmer and key spokesman in his village for the transition away from highland swidden cultivation based on opium. he has assumed a leadership role in raising his neighbors' awareness of the interrelated problems and ecological linkages between deforestation, soil erosion, water availability, crop productivity, and excessive use of pesticides.

Recruited early in the project to work as community extensionists, two young community organizers started to live in the Nam Sa subwatershed. With the help of supportive social scientists from Chiang Mai University, the community organizers acted as mediators to create an atmosphere of trust among the different groups in the communities and among the project staff, government officials (i.e., RFD field officers), and the communities which formerly were isolated from outside influence. The organizers began visiting the settlements to discuss conflicts and resource management needs. However, it took them two years to transform an initial skepticism into a relationship of trust with the communities. Only then could the organizers successfully facilitate discussions of watershed management by encouraging the communities to organize and to participate actively in land use decisions.

Among the first activities undertaken jointly by the community organizers and communities was the construction of large, three-dimensional landscape models of the areas based on information from topographical maps and aerial photographs. The interactive process of creating the models led to numerous discussions of resource use in the subwatershed and helped the community focus its attention on the location of problems, management options, and strategies to address them.

Community organizers were able to assist the villages in establishing coordinating forums. Each village has its Own Village Land Use Committee responsible for patrolling and protecting the forest area surrounding the

village. The village committees have formulated elaborate rules and regulations to govern communal resource use. Local land use management plans have been developed for each microwatershed. These plans and systems have been developed through community discussions and debates and are unofficially supported by the RFD field officers. Each village committee is responsible for allocating agricultural plots to households. The family which clears the land holds usufructs rights as long as it utilizes that land. There are fines for activities such as hunting, the use of chain saws, cutting trees without permission, and letting fire escape when burning off new fields. The revenues collected from fines go into a community development fund. Villagers who fail to pay their fines are sent to the district office.

In addition to the village committees, a Subwatershed Network Coordinating Forum holds monthly meetings for village committee representatives.

CASE STUDY 12

COMMUNITY-BASED FOREST MANAGEMENT IN SOUTHERN THAILAND*

LOCATION

Covering an area of more than 17 million ha, Southern Thailand has a long coastline with the Andaman Sea on the west coast and the Gulf of Thailand on the east. The natural vegetation is mangrove and tropical forest

Ban Nam Ra is 25-year-old community in a watershed area in Satun Province, Southern Thailand.

ECOLOGICAL VALUE

A rich forest and mangrove area. An important watershed.

PROBLEMS

Agriculture, logging, charcoal, production and shrimp farming have had a major impact on the forests. By 1991, the remaining forest cover was less than 20%. Although a logging ban was enacted following severe flooding in 1988, the ban does not include the mangrove concessions.

While much of the mangrove is under management by concessionaires, the Royal Forest Department (RFD) is responsible for the national parks, forest reserves, and wildlife sanctuaries. Effective conservation of the forest under the management of the RFD has been hindered by the continuation of illegal logging and the pressure to convert mangrove forests into shrimp farms.

Due to the high cost of agricultural inputs and the low price of rice, rice farming was no longer profitable in the region. Some of the households previously growing rice moved into the national forest reserve where they established rubber plantations. Rubber and palm oil production and export was supported by the development policies of Thailand. By 1991, the area under plantation cover was more than the area under natural forest.

*Rittibhombhun 1995

Between 1961 and 1991, more than half of the mangrove forest area was destroyed. Most of the mangrove forests excluding small patches surrounding the settlements, was under charcoal concession. A combination of charcoal production and shrimp farming continues to destroy the mangrove areas. During the period from 1980 to 1986, the area supporting shrimp farming increased almost fourfold.

The destruction of the upland forests also had a severe impact on the coastal communities. The results have been the increase in flooding during the rainy season, droughts, heavy soil erosion, sedimentation, and loss of biodiversity.

Later, in 1993, in the Krabi Province in Southern Thailand, local and national NGOs organized a Forum of Annual Reporting on the Environment, focusing on "peoples' role in forest management."

Based on experiences and lessons learned, potential activities that could help establish community-based forest management were shared, and partnerships between communities and NGOs were formed.

Under the current forest policy, the community area is classified as forest reserve. In early 1994, RFD tried to move the community out of the forest. Meetings were held between community members and the authorities, but no acceptable solution was reached through these meetings. In spite of the lack of success in negotiating settlement rights, currently (1995) the community continues to manage the forest. In order to do this effectively, the community has formed a committee responsible for the management of the forest. The committee drafted regulations for activities within the forest, established a rehabilitation scheme, and created subcommittees responsible for the implementation of management activities.

Activities To Establish a Community-Based Forest:

- Contact influential people to assist in halting deforestation.
- Identify the forest area to be managed by the community.
- Create understanding, both internal and external, concerning the importance of community voluntary guard groups.
- Create awareness of ways in which deforestation could be halted.
- Create regulations concerning forest utilization.
- Encourage the establishment of community forests by other communities.
- Encourage the use and management of indigenous plants of edible and medicinal use: either tree, shrub, climber, herb, etc. within the protected areas.
- Introduce a variety of plant species into the rubber plantations, e.g., Chumpada (*Artocarpus integer*), langsaat (*Aglaia domestica*),

mangosteen (*Garcinia mangostana*), as well as local trees, shrubs, and herbs.

- Extension beyond an initial small group of people. Involvement of others, such as monks, students, and homemakers.
- Practice effective land use management. To reduce the clearing of the forest for agriculture, alternative income generation should be supported.
- Raise funds for forest management, especially from the community.
- Introduce and provide training in ecotourism.
- Establish groups within a community and between communities responsible for forest protection and cooperation between parties.

Monitoring of management activities was the responsibility of the community leading group. Outside partners were involved in some activities. NGOs, for example, were useful for secretarial support, study tour management, organizing network meetings, and responding to requests by the community.

Informal discussions were frequently held among the local and national RFD authorities, NGOs, policy makers, etc., on the future of the quickly diminishing mangrove. It was decided that no mangrove concessions would be renewed, and the last concessions would end by the year 2003. But what will happen to the mangrove after the concessions? How can the mangrove be preserved? An option could be to community-manage the mangroves. If coastal communities are provided with technical and coordination support, a large portion of the mangroves could be protected by communities. The RFD would only have to assume management of those areas which are not managed by communities.

PEOPLE'S RESPONSES

Gradually the communities became aware of the decline in the mangrove forest and the associated problems. In 1989, for example, a village leader in the southern Tang Province noted that the mangrove forest was shrinking, the mud was hardened from the direct sun exposure, and very few crabs could be found.

Rural communities found themselves with fewer and fewer livelihood options. Consequently, a small number of communities developed strategies to sustain their livelihood through community-based forest management.

The communities strongly felt that the problems concerning forest management could not be solved at the local level but had to include parties like the RFD, the local government, the business sector and academics. So in early 1993, the southern NGO Coordinating Committee agreed to the main direction of activities in "cooperation with other parties to support local initiatives." NGO coordinating and cooperating activities were then extensively implemented.

CASE STUDY 13

COMMUNITY RESPONSE TO DIMINISHING FOREST RESOURCES, PHILIPPINES*

LOCATION

Gabaldon Valley is within the Dupinga watershed in Luzon. Flowing west, the Dupinga River joins the Coronel in the larger Pampanga River basin and irrigates the rice lands of the Central Luzon plain.

ECOLOGICAL VALUE

The Dupinga watershed, located in the Sierra Madre Mountains, harbors some of the best natural forest left in the Philippines.

PROBLEMS

Like many countries in Asia and other developing countries in the tropics, the forests in the Philippines have been cut and degraded. Deforestation in the country accelerated after World War II due to logging and conversion of forestlands for agriculture and settlements. This pattern continued up to the late 1980s. Satellite data shows that in 1987 less than 22% of the country's land area was covered with forest vegetation and an undisturbed old growth forest of less than 900,000 ha, or less than 3% of the total land area, despite the various programs of the Department of Environment and Natural Resources (DENR), a government agency responsible for the protection, development, and sustainable management of the country's natural resources.

The loss of forest cover, especially on the upper slopes including watersheds, has created numerous problems for both upland and lowland communities. Deforestation has undermined the livelihood of upland communities by accelerating erosion on upper agricultural lands and reducing forest product flows. In the lowlands, the negative impacts of increased flooding and sedimentation have been immense.

*Mariano 1995

However, problems also present opportunities for collective action. Communities in the Dupinga watershed, in response to forest resource degradation and lack of tenure or control over such resources, had taken some actions.

The steady degradation of the Dupinga watershed results from a combination of both natural and human-induced activities. Among natural influences, the entire watershed is unstable partly due to geological activity and partly because the watershed is located in a typhoon belt, and is subjected to severe storms from the Pacific Ocean, that cause landslides, topsoil erosion, flooding, and sedimentation of river beds.

Like many watersheds in the Phillippines, the Dupinga watershed has been subjected to timber extraction, mining, immigration, forest clearing, and agricultural commercialization. Taking advantage of the road network, local entrepreneurs have increasd small-scale illegal logging operations, contributing to the continuing recession of the forest boundaries. The common logging practice of burning undergrowth in the dry season for easier access and log removal destroys many types of regenerating species and leads to soil nutrient depletion, elimination of soil organisms, and the destruction of soil structure. This, in turn, heightens susceptibility to erosion and landslides.

In addition to the impact of logging and mining, dry season grass fires are a major factor in the transformation of the vegetation of lower slopes of the watershed.

Lying at the foot of the Dupinga watershed, Gabaldon Valley is inhabited by Dumagats, Ilocanos, and Tagalogs. The Durmagats are the indigenous people of the watershed. Historically riverine forest dwellers, the Dumagats still depend on forestland and resources for fields, food, shelter, and income. Since the 1940s, migrants from the lowlands have been moving into the watershed. As Ilocano and Tagalog (two of the major linguistic groups on Luzon) settlers moved into the area, they took control and converted the riverine lands into paddy fields. From the original pattern of dispersed Dumagat settlements along the rivers, the movement of the lowland migrants has resulted in major settlement and in a series of retreats by the Dumagats. The Dumagats' response was increasingly to consolidate their settlements into clusters and advance further and further upriver, away from the lowlanders. While the Dumagats originally settled in the area, they are now the most disadvantaged minority population, economically and politically marginalized, compared to the Ilocano migrant land owners and merchants.

Due to their continued involvement with rattan gathering and hunting, the Dumagat community has the highest forest dependency and greatest

knowledge of the internal ecological and biophysical conditions of the watershed. A much smaller proportion of Tagalog and Ilocano families is directly involved in forest-product gathering, while many lowland farmers are indirectly dependent on upland forests for water or raw materials for cottage industries.

PEOPLE'S RESPONSES

Threatened by the growing scarcity of forest resources and the accompanying resource use conflicts and competitions, the communities in the Dupunga watershed became aware of the need to act together for their own survival.

In 1986, a small group of community members encouraged by the local priest took a more direct approach by barricading the road to block the movement of logging trucks through the valley. They succeeded, encouraging the priest to request the Environmental Research Division (ERD) of the Manila Observatory (an NGO) to assist the communities with longer-term diagnostic studies to explore more sustainable ways to manage the fragile watershed.

The combination of detailed studies, community meetings, and consistent interactions brought into sharper focus many of the watersheds' human and resource management conflicts. ERD regarded the context as well intentioned on both community and government sides, but hindered by poor mutual understanding. Early activities involved the identification of conflict situations and social instabilities through interdisciplinary analysis and evaluation. Progress to resolve user group disputes was slow, and other events intervened. An earthquake in 1990 caused massive landslides. A resurgence of illegal logging later that year forced the community once again to barricade the logging road and send off a protest delegation to the DENR in Manila. DENR has refused to revoke mining and timber concessions in the area.

In order to develop a community-based watershed management agreement, full participation and open communication of the community members of Gabaldon was needed. To achieve widespread participation and consensus, five organisational stages were documented by ERD during the process of developing a watershed management strategy.

While coordinating with the local DENR, the ERD facilitated the selection of a non-government organization to act as a mediator in discussions between a local government unit at the municipal level and a church-based environmental organization. The responsibilities of the mediator were to: (1) establish links and develop trust among the various parties, (2) conduct a series of multisectoral meetings, and (3) organize

activities such as trips into the watershed to enhance understanding of the issues.

During the first two stages in the process, the meetings were attended by community leaders and representatives of key local government institutions. By the third stage, representatives from different resource user groups (loggers, Dumagats, lowland rattan gatherers, upland farmers) began attending negotiations, with the mediator assisting them in resolving conflicts.

During the fourth stage, the mediator opened the dialogues among resource users, government representatives, and the community advocacy organisation in an attempt to frame the management plan and reach a consensus among all participating groups. During this process, numerous proposals were reviewed, including revoking of mining and logging leases, control of fires and establishing guidelines on firebreaks, establishment of fines and a systematic monitoring system, enrichment planting of valuable rattan species, and patrolling of the forests by the Dumagat youth. Continuous liaison with the local DENR was essential in facilitating government support for the community's future resource management plans.

During the fifth and final stage, a group of representatives from among the primary resource users began operationally managing the watershed, relying on other community organizations and the local DENR for consultation, coordination, and technical advice. For field operations, the Dumagats, who are closely linked to the forest, will play a principal role as stewards.

CASE STUDY 14

COMMUNITY MANAGEMENT AND UTILIZATION OF FOREST RESOURCES: THE CASE OF DONG YAI, THAILAND*

LOCATION

In the northeastern region of Thailand, bounded by the borders of Laos and Cambodia, lies the province of Ubon Ratchathani. Historically isolated from the kingdom's capital of Bangkok, the Northeast is the country's largest, poorest, and most populous region.

ECOLOGICAL VALUE

Community-led forest protection, management, and benefit sharing by 12 villages surrounding a large 3,800 ha tract has created and conserved a forest named *Dong Yai* (*Big Forest* in Thai).

Dong Yai is characterized by three distinct natural forest types: the dominant dry dipterocarp, the dry evergreen forest, and a small area of riverine bamboo forest. Recent research in the dry dipterocarp forest identified an average of 61 different tree species on a 1.7 ha plot. Coppicing species in this forest type comprise a significant 72% of the total (44 of the 61 species in the plot) and indicate a high potential for natural regeneration, if given adequate initial protection from disturbances such as fire.

Community interviews and field investigations have so far identified more than 50 edible leafy plants, 30 mushroom species (10 with current commercial value), 8 tuber varieties, 15 fruits, and more than 25 edible fauna species (e.g., squirrels, birds, ant eggs, lizards, snakes, fish, turtles, beetles, locusts, and moths). Based on discussions with community informants, a seasonal calendar and transects of products by ecological niche illustrates the seasonality of the forest production system and its impressive floral and faunal diversity.

PROBLEMS

Since the late 1950s, widespread conversion of upland forestlands to rainfed cash crops such as kenaf (*Hibiscus cannabinus*), cassava, rice, and maize has contributed to the sequential process of deforestation, soil erosion,

*Warner 1995

dessication and floods, and declines in crop yields. Forest degradation in the region peaked in the 1970s, when the average annual deforestation rates in the Northeast watersheds exceeded 10%. By 1991, a mere 13% forest cover remained in the entire Northeast.

The decline in forest resources resulted in shortages of wood and non-timber forest products in the region. Because communities in the Northeast historically have strong socioeconomic dependencies on a broad range of forest products, including edible and medicinal plants, their socioeconomic situation worsened. Within this context, the villagers of Dong Yai are focusing their energies on sustaining their most valued resource, the surrounding regenerating forests.

More than 150 years ago, the area's original settlers migrated from Muang Samsip District, 20 km southeast of Dong Yai. The forest has been cleared periodically by villagers for agriculture during the past 100 years and used as an open access resource with few controls or regulations. In the 1960s and 1970s, the Royal Forest Department (RFD) began logging Dong Yai on a 30-year rotation. During this period, 50% of Dong Yai's upland forest was cleared for kenaf cultivation. Each family cleared communally designated plots of less than 1 ha.

Frequently, villagers from neighbouring districts that lacked forests would travel to Dong Yai and set fires in order to more easily collect the burned and fallen wood, and graze their cattle on newly germinated grasses. During the rainy season, villagers from afar would travel up to 60 km to collect the many varieties of mushrooms in the Dong Yai forest. Over time, outside threats of fires and excessive exploitation mounted. In badly degraded areas adjacent to Dong Yai, scarcities of water, timber, fuelwood, and non-timber forest products grew while placing an even greater pressure on the Dong Yai forest.

PEOPLE'S RESPONSES

The 12 communities of Dong Yai are each composed of 100-120 households. The major local occupation is lowland paddy farming, supplemented with vegetable cultivation and livestock rearing.

Today, these former kenaf fields are forests, protected and managed by Dong Yai's families. After almost 30 years of regeneration, most of the former kenaf fields are covered with 30-45-foot-tall biologically diverse dipterocarp forest. The combination of several factors provided a favourable opportunity for the natural regeneration of Dong Yai's dry dipterocarp forest. In the 1960s, when farmers cleared the forest for kenaf cultivation, they often left stumps and large "mother" trees standing in the fields. When the regional price of kenaf plummeted, households made the decision to abandon

their kenaf upland fields. The kenaf fields were left fallow, and despite occasional outbreaks of fire, some of the stumps that had remained intact in the fields began coppicing and producing vigorous shoots.

In 1989, a national logging ban was imposed. The RFD decided to maintain Dong Yai as a reserve forest. Legally, reserve forests fall under the tenurial and management jurisdiction of the RFD. The designation curtails villagers' rights to certain benefits and their authority to make decisions regarding forest use. However, in this case, the RFD regional officers encouraged the villagers to cooperate with the protection objectives of the reserve forest. With the support of the village council, the general village committees informally requested each village family to assume responsibility for forest protection of small patches.

As the protected land began to regenerate, wood and non-timber forest products flourished. The Dong Yai villagers grew aware of the increasing value of their forest resource. They also came to understand the periodic threats from forest fires.

Ultimately, the threats of uncontrolled access, as well as the opportunity to change the situation, motivated the Dong Yai communities to adopt a more organized, proactive role in forest protection and management. In 1989, realizing the potential of the community as an ally, a sympathetic regional forest officer, together with several forestry professors, began working with the community and offered a training course in forest protection and management to Dong Yai's leaders. The technical course covered fire prevention and control, silvicultural practices, and boundary demarcation - the result of which informally designated Dong Yai the "Conservation Forest for the Community of Village Srang To Noi". This cooperative intervention by the RFD proved strategic, laying the foundation for improved relations between the communities and the RFD, as well as between the RFD and university faculty.

In 1992, each of the 12 villages formed a Forest Protector Group. Each village elected 10 representatives to meet twice monthly and assume the primary role of forest protection and management. Initiating an informal system of watching, each village was responsible for protection of the geographical area that had originally been its households' kenaf fields. As the Forest Protector Group became recognized by the RFD and acknowledged with rights and responsibilities, a protection and usufruct agreement between parties was signed. Although not legally sanctioned, this agreement instilled greater confidence and gave legitimacy to the community. While the institutional arrangements in Dong Yai remain unofficial due to the lack of a formal national policy which recognizes community forest rights, the management system is relatively stable.

The cutting of certain species is prohibited, including the highly valued *yang* (*Dipterocarpus alatus*) and teak (*Tectona grandis*). Harvesting of other tree species by villagers is allowed, but only for domestic purposes, and a fee must be paid. A permit for the desired tree must first be approved by the "owner" or steward of the kenaf field in which the tree stands and subsequently by the village council. Each tree is priced by the council, based on quality and size. The fee is then contributed to either to the "owner" or (if located on community land) to the general village development fund. On average, a village in Dong Yai limits the annual harvest to a 100 or less trees, with a general maximum limit of two large trees per family. The village council maintains a record of all transactions. To help prevent timber violations by speculators, a rule has been issued which allows the sale of timber for only one new house per family every 25 years.

Although the community system of organized tree harvesting is officially illegal in reserve forest areas, in Dong Yai the regional RFD recognizes the village council and villagers as key allies in co-management. Hence, the RFD supports the villages' rules of resource use and conservation. Much of the forest land in the vicinity has been registered by farmers under a land reform program, which can theoretically allow conversion to private ownership. It is unlikely, however, that private entitlements will be granted to these farmers, due to the land's legal status and current value as regenerating reserve forest.

The most persistent threat to the forest continues to be fires, many of which are induced by collectors. There is rapid improvement in useful forest products and tree height and girth when the forest is protected from fire. During the peak of the dry season, in March and April, small fires may break out several times every day. The community employs multiple control techniques: cutting weeds for fire breaks, raking away leaf litter, announcing outbreaks over the village loudspeaker, spraying with water extinguishers and sand, and beating fires out with sticks and palm fronds. In most cases, while the fire destroys the understory and inhibits coppicing, it often stimulates mushroom growth and does not damage the larger forest trees.

Mushrooms are among the most highly valued and the most important food item extracted from Dong Yai. Every household is involved in mushroom collection for subsistence use, and the majority also sell them. Studies of mushroom gathering and marketing indicate that each family can collect an average of 1 kg daily for 15 days each month, through the 4 months of abundance during the rainy season. On average, 70% is utilized for domestic consumption, and 30% is sold. Perhaps most important from a nutritional standpoint, the daily diet of the families of Dong Yai benefits for more than one-third of the year from renewable forest food sources which, given their low incomes, they could not otherwise purchase.

CASE STUDY 15

EMERGENCE OF FOREST PROTECTION BY COMMUNITIES IN KUDADA, SOUTH BIHAR, INDIA*

LOCATION

This is a case study of self initiated forest protection committees around the hills of Kudada in South Bihar, India. The 34 villages surrounding the Kudada hills no longer headload fuelwood, instead they have united to protect the forest.

ECOLOGICAL VALUE

The case study area has now a 25% forest cover comprising of the regenerating Sal (*Shorea robusta*), *Adina cordifolia*, *Terminalia tomentosa*, Kendu (*Diospyros melanoxylon*) and Bija (*Pterocarpus marsupium*).

PROBLEMS

An 80-year-old leader noted that, beginning in the early 1960s, his village made some initial attempts at forest protection, but their efforts collapsed. By 1968, the forest was in a very bad condition. Most standing trees were felled, and roots were extracted for fuelwood, leaving only a stony ground cover. In 1972, a meeting was held by a neighbouring village. According to those who attended: "In the meeting we discussed our needs for many products including timber for plows. Purchasing these things from the market will be very difficult for poor villagers. Apart from plows, we require wood for house building, for bullock carts, and fuelwood. We also need different fruits, leaves for food, and sal leaves from the sacred trees, for ritual purposes. If the forest is denuded, how can we live?"

While the forest's economic value to communities is important and an oft-cited reason for protection, local people also assess the environmental impact of forest destruction.

*Bhattacharya 1995

PEOPLE'S RESPONSES

In a cluster of villages in the north, villagers were also concerned about forest destruction. By the late 1960s, one of the area's leaders, a traditional medicine practitioner who collected herbs in the forest and walked to distant villages to provide them with his service, initiated discussions in the villages about the problems of vanishing forest resources. When asked why he began encouraging his neighbours to protect the forest, he explained: "One day my friends and I went out to collect honey. On the way we saw a monkey running with her child. The monkey wanted to sit on a stone, but the stone was too hot, so she was forced to keep running. We saw a dove making her nest on a bush. We realized that the monkey was running to protect her child from the hot sun, but there were no trees to give her shelter, nor was there a tree for the dove to build a nest. So we came back to our village and called a meeting. We decided to protect our forest areas for our own sake and for the wild animals."

A few people were the leading spirits behind the community movement in each area. Each village formed groups which would contact other people and persuade them to join the forest protection activities. The response came mainly from the aged and the younger generation. Women's membership was deemed unimportant at the time by the leaders, although the women did help by reporting outsiders who entered the protected areas.

While the formation of forest protection committees began in 1970, mainly as information groups, the activities of such groups focused not only on forest protection but also on other social problems.

In 1976, 40 women entered a protected forest, and the forest protection committee confiscated their fuelwood. Afterward, people from five nearby villages went to the women's village to stress the importance of forest protection and resolve the conflict that had led to the confiscation. The offending village felt isolated by the unity of its neighbours. A second conflict took place in another village when an adjacent community set fire to a seven-year old regenerating forest because they had been banned from entering it. A meeting was held with the political representatives to help mediate, and the disagreement was resolved.

The members of the forest protection committee met once a week to organize the forest patrols and discuss problems. Patrolling was a compulsory duty within all villages; men, women, boys, and girls from every household participated. Each village gave its forest guards uniforms to make them look like official guards. The concept of forest protection committees spread to more than 34 villages, mostly during social interaction at festivals, or through articles in local magazines and through inter village meetings.

Until 1975, only a few inter-committee meetings had been held, and the local forest protection committees functioned largely individually. However, people felt there was a need for good relations among the presidents and secretaries of all the committees. In 1979, a historic meeting was held with approximately 500 villagers from 32 villages.

In the meeting, leaders of different villages proposed that a coordinating committee be established to co-ordinate the activities of the 34 village forest protection committees. This committee was given the name *Adarsha Gram Vikas Samiti* (Ideal Village Development Committee).

To fulfil the fuelwood needs, the villagers planted wild *Syzygium Cumini* (Jamun) near their houses. This tree provides the maximum coppice growth in the shortest time. The seeds' regeneration takes place in wastelands and in gaps between agricultural lands. Dry branches of this tree are used extensively by the villagers to meet their fuelwood needs. Previously, during certain festivals, people would cut one pole for every household and agricultural field, resulting in a massive cutting of logs within the forest. Now, the central committee has banned this and established extra patrols during these festivals. For effective water management in the forest, villagers have surveyed which areas are suitable for establishing water reserves. Check dams have been made, sometimes with financial help from the forest department. These seasonal water reservoirs create an important microenvironment in the forest and meet the needs of drinking water for the wildlife.

CASE STUDY 16

FIBER GRASS FROM FOREST LAND: A CASE FROM NORTH INDIA*

LOCATION

In North India the heart of the fiber production region is the Shivalik hill belt stretching from the Nepal Border to the Pakistan border, along the base of the Himalayas. Most of the hills fall under state forest department control. A case of a community grass lease holder is that of Kahinwala. Once migratory pastoralists, the Banjara Sikh community of Kahinwala was established in the middle of the Shivalik hills four generation ago. Rope making represents the main source of income generation for most of the community's households.

ECOLOGICAL VALUE

The Shivalik's were well forested at one time, extensive logging from the late half of the 19th century till the 1960's allowed grasses to come up in abundance. Throughout the region many communities are involved in *bhabbar* harvesting and rope production.

PROBLEMS

Over the past decade the Haryana Forest Department has attempted to overcome legal, procedural and organizational barriers, and the vested interests of powerful economic groups, to devise participatory management systems for reserve forest lands in the Shivalik Hills. The Department has struggled to identify appropriate technologies, open communication channels with hill communities, and involve them in a collaborative effort to regenerate the highly eroded watersheds of the Shivaliks, providing fiber grass leasing opportunities as an incentive. The community has 140 hectares of common property land (*Shamlat*). Some of its fiber grass needs for *baan* (rope) making are met from this. To meet their remaining raw material

*Poffenberger & Sarin nd

requirements, villagers often buy bhabbar grass from local contractors at inflated prices. Alternatively, they sometimes bid for the bhabbar leases in an open auction.

PEOPLE'S RESPONSES

HFD (Haryana Forest Department) staff contacted the village to determine their interest in forming a management society and taking the lease, the community showed considerable interest. The HFD indicated that in return for the lease the community would need to stop grazing and tree cutting on the reserve forest. The community quickly drafted a handwritten resolution signed by representatives of all village households offering to keep livestock out of the compartment in exchange for the bhabbar lease on concessional terms. All forty-six households in the village reduced their open grazing animals from 135 goats and 65 cattle in late 1989 to 55 goats and 26 cattle in early 1991. After reducing their free grazing population by 60%, they used the money to increase their commercial dairying herd of stall-fed water buffaloes from 39 to 91 head, over the same period.

In 1989, the Kahinwala HRMS (Hill Resources Management Society) purchased the bhabbar lease to compartment C8 for Rs. 44,550 (approximately US\$ 2500). The rate was fixed by adding a 10% increase to the previous years winning auction bid. In 1990, the price was raised another 10% to Rs.49,000. In addition, the HRMS had to deposit Rs. 7225 as income tax payable on the lease, which was later refunded after a tax exemption was granted. The total sum of Rs. 56,225 was raised by 41 members of the community, each paying Rs. 1400 for *bhabbar* cutting rights (*dati*). Four families did not participate because they were not involved in rope making. Each participating family harvested approximately 3 metric tons in 1989, but only 2.7 tons in 1990, due to unseasonably abundant rainfall and the spread of *lantana camara* in the leasehold.

While the Kahinwala HRMS members profited in both years from their lease purchase, their leaders were not entirely satisfied with the HFD's behavior. They felt that they had fulfilled the terms of their joint management agreement with the HFD by halting grazing and cutting down their lease area, but objected to the HFD's 10 per cent annual increase in lease rates. Since the villagers understood that the lease rate was to be set at the average price over the past three years leading up to the HRMS purchase with increases limited to 7.5% annually, the HRMS felt the HFD was defaulting on the agreement. They also felt that downward price adjustments should be made if productivity fell due to natural causes. A new HFD resolution is being drafted to shift the rate fixing to one based on actual production levels and allowing instalment payments by the HRMS.

CASE STUDY 17

THE STRUGGLE FOR FOREST CONTROL IN THE JUNGLE MAHALS OF WEST BENGAL, INDIA: 1750-1990*

LOCATION

Chandana and Harinakuri villages are located approximately 20 kilometres south of Kharagpur, in the state of West Bengal. Most of the villages in the area are inhabited by low-income scheduled castes, tribals, and farming families.

ECOLOGICAL VALUE

According to Lokhun Sahu, a 65-year-old Chandana villager, the surrounding forest was once comprised primarily of first growth sal trees. The villagers were aware that the regeneration of the forest had substantial environmental and economic benefits that would be lost if the entire area was clear-felled. The most important advantages emerging from forest regeneration have been improved groundwater infiltration and slowed run-off, and the increased availability of non-timber forest products such as tubers, mushrooms, and fibre materials. FPC members also noticed that the re-establishment of standing forest near their village resulted in the nesting a large population of birds in the area. Birds were important in controlling the pests, that attacked their rice crop. They also felt that the forest had a beneficial effect in preventing disease. They noted that when the forest was degraded, the incidence of disease increased, and they came to associate a healthy environment with a good standing forest.

PROBLEMS

During the years of British colonial rule, the forest tracts of Chandana were controlled by a zamindar named Bhuwan Chandra Pal, who lived 20 kilometres away in Hundla, near Narayanagar. To pay his taxes to the British Raj, the raja would periodically sell tracts of jungle to contractors for logging.

*Poffenberger 1996

After the contractor finished logging the concession area, the sal would send up coppice growth and the forest would re-establish itself. Older trees, including sal, mahua, and cashew, were left as sources of seed and fruit. During the felling, local villagers could purchase the lops and tops for fuelwood at the rate of Rs 1-2 per cart load. The raja did not allow villagers to cut poles or logs, and had guards to protect the forest against local users. Periodically, the raja would send his men into the village to see if the villagers had hidden poles or timber. If caught, the guards would beat, sometimes to death, anyone found to have stolen wood.

During the early years after Independence, little changed in forest management practices, with the zamindar continuing to control the forest of Chandana. In the early 1950s, however, the Zamindari Abolition law was passed giving the West Bengal Forest Department (WBFD) an opportunity to establish direct control over the forest lands of the south-western part of the state. Seeing that he was about to lose control of the forest, the local zamindar sold the entire forest tract to contractors who felled the area, leaving only a few fruit trees. For the next six months, communities faced a severe shortage of fuelwood; however, as the coppice growth emerged, the forest resource supply also began to recover.

From the mid-1950s through the 1960s, the WBFD exerted control over the forests of Chandana. Throughout this period, the WBFD continued the practices of the zamindars by leasing cutting rights to contractors. Consequently, the sal trees were cut every ten to fifteen years, regenerating through coppice growth. The local field officer complained that the contractors would often cut the older sal and fruit trees, a practice that was officially banned, as these trees were sources for natural regeneration. When the forest guard or the villagers attempted to stop the contractors, they were threatened. The contractors were also reported to have enjoyed political patronage, so the field staff and villagers could do little to stop them.

In the early 1970s, according to Lokhun Sahu, political organizers began visiting the community. They told the villagers that the forest was community property. In retrospect, Lokhun felt that 'the political leaders mislead us to gain our political support'. No control system existed and the villagers began indiscriminately cutting and selling the trees. By the early 1980s, the sal forests were badly degraded.

PEOPLE'S RESPONSES

In 1983, Jyoti Naik, a man from the neighbouring village of Harinakuri, began visiting Chandana village to discuss forest management problems. Jyoti, a 45-year-old illiterate farmer with only two years of formal education, was convinced that some action had to be taken to reverse the process of

forest degradation. In the beginning, Jyoti visited each house to talk about the problem. He told the villagers of Chandana that if they did not begin protecting the forest it would degrade to a point where even fuelwood and leaves would no longer be available. He told them they would be forest people without a forest and that their children would have no forest resources in their adulthood. Gradually he began organizing village-level meetings. By 1984, a sufficient number of Chandana villagers were ready to protect their forests. They called a meeting of the neighbouring four villages to discuss a collaborative management programme and decided that each community should be responsible for the forest area nearest to its village. Although the Chandana and Harinakuri villages began actively protecting the forest tracts near their communities, the villages to the north of the forest, Nidata and Babunmara, were less effective in controlling access, and commercial fuelwood cutting continued. Jyoti Naik and other village leaders met with local political representatives from the area and urged them to put pressure on the north-side communities to begin protection activities. However, Jyoti noted that the politicians were afraid that they would lose votes if they did so. Currently a four-village (Chandana, Harinakuri, Nidata, and Babunmara) FPC co-ordinating board exists, for which Jyoti Naik acts as chairperson.

EXPERIENCES WITH PROTECTION ACTIVITIES

The Chandana FPC has experienced continuing problems in controlling illegal cutting by outsiders. Women from other villages come in groups of five or six every two to three days to cut fuelwood. These women frequently come from Bhetia village across the river to the north, or from Pora and Simildanga villages in the south. When caught in the act by Chandana villagers they are asked to go elsewhere, and if necessary they are chased away with sticks. More serious a threat are the gangs of ten to twelve men who come during the night, from August to October and from February to May—the slack agricultural season—to cut sal poles for commercial sale. When outside cutting groups are active, the FPC keeps one man patrolling the area on two-to three-hour shifts. Other villagers are also watchful and notify the community if cutting groups are seen approaching the area. Occasionally, the FPC apprehends groups while cutting, confiscates their axes and levies fines.

Protection experiences in the neighbouring village of Harinakuri are similar. Since the FPC was first formed in 1979, Harinakuri has worked with Chandana and Telebanga villages to deter cutting groups from nearby villages in the north and east. According to Jyoti, pressure from nearby villages is particularly high because many members of these communities

depend on fuelwood headloading as their primary source of income. Often tribal and scheduled caste members of these villages are contracted by high-caste families in towns and villages and at the Soluwa Army base, to cut fuelwood and timber for them. The cutting groups often band together to overcome local resistance. In response, the Harinakuri FPC patrol an area in a group of eight to ten men, armed with bows and arrows and spears. Boys with grazing animals also watch and listen for the sound of the axe upon the tree, so that they can warn the FPC about the intruders. When this occurs, the men encircle the cutting group so that it can be apprehended. In these cases, the offenders are turned over to the forest department guard and later fined by the forest department.

The amount of time Chandana and Harinakuri FPCs spend patrolling the forest and the value of that time in terms of opportunity costs are difficult to calculate.

When news of illegal activities was given, men would move into the forest for protection activities.

Despite their success in protecting at least 100 of the 160 hectares of disturbed natural sal forest neighbouring their villages, the villagers continue to be confronted by threats from other villages in the area that depend on fuelwood cutting for a substantial part of their income. The tribal and scheduled caste people who illegally exploit these forests are driven by economic necessity and encouraged by local and urban high-income and caste groups. Until all communities neighbouring the forest can be effectively brought into the joint management programme and their economic needs met, these emerging local-management systems will remain threatened and their sustainability will continue to be questioned.

CASE STUDY 18

JOINT FOREST MANAGEMENT PROGRAMME IN SANTRAMPUR AND LUNAWADA TALUKA, INDIA*

LOCATION

Nansalai is in the Ramberna Muvada round of Santrampur range of Santrampur taluka , in Panchmahal district of the state of Gujarat. It comes under the Ambliat group gram panchayat.

ECOLOGICAL VALUE

The total area of the village is 729.04 ha, of this 340.50 ha is forest land and 39.04 ha is gauchar land. The soil of the village is mainly gravelly.

PROBLEMS

Dwindling of forest resources goaded them to start protection.

PEOPLE'S RESPONSES

The people in the village belong to Nayak. Baraiya and Miya adivasi communities. There are 78 households in the village. The village is made up of Three hamlets. The population of the village (1991) was 510 ,with 267 women and 243 men.

The main occupation of the people is agriculture and agricultural labour. The people started protecting their forest 10 years back but it is only in the last 6 years that they have been protecting it well.. Around the same time, initiative taken by villagers in the neighbourhood, for forest protection, also provided the motivation.

There has been good regeneration of teak coppice in the forest, on account of good protection. Trees like Mahuda, Dhavdo, Khair, and Timru are seen, although in small numbers.

The people of the village, alongwith the beat guard, go around the forest twice a week. No one is allowed to take any tools to the forest.

*Lakshmi & Raju 1995

People are not allowed to cut timber from the forest. Collection of dry twigs and non-timber forest produce is allowed. For the collection of some of the NTFPs, like Mahuda, the old system is followed where each family in the village can collect Mahua flowers and seeds from the area allotted to them.

The villagers also have an understanding with the neighbouring villagers not to damage each others forest.

There is no institution, formal or informal, but people have decided on some basic rules which everyone follows. People get together to take decisions and, as such, no committee exists. Twice a week, a group from the village goes round the forest. This group is made up of two people from each phaliya. Regular meetings are not held. But when some important issue regarding forest protection has to be discussed, festivals and other occasions when people generally get together are used. For the collection of NTFP they follow their age old system where people have allotted trees from which they collect.

Everyone is aware of the fact that they are protecting the forest. People feel that quantity of NTFP has increased. They do have problems with some people, from their village or neighbouring villages, who are prevented from cutting trees. Sometimes it results in fights. They also face problems with the FD. They are not allowed to cut trees on their own land. They are punished for this and asked to pay a fine. Internal conflicts have developed between people as some people, do not like to be prevented from cutting trees in the forest. One person who had cut 30 teak trees from his own land was penalised by the FD.

The local forest officials encourage people to protect the forest. However, the people are not informed about rules and regulations governing forest protection, harvesting trees on private land etc.. and often unwittingly violate rules. They are then penalised by the FD, causing resentment.

The people feel that the Forest Department alone is not able to protect the forest and hence ask for people's cooperation. But when the people cut trees for their basic requirements, they are punished. In fact, they are harassed even when they cut trees from their own land. Despite this, the people have been helping the beat guard in protecting the forest.

CASE STUDY 19

CO-MANAGEMENT OF RESOURCES IN SRI LANKA: STATUS, ISSUES, AND OPPORTUNITIES*

LOCATION

The Human-Elephant Conflict (HEC) Project works in 45 villages in the Divisions of Galgamuwa and Giribawa, in the Northwestern Province of Sri Lanka .

ECOLOGICAL VALUE

Like most of Sri Lanka's dry zone, the Kahalla Palkelele area used to be prime habitat for elephants.

PROBLEMS

With the large-scale clearing of forests, for irrigated agriculture and human settlements, in the post-Independence era, there was substantial elephant displacement and habitat loss. Increasing levels of human-elephant conflict have resulted not only in regular elephant injuries and deaths, but also in severe damage to human communities (in terms of death, injury, and property/crop damage, etc.) in the project area. Department of Wildlife Conservation (DWLC) officers estimate that there are approximately 150-200 elephants in the Kahalla Pallakele area. Project statistics indicate that, in 1993, villagers incurred more than Rs. 3,200,000 in losses as a result of elephant-related damage. In addition, three people were killed, five people were maimed, and 31 houses were destroyed that year. Villagers residing in this area are very poor and heavily dependent on chena cultivation. They are, therefore, not equipped to withstand the human and economic losses inflicted by elephants.

Although DWLC is responsible for the management of elephants and other wildlife in Sri Lanka, it has not been effective in providing protection either to humans or to elephants for two major reasons. First, there is no

*DeCosse & Jayawickrama 1997

coherent elephant management strategy for DWLC to implement. Second, DWLC's financial, technical, and human resources are inadequate to cover the vast area under its jurisdiction. Project staff claim that the project area requires 60-70 DWLC rangers, if elephants are to be afforded effective protection. There are, however, only 7 rangers in the Kahalla Pallekele area and their movements are severely restricted by the fact that they do not have a vehicle. As a result, the rangers cannot respond in a timely manner to elephant-related emergencies and villagers take the law into their own hands to defend their lives and crops from elephant attacks.

The Kahalla Pallekele HEC project started under the Special Projects initiative, in 1993, with the goal of strengthening communities to "manage local resources". The local resource to be managed in the case of Kahalla Pallekele is the elephant population. This resource is different from the other resources discussed in this study. First, it does not generate any benefits for the primary stakeholders; rather, it generates only costs. For this reason, the project focuses on trying to minimise elephant-related costs. Second, the resource is mobile and interacts with other communities and resources in a fairly large geographic area; therefore, management outcomes may have an impact on communities and resources outside the project area.

PEOPLE'S RESPONSES

The HEC project is implemented by an NGO coalition named the Wana Jana Mithuro Sanvidanaya (WJMS).¹ The basic thrust of the WJMS strategy is to address the elephant-related issues by first helping villagers to address their socioeconomic problems. The assumption underlying this approach is that better socioeconomic conditions and improved governance will reduce the villagers' vulnerability to elephant-related damage and consequently reduce the pressure on elephants. In each Division, WJMS has helped to establish an Apex Body to bring together the different players in the resource management process.

Each Apex Body is chaired by the Divisional Secretary and consists of representatives of the local community, DWLC, and other government institutions. Project activities during the first three years have focused on: 1) introducing new crops and cultivation techniques that reduced potential for conflict with elephants; 2) strengthening community-based organisations (CBOs) and improving their capability to interact with providers of services

¹ The four NGOs in the WJMS coalition are Wayamba Govi Sanwardana Padanama (WGSP), Organisation for Resource Development and Environment (ORDE), Wayamba Environmental Science Explorers (WESE), and March for Conservation (MFC). WJMS links the rural development experience of WGSP and ORDE with the conservation experience of WESE and MFC.

(credit, marketing, agricultural extension, etc.); 3) enhancing knowledge of elephant behaviour and habitat and teaching methods of elephant deterrence. Numerous training programmes in forestry, animal husbandry, agriculture, grain storage, bee keeping, and nursery development have been conducted in order to encourage new means of income generation.

Looking at project outcomes from a **socioeconomic** perspective, villagers appear to be better off now than before the project began. The success of elephant deterrence methods taught to villagers has succeeded in reducing the incidence of human-elephant conflict. Preliminary data indicates that crop damage has decreased from 921 hectares in 1993 to 19 hectares in 1995, and the number of houses destroyed has decreased from 31 in 1993 to one in 1995. Anecdotal evidence also suggested that the introduction of new entrepreneurial activities has increased incomes and that increasing levels of external assistance are now being channeled through project-strengthened CBOs. Although it is not clear how the success of these rural development activities will improve the quality of the resource (elephants), it is expected that increased awareness and community empowerment will contribute positively to elephant management in the future. It is already evident that, as communities begin to be perceived as important actors in controlling human elephant conflict, the relationship between DWLC and the community has improved. Villagers now understand the value of elephants as a national resource and are willing to engage in habitat enrichment activities. DWLC has also recognised the benefits of collaborating with local communities and is increasingly seizing this opportunity.

Looking at project outcomes from an **elephant management** perspective, there is little evidence to suggest that overall pressure on the elephant population was reduced or that the quality of elephant habitat was improved. In fact, the decrease in human elephant conflict in the project area has been accompanied by an **increase in conflict** in other areas¹. There is growing recognition among project staff and DWLC officers that elephant deterrence and removal strategies do *not* constitute elephant management and that they will not provide a long-term solution to the human elephant conflict. It is evident that the **effectiveness of the HEC project is undermined because it does not have a larger framework within which to work**—there exists no coherent elephant management strategy and little research² on which to

¹ R.A.D.Ranasinghe, a DWLC ranger at the Meegalawa Beat Office, stated that human elephant conflict in northern Kurunegala District is presently on the rise in spite of project activities.

² Since adequate scientific data are not available, it is not possible to accurately assess the impact of project activities on elephants. For instance, if farmers' crops are a crucial part of an elephant's normal dietary intake, then protecting crops and deterring elephants from entering chenas will have a negative impact on elephants.

ground such a strategy. Under these circumstances, a project of this nature cannot have a significant impact on human elephant conflict on a regional or national level. It must be emphasised that the Kahalla Palkelele project was *not* designed to reduce human-elephant conflict at a regional or national level. It is important, however, to examine what projects like this can realistically achieve in terms of elephant management by working solely at the local level. Many DWLC officers and wildlife experts are of the view that intense human-elephant conflict will continue as long as high population densities of humans and elephants remain in areas like Kahalla palkelele in Sri Lanka's dry zone.

The project has not been able to significantly change the incentives currently in place with respect to elephant management. For villagers, the fact that the compensation scheme¹ for elephant-related damage is almost ineffective, is an incentive to kill or injure elephants. Since they do not get compensated for the damage incurred, villagers' want to make sure that it does not happen again. Hence, the compensation scheme is a "negative" incentive for elephant protection. If the compensation scheme was working (if it paid villagers the amount claimed within a reasonable time), this would neutralise the incentive to kill or injure elephants. It is, admittedly, hard to try to build "positive" incentives for elephant protection in a community which derives no benefits from the existence of elephants. Nevertheless, more emphasis must be placed on trying to neutralise the incentive to destroy elephants.

If similar projects are to be replicated in other areas of Sri Lanka, there must be a stronger scientific basis and a more supportive policy framework for elephant management. There is an **urgent need for scientific research on elephants** (their biology, behaviour, ranges, habitat, etc.) to be carried out in collaboration with DWLC. This research should be used by DWLC to identify high-conflict areas and develop plans for sustainable elephant management. Such plans must address issues such as incentives, institutional mechanisms, culling and corridor development and should be integrated into existing development plans for the regions concerned.

¹ Villagers are entitled to government compensation for any elephant-related damage: the Department of Social Services compensates for crop and property loss and DWLC compensates for loss of life. However, this system is rendered all but ineffective for two reasons: first, the process of lodging a claim is time-consuming and riddled with bureaucratic procedures; second, claims are usually paid after one or two years and, even then, only a fraction of the original claim is paid.

CASE STUDY 20

GOOD NEWS FROM TANZANIA; VILLAGE FOREST RESERVES IN THE MAKING: THE STORY OF DURU-HAITEMBA*

LOCATION

Today there are three villages in Tanzania which are actively managing what could become the first Village Forest Reserves in Tanzania and possibly in Africa. Duru-Haitemba Forest in Babati District.

ECOLOGICAL VALUE

Tanzania is blessed with considerable natural forest resources, much of it dry, medium canopy woodland, locally referred to as miombo (Prominently *Brachystegia* species with *Pterocarpus angloensis*, known locally as Mninga; *Azelia quanzensis* (Mkola); *Dalbergia melanoxylon* (Mpingo or African blackwood).

Although slow growing, such forest is valuable and valued, providing a multitude of services and products for both consumption and sales.

Babati District is an agricultural area of some importance and generally well-settled. Few significant tracts of natural wood-land remain. Duru-Haitemba Forest stands out as accessible (close to the District capital) and visible (along the upper reaches of a range of inter-related hills). Although a dry forest, it includes significant timber species and aerial photographs show a generally high and often closed canopy (up to 20 m high). At one time or another both central and local governments have sought to take control of the forest, for purposes of both protection and revenue generation.

Moreover, as again is frequently the case, certain areas of the Duru and Haitemba Forest came under complete protection, in this instance, as Quaymanda, or sacred forests used for secret or socio-ritual purposes such as initiation. Today, at least 25 such totally untouched forest patches remain in Duru-Haitemba. However, only a few of these are more than a hectare or so in size.

* Wily 1995

PROBLEMS

A great deal of the forest has been systematically drawn out of the public domain and into the 'protective' hands of the State, through gazettment as state-owned and controlled Forest Reserves. Today there are some 13 million hectares of Forest Reserve in Tanzania. Uniformed guards patrol these forests and stringent rules operate, which have generally favoured the commercial timber merchant who could afford the required Government permits. On the whole, traditional or local forest use is either forbidden or seriously constrained.

More recently, a Swedish funded Regional Forestry Programme (RFP) identified the forest through aerial photography, as an area 'worth saving'.

However, Duru-Haitemba Forest does not constitute a remote or uninhabited woodland area. On the contrary, the forest falls within the clearly demarcated boundaries of eight registered villages, each of which was already in the process of securing recognition of its ownership over their respective village areas, through the issue of Village Title Deeds*.

This socio-spatial pattern means in reality that the forest today is subdivided into distinct 'village forests'.

The area has a long history of habitation. Today, elders recall how their forefathers effectively 'managed' the use of forest resources through a series of socio-economic rules—a code of ethics that outlined appropriate behaviour which included, among other things, sustainable use of forest resources.

Now, in 1995, the area additionally has a twenty year history of formal village registration and occupation, with upwards of 3,500 member households. Traditional practice (or 'rules') relating to the use of community forestry resources, were incorporated into modern village management practice after the local process of Villagisation, in 1975.

In these circumstances, it is not suprising that the villages of Duru-Haitemba viewed with dismay attempts to 'take away' their forest through reservation, however benign the origins.

Their first intimation of this trend came with the deployment of a Dwana Msitu (Forestry Guard) in the area, in the early eighties. He began regulating forest use, as the sole authority to permit grazing, pole-cutting, clearing, felling, or indeed even, in theory, the collection of dried fuel wood. The fact that this particular junior officer appeared to pocket 'fees', was erratic in the determination and issue of permits, and increasingly authorised considerable forest clearing for charcoal burning and farming, contrary to traditional

* This is a legal tenurial framework unique to Tanzania, which gives communal land ownership to a defined community, Which then sub-lets cultivation areas to member households.

practice, served to seriously undermine local commitment to forest conservation.

The arrival of the RFP supported survey team in 1992, to demarcate the forest reserve boundary, was the last straw. In the words of the Village Chairman "we heard they were putting in boundaries. We rushed to claim as much of the forest as we could. We started burning the forest for charcoal and cutting as many poles as we could before they would stop us entering there".

In the case of Duru-Haitemba, government and advising foresters saw fit to pause and take stock. Attention to local concerns was seen as paramount. No radical changes were proposed. The reserve might have to be made smaller to enable local people to secure the forest products they seemed to need.

PEOPLE'S RESPONSES

The logical framework for local forest management was on a village by village basis, each village managing the part of Duru-Haitemba Forest which had traditionally fallen within its village boundaries—well known boundaries which were by that time even physically demarcated in preparation for the issue of Village Title Deeds. It helped that, with the exception of grazing, villagers only used the forest of their own village, and indeed normally only that area of the forest that fell within their sub-village.

Obviously the village was institutionally the appropriate manager of local forests.

Decline in these services was by now an acute concern to the villages. They saw a causal link between the forest's degradation and the reduction in water from forest derived springs, the decline in bee populations and the soil erosion affecting their farms below the forest.

As discussions on the history of the forest, on how it changed and what was now needed, ensued, the villagers themselves became increasingly sure that they, and only they, were the appropriate guardians and managers of the forest. It is we, not government, they argued, who most want and need the forest. It is we who live here and can see to its management. It is we who have to honour decisions and pay the consequences if we don't. And it is we who can do all this—look how we managed the forests in the past. And if decisions are to be honoured, then it is we, not Government, who must make them. We cannot look after a forest that Government owns and uses for itself.

There is no doubt that the turning point in the future of Duru-Haitemba was when the villagers came to genuinely believe, because of the public assurances of the District Forestry Officer, that the government would not take the forest away from them—at least not as long as they managed to

restore and conserve it. As one village leader observed:

"If government accepts the forest as ours, then we have a great responsibility. It is now up to us to save the forest. If we fail, our children and children's children will not forgive us".

Survey and planning fuelled by responsibility and power

Serious forest planning work began in each of the three villages at this point. For example, the survey of local forest use was tightly tied to the intention to make reasonable and workable rules about future use, not out of casual interest. Debates as to the importance of different forest products were heated and information abundantly volunteered.

The fact that the process began in each and every sub-village of the wider village, meant that the majority of households were involved at one point or another and particularly in final meetings, where a formal assembly of all sub-village households met to refine and approve the plan of action their representatives had drawn up for managing their part of the village's forest. Several sub-village leaders actually insisted that children attend these meetings *"so they learn about our forest and understand what we are trying to do"*. In general, the planning process comprised an initial discussion with leaders and a handful of household representatives (both men and women) held within the forest itself. Being physically present in the forest greatly focused discussion and concerns and, as many later reported, *"helped us to see our forest with new eyes"*. Together with the Forestry Officer, the author guided the group in assessing the condition of the forest, how it had changed and why, identifying every possible forest use, ranking the impact of each upon the forest, and discussing what action would be needed to reduce damage and yet at the same time retain the most important uses of the forest. By the end of these long 'forest walks,' the involved villages generally had in mind a whole series of problems and solutions they wanted to present to fellow members of the sub-village. Larger and more structured meetings followed. Leaders were guided in ways to ensure that the different perspectives of men and women, rich and poor, were considered. These discussions were not only concretely based on a forest which most households daily used and needed but they were also decision rather than survey oriented and everyone knew it would lead to rules that they themselves would both honour and implement. As a result the level of interest was extremely high, meetings well attended and dynamic.

Once sub-villages had agreed on their individual forest plans, these were coordinated into an overall Village Forest Management Plan by mainly the constituent sub-village chairmen. They quickly came to represent the core membership of each village's Forest Management Committee. Overall,

the differences among the sub-villages were not great, and where these existed, they were noted in the village's general management plan.

Within the pace of a few short weeks, each of the three villages had come up with what were simple but precise 'Management Plans' for restoring control over the natural forest within their village area. Typically, the 'plan' opened with a statement of principles, such as "The forest of this village belongs to all the people of this village and is only to be allowed to be used by members of the village". A description of how the forest would be managed followed, usually identifying a village Forest Committee, supervising the day-to-day management responsibilities of each sub-village Chairman, who in turn would get member households to elect *Walinzi* (Village Forest Patrolmen) to patrol their area of forest. In return those *Walinzi* would be exempted from other communal activity or 'taxation' for local development.

The core of the plan was a list of rules, which generally fell into four categories:

- forest uses which could continue unimpeded, given their non-destructive nature (such as collection of dry wood for domestic fuel, wild fruits and mushrooms);
- forest uses which were notifiable (such as the placement and harvesting of beehives, the collection of medicinal plants);
- forests uses which had to be rationed or controlled through the issue of a limited number of permits (for example, polewood collection, the use of fallen timber) or by season (collection of dry wood for brick-burning), or by area (beehive placement, grazing, hunting, etc.);
- forest uses which would henceforth no longer be permitted under any condition (for example, individual timber extraction, forest clearing for farming or settlement, charcoal burning, bark-stripping).

A system of fines was detailed, and the means through which these would be levied and deposited in the Village Bank Account, described. Predictably, most villagers were concerned to find a way to prevent village leaders from misusing the fine money, and the collection and management of fines remains a troublesome issue in one of the three villages.

In each village leaders and elders carefully re-inspected the forest. Boundaries between villages and among the sub-villages within the village were confirmed and, where necessary, visibly demarcated. Simple forest zoning was effected. In all three villages, the decision was made to close off certain areas of the village forest, either because they were so severely degraded and needed time to recover, or because they were so intact, villagers felt they needed full 'protection'. Each village debated the issue of grazing with the general conclusion that limited grazing zones should be created.

The sub-chairman of the village discussed the final overall Village

Management Plan with their constituent households. Mainly young men volunteered or were nominated as *Walinzi*. The few sub-villages with no or very little forest made arrangements to formally share the use of, and responsibilities for, the forest of a neighboring sub-village. Within the space of a few weeks, each of the three villages had not only secured the majority agreement of all the members of the village but had gotten active forest management underway.

Progress

As management consolidates, small changes are occurring in the rules and in the systems of management. One village has established an Inspection Committee to regularly check and support the efforts of each sub-village. This team includes, among others, four elders with past experience of forest management, who link the forest's conservation with the more 'social' rules they still promote in the community. These same old men and one woman recently forbade, for example, people to visit the forest until a charcoal burner had been apprehended. In another village, beer brewers and brick burners are now required to plant fifty trees each year on their farms. This is the result of raised awareness of forest use that has illuminated the high volumes of dry wood consumed, at the expense of the availability of fuelwood for domestic use. Those who fail to meet this rule will find that their permits to brew or burn bricks are not renewed.

More focussed management action is also emerging. As the dry season approaches, each village is preparing to assess the availability of polewood in order to know how many permits may be issued, the species that may be used and the areas that may be harvested. Although each village initially determined to ban all felling of timber, two have now authorized the felling of one tree in each sub-village in order to meet the needs of school desk production. This decision has confirmed the function of the forest as serving the community, rather than individual needs or commerce.

Not all villages are enthusiastic about local forest management, and there are and will continue to be problems to solve. Resident timber sawers were angry at the majority decision to close the forest to harvesting, especially as the local Forest Officer had 'allowed' it. Some of the poorer households lost their source of income from charcoal burning and selling or the sale of fuelwood, now banned in all three villages in favour of retaining the resource for subsistence use. At the other end of the social hierarchy, the larger livestock owners are frustrated at the loss of forest grazing. For their part, some of the patrolmen now feel they should be paid for their work, an issue the concerned village is considering.

CASE STUDY 21

INDIGENOUS SYSTEMS OF COMMON PROPERTY FOREST MANAGEMENT IN NEPAL*

LOCATION

Indigenous forest management systems are operational in the Sindhu Palchok and Kabhre Palanchok districts of Central Nepal. The two districts are located to the northeast and east of the Kathmandu Valley.

ECOLOGICAL VALUE

Northern Sindhu Palchok includes part of the Himalayan range. Most of the inhabited area of the two districts is within the Himalayan foothills-the Middle Hills of Nepal. Some ridges are covered with high altitude forest, but most of the forests are scattered patches, which are part of a mosaic including hamlets and agricultural terraces as well as shrubland and pasture.

PROBLEMS

Mahankal Ban is another case of a local initiative leading to regeneration of a previously degraded area. In 1963, local efforts to protect the badly degraded area commenced. There were approximately 14 hectares of thick and generating mixed broadleaf forest 25 years later.

PEOPLE'S RESPONSES

According to local oral history, protection was initiated without any formal organization. It began when residents of Archale, a village near the forest, agreed that protection was necessary. People from other nearby villages subsequently agreed with the plan (under what conditions is unclear). A committee was set up between 1971 and 1973 and, in 1977, a forest watcher was employed by the Nepal-Australia Forestry Project to look after a patch of plantation adjacent to Mahankal ban. He retained responsibility for Mahankal Ban, although the local collection of funds lapsed. The committee lapsed at the same time, but the locally recognized rules continued to be followed.

*Fisher 1992

An important feature of the case is the rather complex nature of use-rights. These need to be understood before the rules for forest use can be described. There are essentially two broad categories of use-rights. Primary rights are held by the 60 households residents in Archale Village. The entire village population consists of members of the Dulal clan of Brahmins and a single lineage of Dulal Chhetris. There are two categories of people with secondary rights. The first group consists of people who seasonally live near the forest in *goths* (temporary shelters). These people, normally residents in other villages, have agricultural land in the vicinity of Mahankal ban. The other category of people with secondary rights consists of people from other villages in the general area of the forest. These rights are theoretically open to anyone, although residential proximity to the forest limits the number of people who have any real opportunity to use it.

The rules for forest use, as they stood in 1988, were as follows:

1. Primary users are allowed to collect grass and dry wood from the ground. (They are not allowed to cut green timber or even dry branches still attached to trees). They are able to collect the fruit of the Katus [*Castanopsis indica*] tree when it appears (every two years). This represents a considerable source of income (an estimated Rs.15,000 in 1987).
2. Secondary users living in *goths* have the same rights as primary users during the period of residence in *goths*. When living in their normal residences they are not entitled to collect firewood.
3. Other secondary users are also entitled to collect grass and Katus fruit, but are never entitled to collect firewood.
4. Grazing is free, but the number of livestock is small because fodder species are not readily available.

From a silvicultural point of view, these rules are extremely conservative. It is possible to obtain a substantial quantity of leaf fodder, firewood and timber by selective pruning and cutting without damaging the forest. When project staff suggested to villagers that it would be possible to increase forest use and that the Forest Department could approve this, the villagers showed a surprising lack of enthusiasm. Investigation showed that members of a small sub-lineage of relatively wealthy Brahmins within the village had been largely responsible for initiating protection. Some poorer villagers objected that this dominant sub-group refused to allow increase use of the forests. Members of the dominant group controlled relatively large numbers of trees on their private land. Without access to trees on common land, poorer farmers depended on these people for timber, enabling the dominant group to control agricultural labour.

CASE STUDY 22

THE POLITICAL ECONOMY OF FOREST MANAGEMENT: A CASE STUDY OF GOVERNMENT AND NGO INTERVENTIONS IN THE SAL FOREST ZONE OF BANGLADESH*

LOCATION

The Sal forest zone of Bangladesh in particular in the region at that time were in Kaliakor, Mirzapur and Sreepur Upazillas. A fourth ADC in Shakhipur Upazilla.

ECOLOGICAL VALUE

The Sal forest belt of Bangladesh.

PROBLEMS

Deforestation is the most serious problem. There was an accute scarcity of wood.

PEOPLE'S RESPONSES

One of the most prominent of the environmental NGOs is Proshika, a group that organizes the poor through education, training and technical support services including credit. Field workers discovered that several Proshika groups in Mirzapur Upazilla had started forest protection on a voluntary basis since 1985, due to the scarcity of fuel wood in the area. These groups were the first to initiate forest protection activities, even though their reasons for forest protection was the felt need for fuelwood and not specifically of environmental concern.

Proshika has been involved in environmental issues since its inception in 1976. The major thrust of Proshika's environmental program is to raise people's awareness of environmental issues and involvement in the participatory management of natural resources.

Several Proshika groups, in a village, combine to form a village coordination committee to undertake community activities. Committees identify degraded forest areas with remnants of Sal coppice and protect these to allow the forest to regenerate. Local villagers are not allowed to fell

*Khan & Khan 1992

trees or damage the existing trees and coppice. The Forest Protection Committee (FPC) does this by explaining the purpose and objectives of the protection activity to the villagers, and requests their assistance in the activity. The FPC also informs the local forest official of the forest protection activities in the area. The FPC then erects a signboard in the protection area stating that the forest is being protected by the Forest Department and the protection groups. The FPC develops a plan to protect an area of sal coppice and informs the Proshika field worker. The field worker informs the Forest Department of the committee's plan. Forest officials usually agree to such protection arrangements, provided the FPC does not damage the trees nor thin the coppice shoots. Annual pruning of branches and collection of dead wood and leaves is allowed from the protection area.

Conflicts with local people over cutting timber from the forest do arise and are resolved at the local level, through village mediation. For example, in 1990 the Paikpara Forest Protection Area was attacked by local landowners and timber traders. The groups resisted this attempt and several members were injured. A village court was held to resolve the dispute and the local school teacher and forest official acted as mediators. The problem was not resolved, and the Proshika headquarters staff had to intervene and bring in journalists from Dhaka to write about the incident. This had a major effect on the local community, who saw that protection activities were receiving wide coverage. The problem was resolved temporarily. A year later, however, the protection area no longer existed. The FPC in the area could not withstand the local pressures to cut-down the forest, which finally ended up cutting-down the regenerated forest.

Forest protection committees choose protection areas near their homes as a matter of convenience, and gradually expand the coverage once they establish their reputation and authority. During the first few years, a flexible patrolling system is maintained by the protection committee. Once the coppice has regenerated partially, after two or more years of protection, these areas become susceptible to illegal timber merchants and have to be continuously patrolled. Men and women, in groups of two or three, guard the forest by walking around the protected area day and night. Patrol duty usually falls on each group member every two months by rotation. The regenerating coppice shoots are thinned once a year, during the dry season (November to March), and the fuelwood and Sal leaves harvested are shared by the committee members and other members of the village.

Nature and types of Problems Emerging

Groups involved in forest protection usually meet severe opposition from local timber traders, land owners and other local influential groups who are

involved in the timber trade. In many cases, ownership claims to land have been forged to take over the protected forest. Protection committee members have been physically threatened by these individuals, which in some cases has led to physical confrontation. False cases have also been filed against women group members in an effort to ostracize them in the village. When violence has failed, the traders have tried to bribe individuals in the forest protection committees as a way of creating disharmony within the committee. Local villagers tend to be initially skeptical of forest protection activities. Villagers feel that since the forest belongs to the State, everyone in the village has an equal right of access to the forest and its products. Once the forest protection committee's credibility is established, this skepticism changes and the villagers assist the group in protecting the Sal forest. The local forest officials demonstrate mixed reactions to protection activities in their areas. Some are cooperative and assist the committees in the protection activity, other feel that the committees are interfering with their mandate and try to discourage them from undertaking protection activities. Despite these set-backs, Proshika continues to expand forest protection activities.

Community Action and Media Support for Forest Protection

Forest protection committees have strengthened their activities through a series of "Social Actions". In the initial stages, social action comprised of resisting local pressure by organizing villagers to protect the forest. "Shammolons" or local public meetings were also organized by the groups to build up popular support and publicize the protection efforts. These popular meetings are attended by all the local villagers and groups from the neighboring Upazillas and are a useful forum for disseminating information. Such "Forest Protection" rallies have been reported in several national daily newspapers, which has further strengthened the protection committee's credibility in the area. For example, in September 1990, local landowners and timber traders attacked the forest protection committee of Paikpara to stop the initiative. When the FPC members resisted the attempt, they were assaulted and injured. The Dhaka office of Proshika brought journalists from several news agencies to interview the protection groups. The media attention had an immediate impact and stopped further attacks on the protection areas. Senior officials of the Ministry of Forest and Environment have also visited the protection activities. These visit have helped the protection committees gain "official recognition" for their activities. Though the groups continue to work in the absence of any legal contract with the Forest Department, the high-level visits and media exposure provide the groups with enough "official recognition" to give legitimacy to their work.

CASE STUDY 23

THE ROLE OF TENURIAL SHELLS IN ECOLOGICAL SUSTAINABILITY: PROPERTY RIGHTS AND NATURAL RESOURCE MANAGEMENT IN MEXICO*

Note: 'Comunidad'—is a pre existing corporate entity whose rights are recognized if its members can demonstrate prior community based use of the land and waters. Ejido' is a creation of the Mexican revolution that enables groups of people to petition for access to resources in which they have the prior claim

LOCATION

This case study site is located in northeastern Mexico, on the Gulf Coastal slopes of the Sierra Madre Oriental, in the states of San Luis Potosi and Veracruz, where rainforests reach their northernmost range in the Americas. We focus on two user groups located in contiguous areas (southeastern San Luis Potosi and northern Veracruz) of this ecosystem, who use similar resource management systems: the Huastec Maya (population 121, 000; 1990 census) and the Totonac (population 208,000; 1990 census).

ECOLOGICAL VALUE

From the time of the earliest written documents, the tropical moist forest region has been characterized as a "hell" or a "paradise," depending on the viewer (e.g., Vetancourt 1689; Tapia Centeno 1960). If this ecosystem is managed properly, it is a paradise, because it provides a wealth of short and long-term benefits. If its special resources created under hot, humid conditions, are misused, this ecosystem degenerates into a less valuable ecosystem requiring external inputs to maintain production.

PROBLEMS

Totonac and Huastec both retain their language and strong cultural traditions, but at the same time have participated in economies linked to the global economy, for several centuries.

While there are no significant, distinct, subgroups of resource users

*Alcorn & Toledo 1995a

within their communities, Huastec and Totonac communities are spatially distributed as islands in a sea of lands operated by a different group of resource users—mestizos, the Spanish-speaking people who claim Mexican national identity. Mestizos' political power and domination of the economy influence the technical and organizational options available to indigenous resource users. Mestizos occupy towns, ranches, and citrus/sugarcane plantations in the more level lands and areas along roadways, while the islands of indigenous territories tend to be aggregates of communities grouped on steeper, less desirable, agricultural lands. There is continued tension over borders between mestizo and indigenous lands and forests. Occasionally, powerful mestizos still assert their rights over these resources without any legal basis to back their claims.

Mestizo land use outside ejidos generally tends to follow the standard Eurocentric model of monocrops and pastures, with intensive herbicide and pesticide use. Mestizos in this region dedicate most of their lands to cattle, although pastures are largely degraded and unproductive. This general pattern has been in place for several hundred years, but forest in mestizo areas decreased dramatically after World War II, when mestizos gained access to machinery for clearing forest and used it to increase the area under cattle pasture.

PEOPLE'S RESPONSES

Property within the borders of the *comunidad* or *ejido* is recognized, used and inherited according to local institutions. Almost all forested land is under family ownership-- a situation in which the family, not others, make management decisions. Families are responsible for making management decisions that are appropriate to the context and rules shared by the community. The small patches of communally-shared forest are used to generate income to pay school expenses and maintenance of other buildings, required by the state, as well as to provide materials for poorer community members who do not have access to forest resources on their own family lands. Decisions about community lands and forests are discussed at assemblies in which representatives of every family participate.

The specific lands that belong to each family are well defined, but border disputes do occur. Under the state-sponsored *comunidad* and *ejido* systems, a community-elected official adjudicates over land disputes and inheritance decisions in consultation with other community members. The real owners of the land and forest are divine beings and spirits (including ancestors). Another way of expressing this relationship is that the Earth (with its resources) is a member of the community, and the community has the obligation to treat the Earth and all other community members with

respect and concern for their continued well-being. In other words, ownership means that the human community has a moral responsibility to maintain the land, its resources, and society in good condition. Hence, despite the apparent clear-cut borders between Huastec families' lands, members of one family have the right to ask another family to borrow land or harvest forest products to meet their subsistence needs. This system provides a social safety net for the poorer members of the community.

Disputes over land borders and harvest rights are common and can disrupt congenial relationships between families within a community. Accusations of witchcraft are made against those who attempt to appropriate resources for private gain. A belief in witchcraft provides a strong social sanction against actions that go against conservative use of resources and a commitment to the corporate group. Traditional curers reinforce socially appropriate behavior during their interactions with patients, looking for causes of illness in the patient's or others' misuse of resources. Here the importance of the relationship between the divine powers and land comes into play, as well as the relationship between people. Clearing a private forest along a community watershed, for example, would result in strong pressure (including witchcraft accusations) against the family, as well as be interpreted by the curer as causing illness or misfortune because the person went against religious sanctions about protecting water (ecologically unwise). Hence, ecologically-sound land use is supported by cultural values and a belief in the ethical commitments made between people and spiritual powers, when people make land use decisions. The tenurial shell created by the state supports the traditional belief structure, which in turn supports ecologically-sustainable land use.

Within the borders of their territories, both Huastec and Totonac apply a high level of knowledge about species and ecosystems. Huastec use 679 plant species and specifically "manage for" 349 of those species. Totonacs use and manage 355 species of plants and animals. Useful species are harvested from lands managed by risk-spreading strategies to make multiple use of available resources while maintaining the natural processes on which agricultural and forest-based systems rely. A survey of indigenous communities in the Mexican lowland humid tropics revealed that 1,052 species are used for consumption and sale. Lowland forests have economic value far beyond the value of their timber.

Managed forests, especially along streams, on ridges and steep slopes, have never been cleared in living memory. Approximately 25% of an average Huastec community's land will be under forest; 50% in milpa (maize field)-fallow cycled land; and 25% in sugarcane. In a typical Totonnac community, 30% of the land was under forest, 36% under milpa, 10% under cash crops (aside from vanilla), and 23% was in pasture.

CASE STUDY 24

CASE TWO: SUB-HUMID TEMPERATE FOREST, MEXICO*

LOCATION

The case study covers two areas managed by Purepechan people (Tarascans) in the state of Michoacan. The first site is located in the Lake Patzcuaro basin which includes lake islands, shore, hillsides, mountains, and intermontane valleys. The second site is the community of San Juan Nuevo in pine-oak forest on the high plateau of western Michoacan.

ECOLOGICAL VALUE

Community-based systems in the sub-humid temperate forest ecosystem (a zone that covers 33 million ha and occupied by 1.55 million indigenous people) are also adapting to changes. The oak-pine forests and the intervening grass and shrubland areas support an estimated flora of some 1,000 species. Archaeological research indicates human settlements in the area from approximately 3500 BP, and Spanish records indicate that the area supported a large population during the 1500s.

PEOPLE'S RESPONSES

Purepechan communities, like the Huastec and Totonac, have communal ownership of their lands and resources, but individual households exercise ownership over their own agricultural lands. Community members may rent or mortgage his lands to other community members. Forest, pasture and lake resources, are considered community property with rules regulating their access and use. Different communities have managed their communal resources in different ways. In Pichataro, for example, 4,000 ha of pine oak forests have been divided evenly between eight subdivisions of the community, thereby giving each of the 559 households equal access to forest resources for resin, wood, firewood, and food. The lake is used by

*Alcorn & Toledo 1995 b

700 fisherman from 21 settlements, 19 of which are purepechan. The lake territory has been divided into sections to be exploited by each community. Each community, in turn, has divided the lake into fishing grounds and shore areas for each fisherman, through collectively established rules. Shore areas are physically divided into territories by artificial channels lined by tule reed plants.

In San Juan Nuevo, forests were divided into family patches for exploitation on an individual basis for resin extraction and small-scale woodworking shops. Until 1970, marketing was controlled by middlemen and much of the forest eventually became degraded from overextraction. But during the 1970's, the comunidad joined the Union of Forest Ejidos and Comunidades and worked for government authorization of community-based forest management and production. By 1981, the community's General Assembly approved the formation of a community enterprise, which successfully competed with middlemen by offering a better price. Sale to the community mill requires sharing rights with the enterprise; the participants enter into co-management arrangements so that the community's forest has slowly come under stronger community control. Forest recovery has occurred because of the tenurial authority exerted by the community. The community as a whole moved to reduce individual rights in order to sustain the forest. It is unlikely that similar state-level action could have prevented clearcutting through zoning or harvest regulations, given the poor record of state-level interventions.

The San Juan Nuevo Purepechans have developed a new local institution associated with the operation of the community's forestry enterprises and the forest co-management rules linked to sustainable extraction for the enterprises. A Communal Council was established which includes 10 representatives from San Juan Nuevo's six sub-units, the enterprise directors, property administrators, and a technical committee. This group oversees and directs the community's projects, and serves as a forum for developing consensus. The comunidad has agreed to reinvest all profits into the enterprise, rather than distributing the profits.

Like the Huastec and Totonac, the Purepechan culture also supports values placed on reproduction of the community, conservative use of resources, protection of natural processes, economic equity among community members, consensus building, and collective resistance to intrusion by outsiders. Equitable distribution of the communities' resources among individual families prevents overuse by any one family, while communally shared values and institutions maintain resource use within acceptable bounds.

CASE STUDY 25

RITIGALA COMMUNITY-BASED RESOURCE MANAGEMENT PROJECT IN SRI LANKA: STATUS, ISSUES, AND OPPORTUNITIES*

LOCATION

The Ritigala Community-Based Resource Management (CBRM) Project covers the regions bordering on and including the Ritigala Strict Natural Reserve (SNR). The SNR is managed by the Department of Wildlife Conservation (DWLC) and lies in the Anuradhapura District of the North Central Province of Sri Lanka, about 27 km north of Dambulla and 36 km southeast of Anuradhapura.

ECOLOGICAL VALUE

Established in 1941 under the authority of the Flora and Fauna Protection Act, the SNR is a unique cultural and biological heritage, in particular with respect to medicinal plants.

PROBLEMS

Threats to the SNR have included harvest and sale of hardwoods (particularly ebony), *chena* (Shifting cultivation), cattle grazing, poaching, collection of plants for food and medicine, and firewood collection. It is not clear how much of this degradation can be attributed to local inhabitants and how much to outsiders.

PEOPLE'S RESPONSES

A pre-CBRM phase of the project was begun in 1994, to sensitise members of the fourteen area villages to the potential of a joint management structure, and to demand better service from local support institutions. By 1995, villagers had joined together into the Ritigala Community-based Development and Environmental Management Foundation (RITICOE),

*DeCosse & Jayawickrama 1997

whose Chairman is the Rev. T. Chandaratna. During this same short period, they were successful in demanding and receiving better service from the DWLC, the FD, and various levels of local government. Technical support for the medicinal plants work has been provided since the pre-co-management phase by the Bandaranaike Memorial Ayurvedic Research Institute and the overall co-ordination oversight has been done by TAF (The Asia Foundation). It is important to note that this phase of the project was a test phase, and that the emphasis was not so much on resource management as it was on exploring the potential for bringing communities together in a viable management structure.

The CBRM project itself, which got underway in 1995, is designed to continue this participatory work while attempting to increase the economic opportunities of the community and ensure that the SNR becomes more sustainably managed. One project document described the objectives of the project as developing "a CBRM programme for the conservation and sustainable use of medicinal plant resources in and around Ritigala", while another document goes further to say that the objective is "protecting the Ritigala range and surrounding areas while educating inhabitants about its value and providing them with income generation opportunities". The project works on three fronts: 1) education and awareness-raising; 2) promoting liaison between those players currently or potentially involved with the SNR; and 3) introducing income-generating opportunities.

Considerable progress has been achieved to date in expanding the *ex situ* production and processing of medicinal plants, hardwoods and fruit trees. Village committees have been formed and are functioning successfully, and numerous educational and awareness-raising activities have been undertaken. In addition, the project has successfully improved relations with, and the delivery of services from, the DWLC.

Anecdotal evidence suggests that illegal incursions into the SNR are occurring less frequently and that the SNR is not being degraded at the same rate as before. Unfortunately, hard **scientific evidence** on changes in resource quality and management is not available to validate these anecdotes. As TAF

has recognised, this inability to assess changes in resource quality will constrain their long-term ability to know whether resource management is improving. In particular, project managers will need to have more concrete knowledge about the rate of change in resource quality and the source of damage to the resource.

Apart from assessing resource quality, assessments and baseline studies need to be used to determine the benefits accruing to a village from a resource. At Ritigala, many villagers believe that a better managed SNR

will bring direct benefits to them, primarily via improved availability of water associated with increased tree cover. The elder members of the community argue that there has been a steady reduction in water availability for irrigation in the past several decades, and that the primary cause of this decline is the loss of tree cover in the SNR. They conclude that the benefits from improved water availability associated with the project exceeds the opportunity costs of giving up illegal use of the SNR. TAF recognises that the long-term sustainability of the project requires that the communities see a long-term benefit to forsaking the use of the SNR. Unfortunately, without the ability to conduct the resource assessment TAF had envisioned, it is not possible to assess this long-term incentive question. Without such an assessment, it is not possible to ensure sustainability.

Any discussion of the long-term sustainability potential of the project cannot ignore the challenges posed by the current legal status of the SNR. While co-management projects generally assume that communities can receive benefits from the resource they are being asked to manage, in Ritigala these stakeholders have virtually no rights to the resources of the SNR. By law, access to the SNR is strictly restricted. The restricted rights that neighboring communities enjoy with respect to SNRs, and indeed with respect to most protected areas in Sri Lanka, represent a serious constraint to the potential for sustainable co-management efforts. If some sharing of management responsibility is to be undertaken for protected areas, then the allocation of rights between the state and communities must be reconsidered.

The Ritigala project draws attention also to the link between income-generating activities and their impact on resource conservation. The income generating activities at Ritigala are not reviewed, except to note that they have been rapidly adopted, particularly with respect to the *ex situ* cultivation of medicinal plants. In spite of these successes, it is not at all clear that these and similar activities have had any impact on the **quality** of the SNR. Even the theoretical link between cultivation of medicinal plants and its impact on the SNR is not clear, since an expanding market for medicinal plants might be an incentive for villagers to cultivate *ex situ* and then augment this with collection from the SNR. In fact, on the basis of our review, it appears that the improvements in SNR management have less to do with new income-generating opportunities and more to do with: 1) improved patrolling and enforcement by the DWLC (due in great measure to the project's liaison work); 2) increased fines for illegal incursion; and 3) improved awareness of the value of the SNR (again, due to the project).

CASE STUDY 26

EARLY EXPERIENCES WITH HILL RESOURCE SOCIETIES AS JOINT FOREST MANAGERS, SHIVALIK HILLS, INDIA*

LOCATION

The programme village Nada, in the Shivalik foot hills, about 15 kms from Chandigarh, in the state of Haryana, in India.

ECOLOGICAL VALUE

The area was a denuded, fan shaped forest catchment of 11.3 ha, in a Reserve Forest. It has steep slopes with all forms of erosion and was devoid of any vegetation.

PROBLEMS

Forest destruction was so great that base hill slopes replaced thick green forests, perennial streams took the shape of seasonal torrents, to bringing down tonnes of silt and boulders.

PEOPLE'S RESPONSES

The rainwater was impounded in 1980 by constructing an earthfill embankment at a cost of Rs.3.60 lakhs. This water is adequate for the harijans to raise 3 to 4 crops. With the immediate increase in crop yield, the people started protecting the catchment which resulted in a perceptible change in the forest cover and in its composition.

The problem of erosion in the hills near Harijan Nada has been dramatically reduced. The hills have once again become a major source of fodder, fiber grass (bhabbar), and fuel for the villagers. A sort of cyclic development has started. The faith of people in the productivity of the hills has been rebuilt and rapport with the forest department has greatly improved.

The concept that forestry is a long gestation venture was disproven in

*Dhar et al nd

Nada, where Bhabbar (*Eulalipsis binata*) was made available to the HRMS (Hill Resource Management Societies) within the first year, after about 4 months of its planting. The graziers tied their cattle and stall feeding came in to vogue, and the men and women earlier sitting idle, had more work in their fields. The same hills that produced 40 kgs of grass per ha. Started producing more than 2000 kgs per ha by 1986, in addition to increasing tree biomass. No barbed wire fence was erected as there was no need for it. Water runoff came down to 2% of what it was in 1979.

The harvested rainwater assured increased agricultural yields. The other important need of fuelwood and fodder availability near the houses was satisfied by raising a high density plantation on the adjoining barren hills. After a soil survey, *Prosopis juliflora* (Mesquite) and *leucaenia leucocephalla* (soo-babul) were planted on staggered contour trenches (200×60×60 cm) in July, 1981.

Initially, planting was done in 0.9 ha and subsequently extended to 16 ha of degraded forest land. The plantation is now about 10 years old and provides an excellent cover over the barren hill slopes. Runoff and peak discharge experienced earlier, that eroded the meagre farmland down below, has reduced to a negligible level. An excellent village forest is standing behind the community and the villagers are proud of it. The hills provide water, fuel, small timber and fodder to the people and the society has taken a pledge not to graze in the hilly catchment. However, they cut for their own needs, but in a regulated manner.

Sharing Other Hill Resources

With an increase in forest productivity, it was felt that the increased production of even other forest produce should be shared with the villagers. This was based on the concept that the people will protect only that which they benefit from. For deeper involvement of villages, it was necessary to pass on the benefits of "social fencing". For this purpose, the Water Users Associations formed earlier were reorganised into the Hill Resource Management Societies (HRMS). These were registered under the Societies Registration Act, 1860. Their responsibilities were also defined. The state forest department recognizing the improved management practices and changes in the attitude of villagers, stopped the annual auction of fodder grasses and bhabbar and instead leased out these areas to these HRMSs. The societies paid the average price obtained in the last three auctions with an annual increase of 10% after two years of price stability. The villagers, who used to pay Rs.450 per head per year for grass cutting to the contractors, now had to pay only Rs.150 per head per season to the society. In this way, the interest of village societies and village families in participative management was assured.

CASE STUDY 27

FOREST PROTECTION COMMITTEES IN GUJARAT, INDIA: A JOINT MANAGEMENT INITIATIVE*

LOCATION

Pingot village is a community of 165 households, with a population of 1147, in South Gujarat, India. The community is primarily comprises of the Vasava tribal farming people, although there are a few Kotwalia tribals who are traditionally basketmakers.

ECOLOGICAL VALUE

The community lies in the middle of a small plain, with outlying agricultural fields surrounded by about 700 hectares of degraded wastelands, both revenue and forest. The forest lands are situated on the hills around the village and form an important catchment.

PROBLEMS

These hills have been severely degraded in recent years. Because there is little remaining root stock from the original teak and other species which once covered the hills, there is little opportunity for rapid coppice regeneration. It has therefore been necessary to carry-out intensive planting activities to re-establish vegetative cover.

Till recently, the people of Pingot were largely interested in wage labour rather than agriculture, due to the marginal returns from their fields. Further because by the 1980, the forests were heavily degraded, there was little opportunity for employment in forest related activities. Many of the adults from Pingot would migrate each year in search of wage labour as far as Surat and beyond. They would return to the village around Diwali, stay on for the agricultural season to cultivate their lands and leave the village again after the harvest.

*Pathan et al nd.

PEOPLE'S RESPONSES

In 1986, the Aga Khan Rural Support Project (AKRSP) began a rural resource development programme in Pingot. The AKRSP, therefore, took up a degraded forest area of 125 hectares for afforestation, the same year.

Historically, migratory shepherds have come through Pingot area. This added to the degradation of the forests, which were already subject to indiscriminate use by the locals. Now the people of Pingot decided in their TGCS (Tree growers Co-operative Society) meeting that continuous protection would be necessary to control grazing and illegal cutting. They organized six-person patrols during the day and twenty-person patrols at night, usually breaking into three smaller groups to guard the three separate forest territories. One man was elected to schedule the patrolling activities and keep a record of attendance. For this work, he got paid Rs. 50 per month by the Gram Vikas Mandal, a registered body formed, in 1987, by the villagers to cater to the various developmental needs of the village. The AKRSP paid some of the salary for protection activities, but terminated this support in December 1989. The community has, however, continued its forest protection activities.

During the early years of the programme, confrontations with illegal users were common, but the frequency of such incidents has gradually declined as people from other villages and migratory shepherds have begun to recognize Pingot's right to protect its hill resources. In one case, a man had cut 25 bamboo poles growing on the regenerating revenue land and was fined Rs.5 per pole. According to the Gram Vikas rule, 50% of the fine is paid to the patrol member who catches the offender.

Based on the successful regeneration of the 65 hectares of revenue land and the 125 hectares of forest land, the AKRSP began working with the Gujarat Forest Department to establish protection for the surrounding degraded forest lands. In June, 1988, following a suggestion from the AKRSP, the people of

Pingot demarcated for protection alone a 50-ha area of forest land, which had coppiceable root stocks of 34 species -- bamboo being the most dominant. Another area of 36 hectares was taken up the same year for plantation, jointly by Pingot and its adjacent village of Mota Jambuda.

Forest Production Systems

Pingot families feel that fodder from forest land has been the biggest immediate benefit from forest protection activities. In 1987-88, the Gram Vikas Mandal of Pingot earned a net amount of Rs.11,000 from the sale of grass, after payment, in the form of steel plates, (as kind and not cash) to the grass-cutters. The villagers also look forward to significant returns from

other sources in their protected forests. For example, the 50-ha plot adopted for protection in June 1988 was seen in May 1990 to be covered with a rich bamboo crop, ready for harvest in 1994. The expected output of the first cutting is about 60,000 mature poles. Other tree crops will also mature increasing returns to the community. In addition to incomes from wage labour engaged in legal harvesting, a certain percentage (yet to be fixed by the Department) of the sale proceeds will accrue to the villagers. The Gram Vikas Mandal of Pingot has introduced a system of saving a certain portion of the villager's wage earnings. The village has already pooled savings of Rs.2,00,000, which provides agricultural credit to village farm families. With timely and easily available credit, the villagers have found agricultural yields and profits to have increased to a point where they prefer agriculture to wage labour.

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CASE STUDY 28

LOCAL COMMUNITIES AND BIO-DIVERSITY CONSERVATION IN MEXICO: A CASE STUDY

By
Harsh Mander*

During the past decade and a half, a large number of highly significant local ecologically-inspired movements have taken root in rural Mexico, which aim to regain control of the local communities over natural resources and promote their conservation (or more accurately their sustainable use). Despite the fact that such 'explosive, but pacific, social movement(s) of ecological inspiration have been growing during the last decade in practically each main indigenous region of rural Mexico' (Toledo 1998), not enough is known about these movements even within Mexico, and much less in the rest of the world. Far more is known about the Zapatista indigenous rebels of Chiapas, but there are many lessons to be learnt from the 'silent revolution' of rural Mexico for seizing control by the local communities of their biodiversity resources. This paper, based on a field visit to Mexico, attempts to outline two such experiences, involving vastly different approaches, with regard to the respective roles of both the local communities and the external facilitating agents, in such a community-based effort.

THE SIERRA DE MANANTLAN BIOSPHERE RESERVE

The first community-based experience of forestry management that we will look at more closely is that of the Sierra de Manantlan Biosphere Reserve, which is an interesting example of a sensitive but 'top-down' effort initiated by an activist university to establish a biosphere reserve.

The Sierra de Manantlan Biosphere Reserve spans two states of Mexico, Jalisco and Colima, in West Central Mexico. The reserve establishes a legal regime in which an approximately 30 per cent core area is to be untouched and completely protected, and in the remainder, around a 70 per cent buffer area, sustainable extraction is permitted.

*Country Director, Action Aid-India.

It is accepted by both local government and university authorities, that these objectives were not determined in consultation with the local community, but were established by an external agent, in this case an activist wing of the University of Guadalajara. The turning point for the University was 1977, when a disease resistant relative of maize, *zea diploperennis* was discovered, which became a symbol of the importance of preserving wilderness areas for conserving their genetic wealth *in situ*, and attracted a flurry of research into the Sierra's distinctive flora and fauna.

The University moved from a single-species preservation approach to one that sought to preserve the entire ecosystem. The Sierra de Manantlan Biosphere Reserve was established in 1987 by Presidential decree, and was recognised by UNESCO's Man and the Biosphere Programme, in 1988.

The University then gradually began to reach out to the local people, and found among them widespread poverty and unemployment, very high rates of infant mortality, incidence of infectious diseases, high emigration rates and social conflict and violation of human rights. There is always a rhetoric to the discourse, but clearly people became more and more important as the processes went on. The University became convinced that it must take up programmes of rural development, for their own sake, and to build communication and support within local communities for the reserve.

The situation was further complicated by the fact that only 1 per cent of the area of the reserve is government land. 60 per cent is community-owned land of *ejidos* or erstwhile large estates expropriated and handed over to communities during and after the Revolution, and 39 per cent is private property. The declaration of the reserve did not involve any expropriation, but instead a major zoning regulation.

Today, 11 years after the establishment of the reserve, local communities are generally still not party to the objectives of the reserve, and many are still not even aware of these objectives. They welcome the reserve, but mainly because of the rural development works undertaken by the university. It is noteworthy that unlike in India, the Mexican government undertakes virtually no anti-poverty rural development programmes. The only real social security system for the unemployed rural poor in Mexico appears to be illegal emigration to the USA !

For seven years after the reserve was created in 1987, government did not invest a single peso in the management of the reserve, nor did it enforce the new regime of protection. It was left to the University to fill the institutional vacuum, but without legal authority, budget or adequate human resources. However, the conspicuous absence of the state meant that protection in the reserve was not significantly enforced.

In 1994, federal government established a Directorship of the Reserve,

supported by GEF funds from the World Bank. The Director was appointed in consultation with the University, from its own ranks, and enjoys a great deal of autonomy and authority. The Director performs his functions in consultation with the Local Council. Each of the 30 communities are represented in the Local Council; the representatives are elected by the assemblies of the *ejidos* and indigenous communities.

It is expected that the elaborate and extended mechanism for systematic consultation with the community established by the Director of the reserve would enhance the informed support of the community to the conservation goals of the reserve.

However, securing the full and genuine support of poor local communities continues to be dogged by several problems. Most importantly, the assemblies of the *ejidos* are not genuinely representative of all sections of the community and includes only the heads of families which have land-rights in the *ejidos*. This excludes on the one hand families without land rights, the underprivileged *avecindados*, and on the other hand women, except when they are of single-women headed households.

A second problem is associated with the creation of the reserve without changes in the tenure regime. This means that local populations own lands bearing forests, but are restricted from harvesting its resources, without being paid any compensation. If the conservation movement genuinely arises from the community, as is the case in our second case-study, this may not be a serious problem. However, in a more 'top-down' model like the one presently under discussion, it can create serious conflicts of objectives.

We have observed that the role of local communities in the setting of conservation goals and planning strategies in the past was mostly passive, and that this is sought to be corrected. However, even apart from this, what remains a matter of concern is that the implementation of the conservation strategies does not actively involve the community. There are for instance no volunteer squads of the community for putting out forest fires or for guarding the forests against illegal felling, and no system for community self regulation.

UZACHI: THE EXPERIENCE OF A UNION OF INDIGENOUS COMMUNITIES IN OAXACA

The second experience included in this study, of the UZACHI, a union of indigenous communities in the state of Oaxaca, is a strikingly successful example of vigorous and professional action taken directly by traditional Indian communities. They have been successful in seizing control of, and in the protection, management, regeneration and sustainable use of, their dwindling forest resources. It is a rare example in which the external agent,

in this case an NGO, did not initiate the process of community control. In fact, the NGO was invited by the community to provide critical technical and networking assistance to the community organisation after the community had, as a result of its own suo-moto organised action, regained control of the forests.

UZACHI is a union of four communities, Compaltepec, Capulalpam, Xiacui and La Trinidad, of two ethnic indigenous Indian tribes, the Zapotecos and the Chinantecas, which own a total of 24,996 hectares of community land, of which as much as 21,895 hectares are forests. Although this area has not been formally declared a reserve, levels of protection and sustainable use enforced by the community are in fact far superior to those encountered for instance in the first case included in this paper, of the biosphere reserve of Sierra de Manantlan.

The vibrant community based forest management observed today in the UZACHI, has its roots in a prolonged, often bloody, struggle by the local indigenous communities to regain control of their commercial lands and forests. They had been dispossessed in 1850, with the imposition of a system of private property on the pre-Hispanic system of communal ownership and management of indigenous lands, and the conversion of these communal lands into massive estates or *haciendas*. After the agrarian struggle of 1910-1917, as a part of the Revolution, rights of peasant communities over their community lands were once again recognised by law.

However, after the Second World War, peasant communities were barred from the commercial use of their forests, and the state assumed this domain even for forest lands owned by peasant communities. The government gave private national and international, and para-state, companies 25 year concessions to commercially exploit the forests.

For the forests owned by the four communities that later formed the union named UZACHI, a former Canadian paper company Tuxtepec had been awarded rights of commercial extraction by the federal government. A prolonged struggle by the individual communities, involving resolute direct (and sometimes violent) political action and petitioning the courts, yielded suspension of the timber exploitation permit of the paper company in 1981, and its final cancellation in 1983.

What is important to note here was that despite community ownership of forest lands, the federal government started from a position of intense, and corrupt regulation, that in practice meant handing over control of even community lands to private and often foreign paper and lumber companies, whose objectives tended to be extremely short term and recklessly extractive. In 1980, practically all community forests of commercial value were under

the 'concessionary' control of private industry.

The struggles of the four indigenous communities in the Sierra Norte de Oaxaca, which subsequently came together to form the UZACHI union, were not unique. During the 1980s, indigenous communities all over Mexico fought for restoration of their control over their forests and the expulsion of private industry, and government gradually yielded to these demands, mainly by withdrawing. Peasant communities were now left free to draw up their own forest management plans, and to exploit or preserve their forests according to their own decisions. Today, in Mexico, there are 3079 local rural peasant communities thus managing their own forests. This has been described (Bray 1995) as **the largest experiment with community based forestry in the world**. The results, however, have been mixed. The experience of the UZACHI recounted in this paper has been one of the most successful.

It must be stated at the outset unambiguously that the primary motor that has energised the local communities to organise themselves and to struggle so resolutely to regain control of their lands, and has sustained them in their highly professional forest management decisions during the past decade since the formation of the union, has been their concern to ensure sustainable profits and livelihoods from the exploitation of the timber wealth of their forests. They are not motivated primarily to preserve the bio-diversity of these forests for its own sake, even though culturally they have a reverence for forests and living things.

Once the communities regained control, the UZACHI union was acutely conscious of the need for technical guidance as well as networking for funds and markets. Government policy was, by this time, effectively one of 'laissez faire'. The union therefore invited the NGO, ERA, and together they have developed what in many ways is a highly productive, and yet non-dependent, relationship between an active local community and a highly professional external agency.

Whether it was enlightened community self-interest, or cultural factors, or both, that motivated the community, but the end result has been extremely favourable to bio-diversity conservation objectives. As the end-product of an elaborate procedure of community consultation, a forest management and land-use plan has emerged, which earmarks only 8,613 hectares out of a total forest area of 21,895 hectares (39.33 per cent) for forest production. Even out of this, more than half (4,475 hectares) are earmarked for use as a source of domestic firewood and house-construction materials. On the other hand, a total of 13,037 hectares (59.54 per cent) has been earmarked for protection. It would be clear that this is a highly enlightened plan, aiming at a high degree of protection.

The subsequent steps for preparation and operationalisation of forest management plans were as follows:

1. The first stage, from 1987-91, was one of overall appraisal and strategic inventory gathering. For accomplishing this task, the NGO, ERA, mainly trained young people from the community with high school degrees for this work, to collect critical social and economic information and to prepare a forest and socio-economic inventory.
2. The second stage, with some degree of overlap, from 1991-93, was one of negotiation with principal stake-holders of the community, such as agriculturists, landless workers, forest workers, people engaged in mining etc. The NGO and the technical directorate of the union held a series of rural communal participatory workshops with stake-holders in the four communities.

This elaborate process of systematic community consultation led to a broad consensus regarding land-use of the community, into the following broad categories:

- (i) Forest production area, further subdivided into
 - (a) domestic use area for firewood and house construction; and
 - (b) commercial use area for timber extraction.
 - (ii) Forest protection area, for
 - (a) watershed and protection of natural fountainheads;
 - (b) wildlife;
 - (c) recreation,
 - (d) untouched areas for bio-diversity conservation
 - (iii) Restoration area for areas that are
 - (a) over exploited;
 - (b) affected by fires; and
 - (c) affected by pests
 - (iv) Areas for agriculture and grazing.
3. The third step was to develop a consensus on the policies to be followed for each of these zones. Here again, the technical directorate with inputs from the NGO gave technical information, and a range of options with implications to the community, and reached a consensus about policies.
 4. The last stage of the strategy is to operationalise these policy decisions. At this stage, the involvement of the community is less intense, and the NGO, professionals and community leaders play a more active role. But even here, the effort of the NGO is to build the

capacity of community leaders for eventual independent decision making in consultation with the community.

At the apex of the UZACHI is the assembly of the four communities. The heads of all families, whether with or without land rights, are members of each assembly. In this way, the assembly is much more representative than that of the *ejidos* of non-indigenous land communities, which as we have seen in the context of the first case study, excluded those without land rights. However, it remains unrepresentative of women, unless they head the households.

Each Assembly controls its designated forest area, and runs a saw mill. A Council of Administration oversees the running of the communal enterprises. Each assembly elects four members to the assembly of delegates of the union. From among the assembly of delegates is democratically elected an Honorary Council of Administration, for management of land, forests and general administration, and an Honorary Council of Vigilance, again to ensure no corruption. Working under these is the technical directorate, with paid employees.

The UZACHI is strikingly successful on a wide variety of yardsticks as an effort of community based forest management. We have seen that even though the area under its control has not legally been declared a protected area, the community has itself chosen to earmark a significant part of its forests (almost 60 per cent) for protection, and enforcement is outstanding because it is the result of a genuine community consensus. The union was able to build an elaborate structure for on-going forest management, comprising honorary community leaders and delegates on the one hand, and paid technical hands on the other. The former successfully built on the pre-Hispanic Indian tradition of life-long obligations for volunteer service, and the latter on systematic and highly successful capacity building by the NGO. Both these wings of the union structure are performing their duties with high professionalism and self-confidence, and increasing autonomy from the NGO.

Although the paramount motor for the community efforts was not doubt to ensure revenues and livelihoods from the forests, the decisions of the UZACHI in the short period since they have assumed control of their forests have been extremely responsible and professional. The volume of timber to be harvested every year is discussed in the assemblies, along with the community organizations and specific responsibilities for control of fires and surveillance of the forests. This is more intensive and effective than the system of protection in government forests in Mexico today.

The only major limitation on the sustainability of this effort is funding. Government withdrew in the 1980s in favour of control of community forests

by communities, but although more recently it has provided moral support and legal backing to community action, it has not provided funds. This carries the danger for enhancing pressures for extractive use of forest wealth. There are also dangers inherent in leaving local communities to their own devices, to seek out funds, especially in the present globalised economy. Local communities are negotiating with powerful multi-national companies, with inherent dangers of the latter establishing afresh their hegemony over the natural resources of poor communities once again, but this time from the back door.

LESSONS FROM THE MEXICAN EXPERIENCE

Mexico and India share in the enormous diversity of their ecological zones, in the richness of their mega bio-diversity wealth, and in their cultural wealth of indigenous tribal populations. However, they have vastly different political and economic systems. India, since its Independence, has sustained a parliamentary democratic political system, and until recently pursued a proud policy of economic self-reliance (or what its critics would describe as a policy of over-protection of national industries in a socialistic, planned economy). By contrast, Mexico, since the Revolution, has mostly been led by military regimes, and has opened its economy after the Second World War to large multinational companies, particularly of North America, which operate with few restraints and regulations. In the context of forests, in India most forests are owned by the state, whereas in Mexico, peasant communities own around 70 per cent of the forests. Even so, there are important lessons that India can learn from the recent Mexican experience of community-based forest management.

The first, and most significant lesson from the Mexican experience is that rural peasant communities *can* take the lead in highly professional and responsible forest management, and through genuine community consultation and consensus, earmark and enforce significant forest regions for high degrees of protection. It is instructive to contrast the two specific experiences from Mexico included in this paper. In the first case, the University of Manantlan, without extensive community consultation, prepared a technically sound plan and secured legal sanction for the establishment of the biosphere reserve. Even so, in the absence of active community involvement, the quality of actual preservation of the core area is still not satisfactory. By contrast, the forest areas of the UZACHI have still not been declared under law to be protected areas. However, despite this, because the movement for protection was initiated by the community, and the land-use and forest management plans were prepared with a high degree of community consultation, the degrees of both proposed and actual

protection are significantly higher than in the statutory biosphere reserve.

The second important lesson from the UZACHI experience is that even for indigenous communities with strong traditional cultural bonds with the natural environment, the major motor energising the community to establish control over and manage its forests, is the desire to preserve the potential of the forests for profits and livelihoods. In other words, except in rare circumstances, it is unlikely to expect rural communities, even indigenous communities, to be impelled to preserve the bio-diversity of which they are immediate custodians, only for the sake of promoting goals of conservation. They are much more likely to be motivated by goals of sustainable extraction.

However, this is not necessarily inimical to the achievement of conservation goals. As we have seen, informed and enlightened self-interest, with no legal or state imperatives whatsoever, still led the communities to set aside as much as 59.54 per cent of their forests for complete protection, except non-extractive, non-consumptive uses. Therefore, our conclusion is that left to themselves, if rural communities perceive forests as potential sources of sustainable livelihoods and revenues for themselves, and if they are assisted in seeing that this can be achieved sustainably only with significant degrees of protection, sustainable use goals are compatible also with high degrees of community protection of their bio-diversity.

The third important lesson from the study of the Mexican experience has been with regard to the role of the external agent. Again, in the first case of the Sierra de Manantlan Biosphere Reserve, leadership was provided by an activist university which played a role similar to that of an NGO, to establish conservation goals, to work with government to establish the legal and administrative mechanism to enforce these conservation goals, and to educate the community and win its support for these conservation objectives. By contrast, the UZACHI achieved far greater success because the initiative for the ecological movement arose genuinely and *suo-moto* from the community, and the NGO, ERA, was invited in later as a partner and technical consultant.

However, the fact that in case of the UZACHI the NGO did not play a leadership role, does not mean that its contribution was not critical. On the contrary, the replicability of the UZACHI experience is limited because there are not many NGOs that combine the high degree of technical professionalism with the conscious detachment achieved by ERA.

The greatest success of ERA, which is a model for all external agents seeking to facilitate rural community management of bio-diversity and in fact all other kinds of community empowerment work, is that it so effectively provided its critical inputs of technical information and choices, but without creating dependencies. Instead, from the first stage of preparing the forest

and socio-economic inventories, through the subsequent stages of negotiations with stake-holders and preparation of the land-use plans, it worked through local persons, often high-school educated men and women, whose capacities they systematically built in the course of these activities. As a result, in just a decade of this collaboration, both the community leaders and technical personnel are handling their responsibilities autonomously with high professionalism and self-confidence, and the NGO is in an advanced stage of withdrawal from its supportive work in the community.

The last major lesson from the Mexican experience relates to the role of the state in enabling, and facilitating, community management of bio-diversity. We have observed that in Mexico, after the Second World War, the state had a highly controlled, and highly corrupt system of controls over forests. Through this system it awarded concessions for clear felling to national and foreign lumber companies, even of forests owned not by the state but by peasant communities. Peasant movements to regain control of their devastated forests in the 1980s, led to a complete reversal of these policies, in which the state withdrew almost completely from the sector. It was a swing from a tight but corrupt system of controls to one of almost complete decentralisation.

This withdrawal of the state from the forestry sector meant that local peasant communities were left to their own devices entirely to manage their forests, which constitute 70 per cent of the country's forest wealth. Local communities had to take their own initiative and find their own resources, to engage technical consultants to prepare their forest management plans, to run their forest production units, and to negotiate the globalised markets for their products. There were some communities, like the UZACHI, which were conscious, proud, capable of establishing strategic links with NGOs and universities, and handling world markets, while maintaining their own world-view. But there are a large number of counter-examples where communities lacked both these competencies and strategic support from external agents, and because of the passivity of the state, the danger is a very real one that powerful corrupt national and foreign interests can again seize control over the community-owned bio-diversity of poor peasant communities of Mexico, albeit through the back door. Thus, neo-liberal policies have two faces, one of which facilitates decentralisation and community control, another which creates an enabling environment for re-entry and effective control by powerful globalised industry.

The most thorny related question that remains is the issue of what kind of state is most conducive to the development of community initiatives. If one is to generalise from the Mexican experience, the levels of community initiative for protection of bio-diversity among some indigenous communities

of Mexico, largely unmatched in its scale, vigour, technical proficiency and autonomy in the Indian experience, arose initially in the context of highly centralised and corrupt military government. The ecological community movement in Mexico was consolidated in a situation inspired by neo-liberal economic philosophies, a situation of almost complete withdrawal of the state from the forestry and rural development sectors. In India, both situations are not found, either of centralised non-democratic political regimes, or of laissez-faire in the sectors of ecology and rural development, nor do we believe that they are desirable. The difficult question, however, that can only be answered with far greater empirical research and socio-historical evidence, is whether a paternalistic welfare state but one with a weak and corrupt delivery system as prevails in rural India, actually inhibits proud, conscious, autonomous, self-reliant and technically sophisticated action by local communities, both for the protection of their threatened bio-diversity, as well as for solution of their problems of livelihood, survival and justice.

In Mexico, the best thing that the government did to enable community control over forests, seems to have been to withdraw, or what may be described as its *de facto* policy of complete decentralisation and deregulation. This has resulted in the last decade and a half in Mexico in what some experts describe as the biggest experiment with community-based forestry in the world (Bray 1995). It has been estimated that over 2,000 rural communities principally on the central and southern portions of Mexico are involved in some kind of environmentally motivated action (Toledo 1998).

The virtual disappearance of the state from the sector of bio-diversity conservation in Mexico, is possibly at least in part the result of neo-liberal economic policies that are holding sway worldwide. Even though this had the unintended effect of unleashing such major community initiatives, it is our conviction that the state can and must play a role in bio-diversity conservation, not of the corrupt controls and collaboration with the lumber industry of the past, but an active role in leveling the playing field for local communities, supporting them with funds, with technical inputs, and in striking strategic links with NGOs and universities, in negotiating globalised markets, and with legislation.

In summary, then, we are arguing that decentralisation is desirable because it releases bio-diversity from the stranglehold of corrupt, unaccountable, centralized controls. But decentralisation must not be interpreted to mean the abdication of state responsibility for bio-diversity conservation, or for that matter for livelihoods of the poor. The state remains responsible to actively and creatively support decentralized community forest control and management. Thus decentralisation should be carefully nuanced, not to legitimise the withdrawal of the state from its responsibility for bio-

diversity conservation, but to alter its role from one of over arching control to one that genuinely facilitates and supports decentralised community action.

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CASE STUDY 29

COMMUNITIES ACTING FOR CONSERVATION: PARTICIPATORY MANAGEMENT OF COASTAL RESOURCES IN SOUTHERN THAILAND

By

*Sejal Worah[†], Edward Tupacz[‡], Suvimol Piriyatanalai[‡]
and Tanu Nabnien[‡]*

SUMMARY

This case study is based on a number of conservation and development initiatives being carried out through a network of Small Scale Fishermens' Clubs and a network of NGOs in southern Thailand. The study highlights issues related to participation in biodiversity conservation, the linkages between traditional livelihoods and conservation, the role of different partners and institutions in initiating and sustaining conservation and the importance of addressing policy for achieving long-term change.

The study is based on work being carried out by communities and NGOs in Pattani and Phang Nga Districts. It first describes how the initiative got started and how it evolved. Some of the conservation activities being carried out by the community groups and NGOs are also briefly introduced. The role of NGOs in supporting and facilitating these activities is discussed. Some of the key factors for the success of the initiative are synthesised and lessons that can be transferred to other similar initiatives are highlighted. Finally, the paper highlights some constraints and limitations that might be faced in applying this strategy to different situations. The conclusion briefly discusses the importance of this approach in "mainstreaming" biodiversity conservation.

[†]World Wide Fund For Nature, ICDP Training Programme, Asian Institute of Technology, P.O. Box 4, Khlong Luang 12120, Thailand

[‡]Wildlife Fund Thailand, Coastal Resources Conservation Programme, 251/88-90 Phaholyothin Rd, Bangkok, Bangkok 10220, Thailand

INTRODUCTION

This case study attempts to highlight participatory approaches to coastal resource conservation in Thailand. While many of the conditions that have contributed to the success of the initiatives are specific to the country and the site, we feel that there are lessons to be learnt from it which could be of great use in designing participatory conservation strategies in India.

This particular case was selected because we feel that it is 'unique' and important in several ways: it focuses on coastal/marine resource conservation, which generally tends to get less attention than terrestrial/forest resource conservation; it was initiated primarily by the communities rather than by external agents; it clearly demonstrates the linkages between local livelihoods and sustainable resource use; it demonstrates roles of different stakeholders working in partnership towards the same goals; it has a strong focus on participatory research and monitoring; it has had a significant impact on local and provincial level policies; and, it highlights how communities can take control of conservation when government agencies and legislation fail to do so.

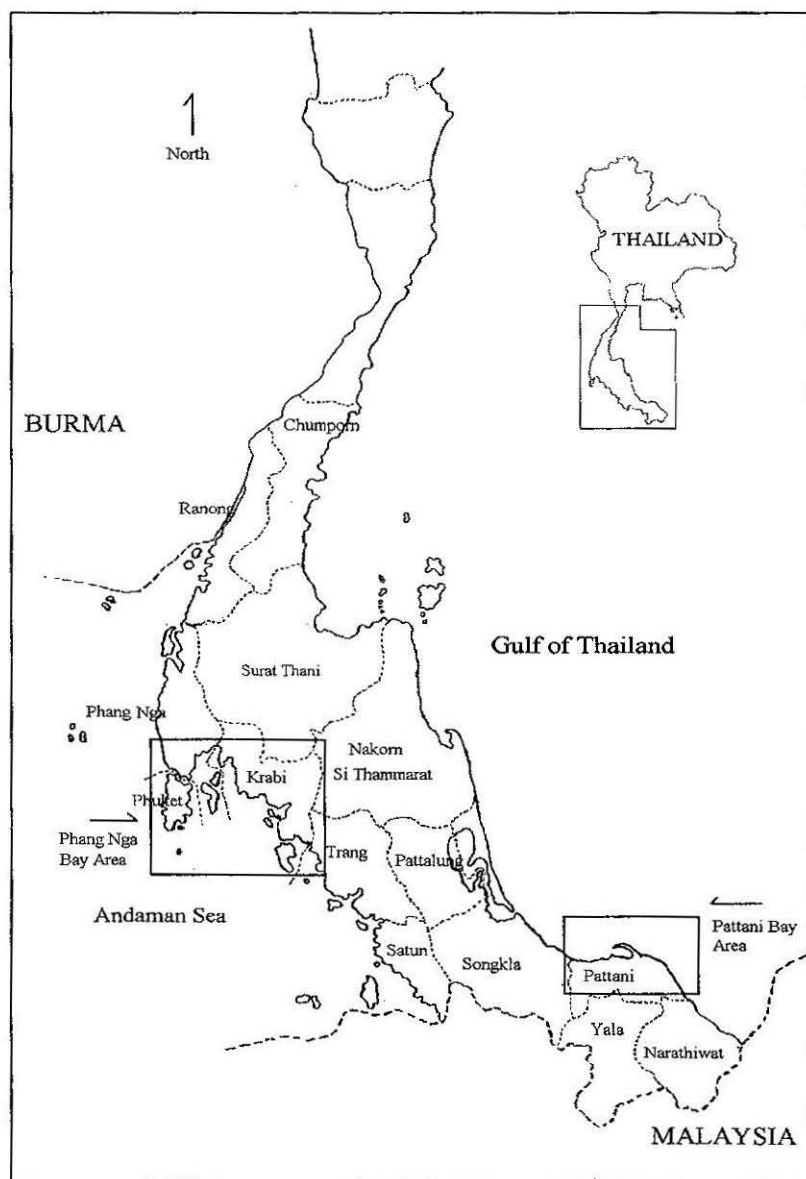
Sources of information that contributed to this paper included reports (in English) written by local NGOs as well as research/monitoring data (in Thai) collected by the communities. Extensive discussions were held with the staff of various NGOs involved in this initiative as well as with local community groups and leaders during site visits.

BACKGROUND

Location

While many of the initiatives described in this paper are taking place all over southern Thailand, this report focuses primarily on the provinces of Pattani and Phang Nga.

Pattani: Pattani Province is located on the eastern coast of southern Thailand in the Gulf of Thailand and covers an area of 1,940 sq. km. It consists of three main zones: the *coastal zone* to the north and the east of the province, which is made up of white sand beaches along the coastline; the *flat plain zone* to the center and the south of the provinces which comprises most of the area of the province and is composed of fertile agricultural land; and, the *mountain zone* in the extreme south of the province and is part of the Sangalakiri mountain range. The area that is of significance for this report is the coastline, which is 116 km in length. In particular, the report focuses on the bay that lies along this zone, Pattani Bay, covering a water surface area of 53 sq. km.



Phang Nga: Phang Nga province is located on the western part of southern Thailand on the Andaman Coast. The Andaman Coast can be divided into three geographical areas: the *upper Andaman coast*, where the coastline quickly drops off to deeper waters at the continental shelf and has many small shallow bays between the coastline and deeper waters; the *middle Andaman coast* or the Phang Nga Bay area which is made up of mangrove forests, sea grass beds and coral reefs; and, the *lower Andaman coast* which has the longest coastline of the three areas and covers two of the southern provinces of Thailand as well as many large islands. The focus area for this report is the Phang Nga Bay area, which also includes Phang Nga Marine National Park.

Conservation Values

Both Pattani and Phang Nga have high biodiversity values. Pattani Bay is located in an estuary zone that forms an important national and regional wetland. The fertility in this estuary is known to be higher than that of other areas in the Gulf of Thailand partly because of the major rivers that flow into the Bay, bringing in a constant supply of nutrients. This makes Pattani Bay an important breeding and feeding ground for a large number of marine species. Studies have shown that the biological richness in Pattani Bay is very high and that it contains some of the best remaining mangrove forests on the eastern coast of Thailand. Currently, this area does not have any *legal* conservation status.

The Phang Nga Bay area is one of the most important areas in the country in terms of coastal biodiversity. Coral reefs, sea grass beds and mangrove forests provide important habitats for a great diversity of marine, coastal and terrestrial species. In addition, the area is also an important habitat for the endangered dugong as well as a nesting site for at least three species of marine turtles (leatherback, olive ridley and green).

Social Setting

Fishing and farming are the main livelihoods of the people living in Pattani and Phang Nga. This report focuses on the small-scale fisherfolk living in the coastal areas of these districts. The fisherfolk, nearly all of whom are Muslim, are ancestors of those who moved up from the areas which are now part of Malaysia nearly 200 years ago.

Due to their migration routes and form of livelihood, most of the communities are located on the coast in bays, at the mouths of rivers, along rivers, or on the islands which are not far from their fishing grounds (normally not more than 2 hours travel by boat). Houses are built in clusters because of limited land availability and the need for mutual assistance. Until

recently, the fisherfolk paid little attention to land ownership and most of them are thus lacking title deeds.

The small-scale fisherfolk work all the year round for up to 24 days each month, although there are three periods when they do not go out to sea or can catch only small amounts. They largely fish close to the shore. Their fishing equipment is simple, based on traditional methods of fishing and non-destructive in nature and includes fish gill nets, shrimp trammel nets, crab bottom gill nets, cast nets, hooks and bamboo traps. Some fishermen still use small boats with no engine, manned by one person. Most boats are now equipped with a 'long-tailed' engine (1-7 hp) which allows them to go further from the shore often and need one assistant. Those without a boat make their catch from the shore or from fishing in the mangrove forests.

The lives of the small-scale fisherfolk depend solely on the sea and its resources. This way of living is hard and risky and most fishermen must use their earnings immediately. They thus have few or no savings. In the past, due to their religious beliefs and culture they led simple lifestyles highly dependent on nature. This is still true to a large extent and their kinship ties are still very strong.

CONSERVATION AND DEVELOPMENT ISSUES AND PROBLEMS

Many of the conservation and development problems in both Pattani and Phang Nga are similar. A key problem is the over exploitation of coastal and marine resources. This has a negative impact on both biodiversity as well as the livelihoods of the small-scale fishermen. Other problems include increasing urbanisation and industrialisation, impacts of tourism, expansion of shrimp farming and destruction of mangrove areas. The main issue discussed in this paper is the first one, i.e. the loss of biodiversity and livelihoods through destructive fishing practices.

Unlike land based resources, coastal and marine resources are considered common property resources which can be used by all people as long as they are not exploited unsustainably. Until recently, this system worked quite effectively and both Pattani and Phang Nga Bays were rich in marine resources. However, with decreasing fish catches elsewhere, more and more people from other provinces are moving into these areas. Along with this increasing pressure, the introduction and uncontrolled use of modern fishing technologies has also changed the situation. Marine and coastal resources are now considered "open access" resources, resulting in the degradation and destruction of marine species and their habitats.

One of the biggest threats to both biodiversity and livelihoods in the region is the increasing numbers and size of mechanised boats using push

nets and trawl nets, along with the increasing encroachment of these vessels into the restricted 3000m zone. Even more than 50 years ago, it was apparent that these techniques were extremely harmful for future regeneration of marine species. The Fisheries Act of 1947 declared the use of mechanised push nets and trawl nets within 3000m of the shoreline as illegal.

The traditional fishing methods used by the small-scale fisherfolk are highly selective in the species caught and generally do not have any long-term negative impacts on marine resources. In contrast, push nets and trawl nets tend to 'scoop up' all fauna, regardless of species or size. This is an extremely wasteful form of resource exploitation as up to 60% of the species caught may be non-target species and are generally sold cheaply as "trash" or by-catch. In addition, this method of fishing tends to catch both mature and immature animals, which affects future regeneration as well as livelihoods since prices for smaller animals are lower than those for mature ones. One study showed that up to 40% of the catch from push nets and trawl nets consists of juvenile fish.

Push netting becomes even more ecologically and economically destructive when it is illegally carried out within the 3000m zone. Here, the fishing equipment devastates breeding and feeding grounds of marine species by destroying coral reefs, sea grass beds and other habitats. With increasing competition and decreasing catches on the high seas, more and more trawlers equipped with push nets and trawl nets are encroaching into the ecologically fragile 3000m zone, with very serious impacts on the ecosystems and biodiversity of these areas.

The people who bear the brunt of the destruction of coastal ecosystems are the small-scale fishermen who fish close to the coastline using traditional fishing gear. Over the last 15 years, these fisherfolk have seen the increasing encroachment of push netters into their fishing areas totally destroy their once plentiful source of livelihood. In addition, the trawlers carrying the pushnets, which are much larger than the traditional fishing boats, often destroy the standing nets of the small-scale fishermen.

This loss of biodiversity and therefore of their livelihood has had many negative socio-economic impacts on the small-scale fishermen. These include increasing indebtedness and a high level of unemployment. Drug abuse, especially among the youth is also increasing. Many fishermen have migrated to neighbouring countries to work as illegal labour on rubber plantations or fishing boats. A more serious consequence is that some small-scale fishermen have started taking loans to buy their own push nets and trawl nets as they feel this is their only way to make a living any more.

Government legislation and enforcement have been largely ineffective in controlling this problem. A recent study found that although the

government had a register of boats with push nets, the actual number of such boats (registered and unregistered) was at least four times as high. Although there are supposed to be fines imposed for encroaching into the 3000m zone with a push net, these are rarely enforced. Patrolling is almost non-existent and most push netters operate with impunity within the 3000m zone without fear of being arrested. This has led to some very serious conflicts between the traditional fishermen and the push netters.

COMMUNITY ACTION

This section gives a brief description of the action taken by communities in partnership with NGOs and other external agencies to address the problems of destructive fishing and the loss of coastal and marine biodiversity.

Initiation

Over the last few years both the small-scale fisherfolk communities and local NGOs had been getting increasingly concerned about the situation and government apathy towards it. Somewhat independently, both groups decided that something needed to be done to address the loss of biodiversity as well as the increasing poverty in the area. While the initiatives emerged separately and had differing aims to begin with, they soon converged to develop into an exciting and innovative initiative for community based conservation and management of coastal resources.

About five years ago, local village groups of small scale fishermen started meeting to discuss the issue of destructive fishing and the impacts of this on their livelihoods. A year later, with the help of local NGOs, 100 village representatives from eight southern provinces held a meeting to further discuss these issues. During this meeting, they discovered that they had many issues in common. They decided to form the Federation of Small Scale Fishermen to address these in a coordinated fashion.

Following this, the small-scale fishermen held regular meetings in each of the provinces over the next couple of years. During this time, the organisational structure of the Federation was set up, problems and opportunities related to resources and livelihoods were discussed, and strategies were developed and implemented. Local NGOs played a key supporting role through these stages both by helping to finance the many meetings and by acting as facilitators during the meetings.

However, this role of the NGOs evolved over the course of time. Initially, the NGOs started their activities in the area with a series of *ad hoc* activities focused around awareness raising on conservation issues. These included developing information materials on marine ecosystems and popular campaigns focused on single species like turtles and dugongs. The

different NGOs rarely coordinated with each other in the planning and implementation of these activities, most of which lacked continuity or follow up.

At about the same time that the small-scale fishermen were starting to organise themselves, the NGOs also started networking with each other better. They realised that the key to long term conservation of coastal resources in the area was to empower the small-scale fishermen to manage these resources themselves. The NGOs also developed links with local research institutions and sympathetic government officials. Together, these groups have provided an important and invaluable support to the small-scale fishermen's groups through funding, research, networking, capacity building, coordination and facilitation.

Organisation

Currently, the Small Scale Fishermen's Network and a loose coalition of NGOs (and donors) are working together for coastal resource conservation and management in southern Thailand. A major donor for the activities of the network as well as some of the NGOs is DANCED (Danish Cooperation for Environment and Development). A number of other national and international donors also fund the various NGOs. The organisation of the community groups is as shown in the table below (this can vary from site to site, but the general structure is more or less similar):

At present there are about eight different (local and national) NGOs working with the Network in southern Thailand on conservation and development issues. While most of the NGOs have different sources of funding and their own individual "projects", they all work within the framework of a common vision. Their work is divided up not so much by different ideologies and strategies but by geography. Different NGOs generally work in specific areas and each province has at least one NGO working in it. Some, like the Andaman Project and Wildlife Fund Thailand work in more than one province. In such cases, staff of different NGOs often work together on each others' "projects". The NGOs meet regularly once a year when they discuss problems, opportunities and strategies while reaffirming common objectives.

Objectives

For a complex initiative such as this one, which involves both internal and external organisations at various levels, it is difficult to describe a specific set of objectives as these may vary from organisation to organisation. However, since many of the activities described below are actually implemented at the sub-district or district level, it might be useful to describe

| Organisation | Level | Decision-making Structure | Frequency of Meetings | Activities |
|---------------------------------|----------------------------------|--|-----------------------|--|
| Fishermens' Clubs | Village, Sub-district & District | Elected Chairman, vice-Chairmen and Committee made up of representatives from each village | Daily or Weekly | Relatively localised, covering one or more villages eg. patrols, community forests, conservation areas, etc. |
| Fishermens' Associations | Provincial | Elected representatives from each District level Club | Monthly | More 'strategic' eg. lobbying at provincial government level, etc. |
| Small Scale Fishermens' Network | Regional (Southern Thailand) | Elected representatives from within provincial representatives | Quarterly | Coordination (eg. with donors & other community organisations), administration (funds allocation, etc.) and lobbying at national level |

the objectives of a "typical" District level organisation to gain a better idea of what these organisations are aiming to do.

The objectives of the Small-Scale Fishermens' Club of Nong Jik District, Pattani Province (made up of six villages) are:

- To eliminate illegal fishing and the use of destructive fishing gear within the 3000m coastal boundary
- To rehabilitate and conserve coastal and marine resources
- To coordinate the union of small scale fishermen in Nong Jik District
- To collaborate with external organisations, both government and non-government to resolve problems

Activities and Results

This description of some of the key activities undertaken by the Network (through the Fishermens' Clubs at different levels) and the NGOs is mainly based on the two sites described earlier, Pattani and Phang Nga. The activities are linked to a range of objectives, many of which are similar to those described above. While the activities have been "isolated" for the purpose of this paper in order to provide a "flavour" of the kind of work being undertaken by the community groups and the NGOs, they should not be seen as such. All of them have emerged through a long process of consultation, negotiation and analysis carried out jointly amongst the different partners.

Most activities are planned and implemented by the communities, with NGOs playing a supporting role in some and no role in others. For some 'cross-cutting' activities such as training/capacity building, networking, research, surveys, monitoring, and policy linkages NGOs might play a more active role. These activities and roles are discussed in section 5. The activities described below are not exhaustive and are specifically focused on conservation issues.

Boundary demarcation

Since the encroachment of trawlers with destructive fishing gear into the 3000m restricted zone was one of the biggest problems, communities in Pattani decided to demarcate this boundary physically as a first step towards controlling the encroachment. The villagers used traditional materials such as bamboo and palm fronds to demarcate this boundary. After they had demarcated 3 km of the boundary, they invited provincial and district level government authorities to see their work and discuss the issues of illegal encroachment. The government authorities were impressed by the initiatives undertaken by the villagers and took on the job of boundary demarcation

themselves. Currently, 116 km of boundary along the coastline has been demarcated.

In Phang Nga, the small-scale fishermen have been waging an ongoing campaign to get the boundaries of the Conservation Area around the Phang Nga Marine National Park extended. The original boundaries of this Conservation Area (where only small-scale, sustainable and non-destructive fishing practices are allowed) were modified to exclude almost half the area because of pressure from trawler operators. The Fishermens' Clubs are now pressurising the Fisheries Department and the Royal Forest Department to re-instate the original boundaries of the Conservation Area and exclude trawlers from this zone.

At the macro level, the small-scale fishermen's groups are pushing for better implementation of the 3000m legislation as well as lobbying for a policy change to increase the restricted fishing boundary from the existing 3000m to 5600m.

Traditional artificial reefs

In Pattani, after the boundary had been demarcated, the fishermen observed that shoals of fish had started moving towards this boundary. This was discussed during village meetings and the villagers concluded that the materials used for the boundary were providing "safe areas" for fish. On further discussion with elders in the community it emerged that the boundary was mimicking a method of developing artificial reefs (*sung*) that had been practised earlier but had been long forgotten.

After a series of discussions, the fishermen decided to revive this traditional method and to place these *sung* along the newly demarcated boundary in order to rehabilitate marine resources. Each *sung* consists of a bamboo pole with coconut palm fronds tied to it. Sacks filled with sand are used as weights. Once placed in the sea, the sacks get embedded into the bottom and the fronds spread out to provide a refuge for marine fauna. The ends of the bamboo stems emerge out of the water, showing their location. Strict regulations are implemented on fishing near these sites (with only line fishing being allowed within a certain radius).

Immediately after the placement of a number of such traditional artificial reefs, the fishermen initiated a study to determine the impact of these reefs on marine resources. There was a steady upward trend in the amount of catch (using different species of shrimp and crab as indicators) from the first month after the placement of the reefs. However, the fishermen realised that they could not prove that this was because of the reefs and the control and management of the area as they had not collected baseline data before

placing the reefs. They therefore collected official fishing records of the previous three years (based on the market records) to verify this.

Based on the study, it became apparent that the placement of the reefs was an important conservation strategy. Not only did they lead to a direct increase in the quantity and diversity of marine resources, but they also made it easier to control the infringement of the boundary by illegal vessels. It also showed that given adequate protection, coastal and marine resources have a remarkable rate of recovery that allows for long term sustainable harvesting. Many species such as bottle nosed dolphins, black fin sharks, sting rays and sea turtles that had not been seen in the area for over 30 years were now starting to return.

Once again, the communities invited government officials including the provincial Governor to examine their work and discuss implications. In particular, the villagers shared the results of a study they had undertaken comparing the traditional artificial reefs developed by them with the steel and concrete reefs being erected by the Fisheries Department. The fishermen felt that the concrete reefs were expensive to construct and not maintained because of lack of ownership. Their location was often inappropriate because fishermen were not consulted before they were put in place. They also often destroyed the gear of traditional fishermen because their locations were not marked. Impressed with the work of the communities, the government agreed to collaborate and even fund the traditional artificial reef programme.

Patrolling

In both Pattani and Phang Nga, local communities have all but taken over the role of the government in trying to ensure compliance with legislation which limits fishing within the 3000m boundary from the coast. Community members take turns to carry out patrols at night, using their own boats and their own fuel. Most village and district level Fishermens' Clubs donate to a Petrol Fund that helps purchase fuel for the patrols. In some cases, communities have set up co-operative stores where part of the profits go towards purchase of fuel for patrols and the repair of boats damaged by trawlers during patrolling.

Patrolling has always been a difficult activity not only because of the time and resources involved but because the illegal encroachers are often armed. In 1997, a fisherman from Phang Nga was shot and killed while patrolling by a trawler that was illegally operating within the 3000m boundary. Such armed conflicts are not unusual and the small-scale fishermen are usually the losers. In addition, enforcement was difficult because the fishermen did not have any legal authority to arrest encroachers and official

complaints against them usually had little effect.

This situation is slowly changing as the awareness of the local government increases and the scale of the problem becomes more apparent. A formal request made to the provincial office to supply an enforcement task force of 10 persons and a boat to assist with law enforcement was agreed to. Now the villagers in Pattani are usually accompanied by an armed government official (from the police or marine police) while patrolling at night. Further work towards formalising this system of "participatory patrols" is under way and it is likely that implementation of this activity will be funded almost entirely by the Ministry of Agriculture and Cooperatives.

Conservation Areas

In both Pattani and Phang Nga, local communities are setting aside and managing areas of high diversity and strategic importance such as mangrove forests, sea grass beds and coral reefs as "Community Conservation Areas." The selection and management of these areas depends on a number of factors, such as status, threats, conservation & economic values. Sometimes an area under direct threat from cyanide fishing or push netting might be declared a Conservation Area. In other cases, community forest areas threatened by development pressures might be selected. Degraded areas left over from previous (badly managed) logging concessions also might be targeted for rehabilitation and management. Or areas of conservation and potential economic importance such as coral reefs and sea grass beds are set up as Conservation Areas within which no use of resources is allowed.

Villagers discuss these issues and agree on areas to be set aside as Conservation Areas. They also discuss, record, publicise and implement regulations for these areas, depending on the management objective (ranging from no utilisation to limited use to replanting). Once the areas have been selected, communities liaise with various government departments such as the Land Department, Forestry and Fisheries Departments to obtain official recognition for these areas. Often, they will invite a high-ranking government official to declare the Conservation Areas. Through these measures, most of the Conservation Areas have gained some level of official recognition and support but as yet there is no *legal* framework that supports the initiatives. Despite this, Community Conservation Areas are continuing to increase in number as more and more communities develop this management option.

Marine Turtle Conservation

Three species of marine turtles (leatherback, green and olive ridley), all endangered, nest on the beaches of Phang Nga. Turtle eggs fetch a high

value in the market and it is common practice for nests to be dug up and the eggs sold for up to 30-50 baht each. Although one of the major turtle nesting beaches in the area, Sirinath National Park, is legally protected, poor enforcement means that turtles nesting here are still vulnerable to external threats.

With the assistance of local NGOs, villagers from Mai Khao have started a unique "buy-back" scheme to help conserve marine turtles. Whenever they discover a turtle nest that has been dug up by someone, they first try to persuade the offender to put the eggs back or "donate" them to the village Club. Failing that, they use community funds to buy up all or a proportion of the eggs from the person who discovered the nest (at rates that are slightly lower than the market rates but are still competitive). The eggs are then incubated by the villagers and the hatchlings released into the sea as soon as they are born.

This initiative was first promoted by NGOs several years ago but died out after a promising start for a number of reasons. Last year, the villagers themselves revived it and have now made it a key activity of the village Fishermens' Club. The factors that led to the activity being initiated again are probably linked to: an increased awareness about conservation on the part of the villagers; a few motivated and dynamic village members who have been promoting it; and finally, the profile and publicity generated for the village and the Club because of it. The villagers' conservation work has already appeared in the local media (newspapers, radio and TV) and is now being picked up by the national media. On 13 April 1998, a number of turtle hatchlings "rescued" by the villagers will be released into the ocean at a ceremony attended by the Governor of Phuket Province.

Since the survival rate of hatchlings released into the sea after artificial incubation is uncertain, villagers are now working towards more effective patrolling of the beaches and protecting the nests until the turtles hatch naturally. They also intend to raise awareness on the initiative among other villages and particularly within school children. They hope to be able to co-operate more effectively with local schools to help with patrolling and protection of the turtle nests.

Overall Impacts

The activities briefly described above have had a number of wider impacts, some of which are discussed in more detail in following sections. In general, the increasing ability of communities to take collective action and achieve results has led to their growing empowerment and confidence in tackling larger issues. Their increased exposure and capacity has also enabled them to directly source funds for a number of initiatives both from government

departments and from external donors. There is increasing communication and collaboration between the communities and the government on a range of issues from joint patrolling to ongoing dialogue and open exchange of ideas and problems. The participatory survey, research and monitoring activities have helped develop a useful base on information for current and future decision-making.

In most cases, the pilot activities (combined with coordination, lobbying, and negotiation) have led to some level of policy reform, both at the micro and the macro levels. This policy influence has probably been the most important and effective impact of the initiative. Some of the policy changes that have occurred include: revoking of the policy to allow registration of new fishing vessels; inclusion of priorities related to conservation and development in the 8th 5-year plan of the national Government (such as eliminating push netting, banning mangrove clearing, rehabilitating ecosystems, and institutionalising participatory resource management); and allocation of local government budgets towards many activities initiated by the Fishermen's Clubs. In February 1998, a much awaited government decree was passed banning the operation of push nets in the whole of Pattani Province.

The socio-economic impact of the initiative has also been significant. Livelihoods and incomes from small-scale fishing have increased to such an extent that many people who had migrated out of the area are now returning. In just one village in Phang Nga, over 50% of the villagers are now debt free within the few years since the conservation activities were initiated. Social stability has also increased to a great extent.

Finally, in biodiversity conservation terms, the recovery of the coastal ecosystems as a result of the improved enforcement of regulations, increased awareness and local level conservation and management has been remarkable. Mangrove forests, sea grass beds and coral reefs that have been protected and managed by the communities are visibly improved and obviously more diverse. Species of both conservation and economic importance such as turtles, dugongs, dolphins, sharks, shrimps and crabs are increasing in number. And the number of people using destructive fishing gear continues to decrease steadily indicating that the results may be sustainable in the long term.

ROLE OF NGOS

As briefly discussed earlier, local and national NGOs have played a critical supporting role throughout this initiative. This role is recognised by both the NGOs themselves as well as the communities. While the initiation of activities, implementation, monitoring and evaluation is primarily undertaken

by the community groups, NGOs have helped create an environment which allows the communities to operate effectively. Some of the key functions and activities of the NGOs are described below.

Information sharing and external linkages

Communities recognise this as one of the most important functions of NGOs. Many community members are illiterate and even those who are not, are often too busy to keep track of external events and policies that might impact their lives. NGO staff, who regularly interact with local villagers and who are also well-connected externally, help to bridge this information gap. The timely sharing and joint analysis of information, whether it is a change in policy, funding opportunities, training workshops, meetings/seminars or activities undertaken by other groups helps communities and NGOs take effective action on these issues. NGOs have also helped community groups develop, expand and strengthen linkages with a range of other players including local universities, different government agencies, donor organisations and small-scale fishermens' groups both within and outside Thailand.

Capacity building

NGOs have played an important role in building capacity of community groups through coaching, training, learning by doing and reflection. This has helped villagers to more effectively undertake a range of activities including participatory action research, monitoring and evaluation, fundraising, and lobbying/advocacy. Through training and workshops, they have also helped strengthen communities' skills in problem analysis, project writing, small-scale business management, etc. NGOs have also helped organise study tours for villagers both within and outside Thailand to learn from the experiences of others facing similar problems. In February 1998, a group of villagers from Pattani visited fishing communities in Kerala, India who have long been involved in fighting for rights of small-scale fishermen. All this helps to strengthen the capacity of local organisations to campaign for policy reform and government support for their conservation and development activities.

Facilitation and negotiation

Another key role of NGOs has been in that of coordination, facilitation and negotiation. One of their main tasks is to continually bring different stakeholders together in various fora and facilitate a process to help them air, discuss, analyse and resolve problems and issues. This includes bringing

villagers from different areas together and bringing communities and governments together through meetings, seminars and workshops. This is an important strategy for the different interest groups to better understand each others' perspectives and come up with mutually acceptable solutions. It should be noted that the NGOs do not provide the solutions but rather help to create an environment that enables the key players to come up with these themselves. In cases of serious conflict or lack of trust, NGOs may play a more active mediation/negotiation role.

Awareness raising

NGOs have helped to raise awareness on conservation and development issues and linkages both 'internally' and 'externally'. Information campaigns aimed at different target groups (local and national media, school children, policy makers, local groups) have been effective in raising the profile of the conservation and development problems and issues in the region and getting the support of local level actors. Several documentaries on the struggle of the small-scale fishermen to conserve their dwindling resources have been produced and aired on national and television. This has also helped to garner support of other groups such as academics and the media.

Funding

Finally, NGOs obviously have an important function in funding many of the activities that enable the community groups to function and network effectively. A large proportion of the NGOs' funds are used for helping to organise meetings, trainings, research and publications. Communities now have the skills to tap funds from government departments and donors directly for major conservation and development work and most NGOs do not fund "hard" costs (such as equipment or infrastructure). It is interesting to note that community groups do not see availability of funding as a major benefit of working with NGOs - they value the other roles of the NGOs much more.

KEY FACTORS FOR SUCCESS

This section examines some of the key factors that have led to the "success" of this initiative. Some of these factors are related to the existing social and environmental setting while others are the result of actions taken by the communities or external partners.

Social Structure

One of the important factors for success has been social cohesion. Almost

all the small-scale fishermen are Muslims and are bound through ties of kinship even with geographically scattered communities. This religious and social homogeneity has made it easier for community groups to understand and work with each other with minimal conflicts. The strong and mutually supportive social structure has provided a foundation for enabling the network to function together rather than as a number of scattered initiatives with different objectives and strategies.

Quick Results

When questioned as to what keeps the communities working together against huge odds and powerful competing interests, one of the replies is "we can see positive impacts immediately". The resiliency and rapid recovery rate of marine ecosystems has played an important role in maintaining and strengthening community interest in conservation. After only a year of enforcing regulations and establishing Conservation Areas, the regeneration of ecosystems and resources was clearly visible. Communities could begin sustainable harvesting of these resources within a very short time and incomes began increasing within the first year of protection. This is obviously a great incentive for communities to continue and expand their conservation initiatives.

Conservation and Development Linkages

The direct link between biodiversity conservation and the existing livelihoods of small-scale fishermen is probably the single most important factor for the high level of community involvement (in fact, for communities taking the lead) in this initiative. Fishing is the only source of income for most of the small-scale fishermen. Therefore the loss of biodiversity through over fishing and destructive fishing by 'outsiders' has an immediate negative impact on their social and economic well-being. Again, this provides a strong incentive for them to act towards reversing this loss of biodiversity, maximising recovery and ensuring that resources are used sustainably in the long term.

Self-Mobilisation

The fact that the communities faced a common problem which was having a serious negative impact on their lives contributed towards the self-mobilisation process by which this initiative got started. External factors contributed but the ideas, objectives and activities were generated largely by the communities. This gave communities a strong sense of ownership over the process and outcomes and once again provided a strong incentive for them to want to succeed in their endeavours. It is also likely to contribute

a great deal to the long term sustainability of this initiative even in the absence of external support.

Scaling Up

Like many conservation initiatives, the origins of this one were small, scattered and localised. However, within a few years the movement has spread widely throughout southern Thailand. At the local level, enough communities are taking part to allow development of a "critical mass" that can be mobilised for creating change within existing systems. The fact that the small-scale fishermen have an informal network through their kinship ties has helped the spread of the initiative. In addition, the fact that most fishermen, even if not related to each other meet at sea at some time or the other and discuss these issues has also played a role. The NGOs who help document and disseminate information have also helped. However, most importantly, communities themselves have recognised the importance of strengthening their impact through scaling up and have actively worked towards this. Community members with communication and leadership skills take on the role of 'catalysts' and actively engage in the spreading the ideas and methods to new areas and new villages. One of the early objectives of the Small-Scale Fishermens' Network was to expand the activities to all 13 southern provinces of Thailand. This pro-active approach towards scaling up has been an important reason why these initiatives have moved from being 'pilot' projects to a wide spread programme covering 13 provinces. It has also been an important reason for the policy impacts created by the initiative.

Policy Linkages

Realising that mere protests, demonstrations and "pilot" activities cannot achieve long term results, both community groups and NGOs focused on campaigning for policy change through demonstrated results and "educating" policy makers. This was done in many different ways: inviting policy makers to observe results of pilot activities; documenting and disseminating results to policy makers; organising meetings with government departments to discuss issues and options (for example, Phang Nga Clubs meet with the provincial governor each month to air grievances and get feedback); lobbying for policy reform with the help of NGOs; working through community members represented in local government boards; using 'higher level' relationships (eg. those between heads of NGOs and MPs) to push for national/provincial legislation, etc. Most activities initiated at the local level also had some sort of policy link which was actively pursued. For example, demarcating the boundaries of the 3000m zone was linked to lobbying for

better enforcement, budgets and personnel for enforcement and expansion of the boundary to 5600m. Linkages were formed not only with the Fisheries Department but with a number of other government departments and agencies to ensure coordination.

Participatory Action Research and Monitoring

A key factor in being able to convince decision-makers about the validity of the activities and the reforms sought by the communities has been the availability of objective data to back these up. In collaboration with NGOs and local Universities, community groups have undertaken a range of baseline studies, action research projects and monitoring. Baseline data on number of pushnets, activities of the pushnetters, number of offenses, existing levels of marine resources, current socio-economic status of villagers, livelihoods and tenure, etc. have provided an invaluable basis for monitoring change. Monitoring of changes in marine resources is carried out regularly by the fishermen themselves and most of the Fishermens' Clubs have research teams who undertake these activities. NGOs and academics help the villagers to analyse and present the results of the research and monitoring. This is then used to lobby for policy reform, law enforcement, and funding. In addition to participatory research and monitoring, the communities also regularly evaluate the overall impacts of their activities and make adjustments as necessary.

Conflict Management

The approach of the Fishermens, Clubs and the NGOs to external conflicts and internal dissensions has essentially been one of non-confrontation. Because of the 'democratic' nature of the Clubs, with elected representatives, conflicts over leadership have been minimal. Similarly, internal dissensions within members of the Fishermens' Clubs are of low frequency and intensity as they have formed the Clubs because of common interests in the first place. Conflicts are more common at the village level between Club members and villagers who are not members (often village level political leaders). In such situations, a number of strategies are adopted: non-members are engaged in "other" activities to bring them into discussions; information (especially success stories) is shared and discussed widely within the village; credit is given to village leaders at all times and "loss of face" is avoided. When confronted with external vested interests and pressures, communities and NGOs use their "contacts" at higher levels to put "subtle" pressure on the outsiders; raise the profile of the issue by inviting dignitaries without vested interests to support initiatives; and use press and information

campaigns to highlight the problems. In general, by focusing on a non-confrontational approach, working from the 'outside' and letting the results speak for themselves, conflicts and pressures have been manageable.

LESSONS LEARNED

Five broad "lessons" emerging from this which can be built into other conservation initiatives (particularly those that have a focus on participatory approaches and coastal/marine conservation) are:

Build on the existing strengths and capacity of communities

The fact that external organisations did not enter the area by focusing on weaknesses, blaming communities for the degradation of biodiversity, or with predetermined solutions has played a key role in the overall success of the initiative. Instead, the focus was on building on the strengths of the communities: their existing networks; their social cohesion; their traditional knowledge; their local institutions; and, their common vision. This allowed communities to be in the "driving seat" giving them full ownership of the process and the results. In the long term, this will ensure that the initiatives and process will continue even if external agents withdraw. In fact, with their current level of skills and capacity, communities feel confident that they can continue to work for improved conservation of coastal resources with or without the help of the NGOs and with or without the support of the government.

Create "space" to enable local institutions to function effectively

This implies that external agents, be they NGOs or donors or governments need to "step back" and play a supporting and facilitating role rather than a controlling and implementing role. They should help create the "space" or environment that can allow local institutions to function effectively and reach their potential. In many cases external agents, while well-meaning, can actually stifle or destroy local institutions by coming in with large funds, pre-conceived decisions and strong ideological biases. In this case, however, NGOs worked with communities and existing institutions, both formal and informal, to identify areas where support or facilitation was needed. They provided this support in a way that helped communities take control of decision-making processes. Once the necessary "space" was created communities were quick to take the initiative and work towards collaborative priorities.

Focus on the “process” not the “project”

This means allowing adequate time frames, flexibility and coordination amongst the different external and internal players to provide the environment needed for change. To a large extent it means that external agents need to be less fixed on targets, structures and procedures and be willing to take the risk of allowing local processes to take a priority. For example, many of the activities described in previous sections emerged after months of almost daily meetings amongst the villagers during which they discussed and analysed the problems and opportunities thoroughly and then came up with consensus solutions. It also means that NGOs and other external partners should work beyond the “boundaries” of their individual projects to achieve synergy. In this case, NGO staff, while paid through different projects and organisations, often worked closely together on issues as part of a single “team”. The main strategy here was coordination, not competition. Again, this meant flexibility of the part of the NGOs and their donors to enable this. It is also important to sustain external support for a much longer period of time (even though actual investment may be low) than with normal “time-bound” projects.

“Mainstream” conservation to increase the support base and acceptance

When biodiversity conservation is seen as an integral part of social and economic development, there is a much greater chance of initiating and sustaining both community and government interest in it. Focusing on conservation as separate from or in addition to development issues (for example, by limiting it to legally Protected Areas), tends to “marginalise” it. In such situations, often neither communities nor governments will see conservation as an urgent or immediate priority. Reinforcing and demonstrating the direct links between conservation and development ensures that it becomes an important part of decision-making at all levels and all sectors. The value of this is apparent in this case where communities are actually lobbying to have conservation areas *expanded* while external commercial interests are against this.

Minimise future threats by working towards policy reform

Individual ‘successes’ can often be undermined by external threats unless reinforced and supported by wider policy. While supportive policy is not the ultimate safeguard, it can help strengthen and dramatically scale up impacts. For example the persistent lobbying against push netters in Pattani by the small-scale fishermen, combined with the many activities undertaken to show the positive impacts of sustainable, small-scale fishing has resulted

in a policy to ban all push netting in the entire province. As mentioned previously, almost all activities have a policy link and the Fishermens' Clubs and the Network in particular spend a large proportion of their time in advocacy and lobbying for policy change.

CONSTRAINTS/LIMITATIONS

While the strategies and approaches described in this paper have been remarkably successful in controlling harmful exploitation of marine resources and promoting conservation, there are certain limitations to their application in many (especially terrestrial) situations. Some of these are discussed below:

When does a common vision develop?

In this case, as in many others, communities mobilised themselves to address conservation and development issues only after the situation had become untenable. Although push netting had been around in the area for a long time and was slowly increasing, it was only after the severe destruction of resources began to have a direct impact on their livelihoods that communities acted to address the problem. It is possible that by the time this situation arises, much biodiversity may be irretrievably lost. This is a much more serious issue in the case of terrestrial ecosystems where loss of biodiversity is difficult to reverse. In situations where communities may not yet see conservation as an immediate priority because of limited external threats *at a given point in time*, it may be necessary for external agents to take a more pro-active role in facilitating the process of developing a common vision and agreed objectives. This in turn may have an impact on community ownership and participation, ultimately affecting the long term sustainability of the initiative.

How long can traditional, conservation-oriented livelihoods last?

As discussed in this paper, the existing livelihood strategies of the small-scale fishermen are compatible with conservation values. However, the question remains about how long these livelihoods will remain small-scale, traditional and conservation oriented in the face of massive development pressures. In addition to pressures related to large-scale and destructive fishing, the small-scale fishermen are also facing pressures from expanding shrimp cultivation, tourism and pollution. Given these pressures and the rapidly changing external environment, there is always a likelihood that lifestyles traditionally based around sustainable fishing will change and many of the conservation benefits of the last few years will be undone.

This is an issue that can undermine many conservation approaches based around maintaining traditional lifestyles and needs careful consideration when developing a strategy. In this particular case, while some small-scale fishermen began using push nets when faced with dwindling catches from traditional methods, they soon returned to traditional fishing after enforcement was effective and catches started increasing. When discussions on this issue are initiated, the fishermen are adamant that they will maintain their traditional lifestyle as long as they can make an adequate living from it. Based on evidence to support this, (traditional lifestyles have survived in the face of incredible external pressures) it seems likely that this will remain true at least for the immediate future.

What about restrictions imposed by Protected Areas?

As mentioned above, “community ownership” over the process and outcomes is an important factor for success and sustainability. In this case, community groups were able to design, manage and implement conservation and development strategies including what areas to ‘close’, what restrictions to impose on use, what quotas to allow for harvesting, etc. This would not be feasible in most legal Protected Areas which severely curtail access to and use of resources by communities, let alone developing management strategies for the area and resources. This strategy therefore, may only be applicable for areas of high conservation value that are not *legally* protected. Alternately, elements of the strategy could be applied to PAs that include multiple-use zones or “buffer” zones.

How different are terrestrial ecosystems?

Some unique features of marine ecosystems and resources have contributed to the success of the initiative. Marine ecosystems recover rapidly on protection, allowing sustainable harvesting of resources to occur within a relatively short time. This is not feasible for most terrestrial ecosystems, where the time frames for recovery are longer and investments often higher. This means that often, where communities are very poor and cannot wait for several years for returns, their interest in conservation is likely to be low unless other direct benefits can be developed.

Factors that add to the complexity of applying this strategy to terrestrial systems such as benefit sharing also tend to be less of an issue in marine systems. Usually, recovery rates for marine resources are not only rapid but also very high. Since the small-scale fishermen’s ability to harvest resources is limited by their traditional equipment, there are adequate resources for everyone.

Communities dependent on marine resources are often more willing to

set up "closed" areas for limited or no use of resources that communities dependent on forest resources. This could be because they are aware that conservation of coastal and marine habitat is important for increasing numbers of economically important species which can easily be harvested once they move out of these areas. In essence "closed areas" in marine systems will mean more resources for harvesting within a relatively short time whereas the same in terrestrial systems might be perceived as "lost" resources.

Finally, it should be mentioned that another complexity related to terrestrial resource conservation and management, tenurial issues, tend to be less of a problem in marine systems (at least in Thailand). Because marine areas and resources cannot be "owned" like land areas, there are fewer vested external and internal interests to deal with. This is made obvious from that fact that one of the more difficult activities within this initiative is that of conservation and management of mangrove forests - here land tenure and external interests play a major role in slowing down consensus building processes.

What about biodiversity values?

While the initiative has succeeded in rehabilitating and conserving once-depleted marine biodiversity to a great extent, it can be argued that continued use of the resources, whether sustainable or not, might compromise overall biodiversity values. While this is possibly true, it can also be argued that in similar situations, this might be the most effective strategy for biodiversity conservation. "Traditional" biodiversity conservation strategies such as setting up strict Protected Areas with no use of resources permitted tend to have a limited applicability in marine situations. This is because most marine species are highly mobile and will certainly be exploited once they move outside the Protected Area. For conservation of coastal/marine biodiversity, it might be more important to ensure that critical breeding and feeding habitats are protected (turtle nesting beaches, mangrove forests, sea grass beds, coral reefs). This can be done through passing and enforcement of legislation against habitat destruction rather than through banning sustainable use of marine fauna. In essence, what the communities in this study are doing is exactly this - by mobilising to prevent further destruction of critical habitats (at the same time ensuring sustainability of their selective, non-destructive fishing), they are effectively conserving coastal and marine biodiversity.

CONCLUSIONS

In particular, the initiative highlights three major issues: firstly, that

biodiversity conservation and *traditional* livelihoods are not incompatible but in fact are closely linked. Secondly, that by making conservation-linked development a priority in all areas, not just in and around Protected Areas, support for and impacts of conservation are likely to be much greater. And thirdly, that with the right external support and skills, primary resource user communities can successfully initiate, undertake and sustain conservation at all levels - from the local to the national policy level.

It is obvious that no single "strategy" can contribute to effective biodiversity conservation in all situations. Each situation is unique and a number of external and internal factors will contribute towards determining what might and might not work for conservation. For example, only strict protection might maximise biodiversity values but this may also lead to conflicts and low community participation resulting in high external inputs and overall unsustainability. It might also tend to create small "islands" of biodiversity that would always be vulnerable to external threats. On the other hand, sustainable use may compromise biodiversity values but may lead to greater support and more widespread acceptance of conservation.

The optimum approach lies somewhere in between and in most cases, selecting and implementing a biodiversity conservation strategy will involve essential "trade-offs" between the different stakeholders involved. Any site or situation will probably demand a combination of strategies that may include areas of strict protection as well as areas of controlled resource use. However, whatever approach is selected, the process should involve participation and consensus of major stakeholders (and agreement on compromises and trade-offs) if it is to be sustainable.

We feel that many elements of the community-based conservation initiative described in this paper can be applied towards achieving effective biodiversity conservation in coastal/marine areas. While its application in terrestrial situations might be somewhat more limited, we still feel that there are some elements that are widely applicable. In particular, we strongly feel that this approach should be explored and expanded in areas that may not be legally Protected Areas. This would be an important addition to biodiversity conservation strategies that focus on the relatively small amount of areas under PAs.

The Authors

Shekhar Singh is on the faculty of the Indian Institute of Public Administration. He has earlier taught Philosophy at St Stephen's College, University of Delhi and at the North-Eastern Hill University, Shillong. He is a member of the IUCN Commissions on Protected Areas and on Species Survival. He has been Advisor to the Planning Commission, Government of India. Email: shekharsingh@vsnl.com

Vasumathi Sankaran has been working on resource management issues for several years and has authored a number of research papers dealing with the study of water resources and the use of traditional knowledge in resource management. She is currently working as a consultant at the Indian Institute of Public Administration. Email: vasumathi_sankar@hotmail.com

Harsh Mander is a member of the Indian Administrative Service, and has spent a major part of his career serving in tribal districts of Madhya Pradesh or in the departments of Scheduled Caste and Scheduled Tribe Welfare in the state government. He has also served on the faculty of the Lal Bahadur Shastri National Academy of Administration, Mussoorie. Currently he is the Executive Director of Action Aid India. Email: harshm@actionaidindia.org

Sejal Worah has a Master's and Ph.D. in Environmental Science and currently works part-time with WWF UK as the People & Conservation Advisor for their Asia/Pacific Programme. Prior to this, she was WWF's coordinator for a regional training programme on Integrated Conservation and Development based in Bangkok, Thailand. Her main area of expertise is in working at the interface between biodiversity conservation and sustainable development. In particular, she focuses on training and capacity building to promote and strengthen participatory approaches to conservation and development involving multiple interest groups. She has worked for a number of international organisations in addition to WWF such as CARE International, FAO, UNDP, IUCN, RECOFTC and ICIMOD. Her work experience includes a range of countries in Asia and Africa such as Pakistan, India, Bhutan, Sri Lanka, Indonesia, Thailand, Cambodia, Laos, China, Solomon Islands, Philippines, Kenya, Uganda and Tanzania. Email: sejalw@nde.vsnl.net.in