Final Report to IDRC

COMMUNITY-BASED CONSERVATION:

The UNDP Equator Initiative Project

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Note: we will need a relatively short Introduction chapter that lays the gound - F

Introduction

Draft: based on 10 May 2006 book description

Objective of the Book

The book explores how conservation and development can be reconciled. It is based on ten cases from the UNDP Equator Initiative project that were studied in the field; review and synthesis of additional Equator Initiative cases; and other integrated conservation and development projects (ICDP), in particular community-based coastal resource management cases supported by the International Development Research Centre (IDRC). The hypothesis of the book is that community-based conservation is feasible and workable, with sufficient attention to issues concerning self-organization; cross-scale institutional linkages; capacity development and learning; and conservation-development through community enterprises. Each of these areas makes one section of the book. The development of the book is supported by the IDRC, Ottawa, and the Centre for Community-Based Resource Management at the University of Manitoba, Winnipeg, Canada.

Background: The UNDP Equator Initiative

The UNDP Equator Initiative seeks to address biodiversity conservation and poverty alleviation simultaneously. It was designed to reduce poverty through the conservation and sustainable use of biodiversity in the equatorial belt of the world by supporting and strengthening community partnerships (http://www.undp.org/equatorinitiative). The Equator Initiative itself is a partnership that brings together the United Nations Development Programme (UNDP) and a number of international and national agencies concerned with conservation and development. At the heart of the EI programme is the observation that the world's greatest concentration of biodiversity is found in the tropics, mainly in countries with rural areas of acute poverty. Livelihood needs of these people create a threat for biodiversity conservation. However, many "experiments" are underway using biological resources in creative ways for food, medicine, shelter and improved livelihoods while conserving them. The Equator Initiative strives to identify these experiments, reward them, and learn from them. They are identified through nominations for the Equator Prize, and rewarded through competitions held in 2002, 2004 and 2006.

The Equator Initiative seeks lessons from the list of Equator Prize winners and nominees, to inform policy and development priorities. Over 400 projects were nominated for each of the 2002 and 2004 Equator Prize competitions. The diverse experiences of Equator Prize nominees provide a rich source of information that may be used to understand the factors leading to successful initiatives. Given that successes are few among conservation and development projects, Equator Initiative cases offer a particularly promising set of data to explore conditions of success.

Target Audience for the Book

The target audience are professionals and researchers interested in the divide between conservation and development, and in bridging that divide. They include development professionals, conservation professionals, and NGO professionals. Development practitioners are beginning to appreciate the importance of resource sustainability and environmental considerations. Conservation practitioners are finding out that many of the conventional approaches to conservation are not working, and they are beginning to appreciate the importance of communities and institutions. The Convention on Biological Diversity highlights the need to address social issues and equity while planning conservation.

Using cases from the Equator Initiative and other appropriate examples, the book is practice-based. However, it will also include the necessary theory to make sense of these cases. In striving to maintain a balance between theory and practice, the book will be of interest to practitioners as well as to researchers. By having principal authors and co-authors from various parts of the world, the book will also attempt to balance developing country and developed county perspectives. Parts of the book will analyze similarities and differences between developing countries and developed counties, focusing on centralization/decentralizations issues, and on interactions between various levels of governance, from the local to the international.

Plan of Meetings and Activities

The process to develop the book will consist of a series of meetings and activities:

1. November 2005 conference call (Berkes, Davidson-Hunt, Seixas, and Davy) to consolidate book organization and plans;
2. Winter/Spring 2006 preparation of chapter outlines and preliminary drafts;
3. March 31 – April 1, 2006 co-authors meeting, Winnipeg, to review and develop section outlines and to discuss co-authorship;
4. Writing of section drafts and submission of Draft 1, end of August 2006;
5. Meeting to review progress and plans for revisions, end of October 2006 (Berkes, Davidson-Hunt, Seixas, and Davy);
6. Fall/winter 2006/07, writing and revising;
7. April 2007, completion and submission of revised drafts;
8. July 2007, key authors and reviewers meeting, Winnipeg, to agree on revisions and additions, and to finalize the content of draft chapters;

9. August 2007, editing and finalizing edited draft (Berkes, Davidson-Hunt, Seixas, and Davy);
10. September 2007, meeting to review progress and the next steps (Berkes, Davidson-Hunt, Seixas, and Davy);
11. October 2007, final revisions and editing, fine-tuning the revised draft; and
12. November 2007, manuscript sent to publisher, presently targeting Earthscan.

September '06 Conf call notes: enter comments from: Hoole, Merino, Zimmerman, Stone, V. Timmer, D. Timmer. These changes will be completed before the October meeting. They will be done later, along with other necessary changes that may come up. Fikret in charge.

Section 1. The Conservation-Development *Problematique*

Prepared by: Fikret Berkes
Draft: 3 May, 2006

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Outline

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1. Introduction

Ecosystems provide the basis for all human needs, such as food, air and water. But the rural people of developing countries have a special relationship with their ecosystems that is the basis of rural livelihoods. Given the well documented declines in ecosystem services and biodiversity, there is a compelling case for preservation. But at the same time, there is a strong case for sustainable use of biodiversity for livelihoods, and the fair and equitable sharing of the benefits of the resources and services provided by ecosystems. It is not by accident that the *Convention on Biological Diversity* brings these three points (biodiversity conservation, sustainable use, and fairness/equity) together (CBD 2006).

Biodiversity conservation and livelihood needs have often been portrayed as opposing goals but they need not be (Western and Wright 1994; Brechin et al. 2003; Borgerhoff Mulder and Coppolillo 2005). Finding synergistic solutions has been on national and international

agendas for decades, in the hopes that poverty reduction through development can be reconciled with biodiversity conservation (Timmer and Juma 2005).

The purpose of this introductory chapter is to set the stage for a discussion of how this book contributes to our understanding of a reconciliation of conservation and development goals. The broader issue is the maintenance of sustainability in the context of large-scale social and environmental change and global transformations. These changes create problems at all levels, but they also create opportunities for communities and small enterprises, such as those in the UNDP Equator Initiative project, to improve their well-being towards Millennium Development Goals (UN 2006). These cases show that there are legitimate community perspectives on what conservation is or could be. These community perspectives focus on biodiversity as local commons to produce a livelihood. This is rather different from the dominant perspective of biodiversity as a global commons to be managed at national and international levels through national legislation and international conventions.

The challenge is for conservation-development practitioners to understand these contrasting perspectives and to deal with them. Conservation solutions can be framed as long-term sustainability issues that take into account both global commons and local commons considerations, and biological conservation objectives as well local livelihood needs. The goals of conservation and development are not necessarily congruent in a given situation. "Conservation should always seek to contribute to poverty reduction, but not all conservation can always be justified in terms of poverty reduction," as the IUCN Director General Achim Steiner (2005: 92) put it, referring to the discussions at the 3rd IUCN World Conservation Congress in Bangkok. He could have added that not all poverty reduction and community well-being measures can always be justified in terms of biodiversity conservation, either. However, it is clear that loss of biodiversity impacts the livelihoods of resource-dependent rural people; conversely, the long-term conservation of livelihood resources improves well-being.

Many initiatives have typically used a global lens on conservation and development. What do conservation and development look like from a local lens? A rich set of cases has become available in recent years to develop an understanding of conservation-development from a community-based perspective. It starts by communities having secure rights and responsibilities for local land and resources, consistent with principles well known in the commons literature. Among many important sets of factors, two important ones we focus on in this book are aspects of community organization such as leadership, and the ability to network and to connect to various key institutions across different layers of social and political organization. Using the language of complex adaptive systems, we refer to these two areas as self-organization and cross-scale linkages. These linkages help people and groups develop capacity to use knowledge, to learn and adapt, and to develop community-based enterprises that produce livelihoods from local resources.

The objective of the book is to explore how conservation and development can be reconciled. It is based on ten cases from the UNDP Equator Initiative project that were studied in the field, four synthesis reports, and other relevant sources. The hypothesis is that community-based conservation is feasible and workable, if there is sufficient attention to issues concerning self-organization; institutional linkages; capacity development, knowledge and learning; and development through community-based enterprises. Each of these themes is dealt with in the various sections of the book.

We refer to the *problematique* of conservation-development in the sense of Rose (1974: 148-149): a constellation of issues that need to be considered at higher as well as lower scales;

have a large social content; interact and intersect with one another; tend to be inherently in conflict; and require long time horizons. Some of the key definitions used in the book are given in Box 1. The terms conservation-development and Integrated Conservation and Development Projects (ICDPs) are sometimes used interchangeably; conservation-development is the more general term and ICDPs are those projects that attempt an integration of the two activities.

<Box 1 here>

The first part of this section deals with the changing context of conservation-development, discussing some of the key developments in the last two or three decades that necessitate a better integration of biodiversity conservation and human well-being objectives. The next part explores the possibilities for establishing a shared paradigm for conservation-development. This task starts by seeking ways to escape the people/nature duality, and by dealing with some of the contentious issues in regarding human use vs. nature protection. It continues by discussing some of the new interdisciplinary areas relevant to the conservation-development dilemma, in particular, commons theory. The next part deals with developing the capacity to use multiple objectives, and to use a complex systems approach in particular. The final part is about the global change perspective, especially those factors that have been shaping the way conservation-development projects, including UNDP Equator Initiative cases, have been developing.

[notes on the Introduction: should we be saying more about CBD, MDG here, in the way of context? Or save it for later, in Section 2?]

2. The changing context of conservation-development: paradigm shifts

Paving the way for integrating conservation with development are two major paradigm shifts, one concerning a major change in the way ecosystems are seen, and the other regarding the development of deliberative discourse in conservation and environmental management in general. Both of these developments have profound implications for conservation-development practice and the role of communities in conserving biodiversity.

The first paradigm shift, towards a more dynamic, multi-equilibrium view of ecosystems, is significant in view of the fact that most of the world's biodiversity is in areas used by people, and depends on maintaining patterns of resource use that facilitate the continued renewal of ecosystems. To conserve biodiversity, we need to understand how human cultures interact with landscapes and how livelihood needs can be made compatible with conservation.

The second paradigm shift, as seen for example in the broad area of sustainable development, is related to a new understanding of environmental *problematiques*, such as conservation-development as requiring deliberation, rather than merely technical solutions by experts. Deliberation requires constant adjustments and trade-offs, a good fit with the *Convention on Biological Diversity* that allows for sustainable use and livelihood considerations.

2.1 "New ecology" for conservation-development

In the last two decades or so, it has become well accepted among ecologists that the classical equilibrium paradigm of ecosystems and ecological processes are inadequate. The new paradigm explicitly recognizes that ecosystems are always changing, even without the intervention of humans. The "new ecology" idea of an inherent level of uncertainty in the system, and the notion that our knowledge will always be imperfect, severely restrict the modernist modernist ideal of "control" and "management".

Equilibrium-and-stability thinking has been replaced by a consideration of alternative states and multiple equilibria. For example, land use history shapes present landscape ecology, referred to as historical dependency. Many ecosystems can flip between different equilibria, for example a forest and a grassland (Levin 1999).

This paradigm shift in ecology has begun to affect fields of applied ecology such as resource management and conservation biology. Callicott (2003) explores some of the implications of the paradigm shift in ecology for a paradigm shift in conservation philosophy.
[note: we will be adding more to this 2.1]

2.2 Importance of deliberative processes

Several recent major initiatives regarding conservation and sustainability have focused on broad participation of a range of parties and the use of deliberative processes in promoting the integration of ecosystem management with human well-being. These initiatives include Sustainability Science (Kates et al. 2001), the Millennium Ecosystem Assessment (MA 2005), *World Resources 2005* (WRI 2005), and the UNDP Equator Initiative (UNDP 2006). The proliferation of deliberative approaches at this point in history is probably not accidental. It marks the understanding that many of our environmental problems, including those related to conservation-development, do not lend themselves to analysis by the conventional scientific approach of defining the problem, collecting data, analyzing data, and making decisions based on the results.

These problems have a large social and political component, and incorporate too much uncertainty; targets keep shifting and one often has to keep redefining the issue. Such environmental problems have been called "wicked problems" or *problematique*, and the kind of approach prescribed for them have been referred to as "post-normal science". Where problems cannot be separated from issues of values, equity and social justice, and where there is a diversity of mutually contradictory approaches, the notion of an objective, disinterested expert no longer makes sense. Conservation, as a Twentieth Century technical science, was premised on the assumption of conserving species in protected areas without human interference. "Without humans, we do not have a conservation problem. This is true but it is also hypothetical and therefore irrelevant because we all know that humans cannot be defined out of the equation" (Steiner 2005: 88).

Twenty-first Century conservation, as a post-normal science, requires alternative approaches. It may be created through a process by which researchers and local stakeholders interact to define important questions, relevant evidence, and convincing forms of argument. This kind of research requires place-based models because understanding the dynamic interaction between nature and society requires case studies situated in particular places and cultures (Kates et al. 2001).

The use of imperfect information necessitates a close cooperation and risk-sharing between the management agency and the local people. Such a process requires collaboration, transparency and accountability, so that a learning environment can be created and practice can build on experience. This approach, bringing the community actively into the management process, is fundamentally different from the command-and-control style of management.

Following the letter and spirit of the *Convention on Biological Diversity*, a key consideration is to design ICDPs that involve communities as partners. Taking local priorities and objectives into account in conservation planning requires real participation of the communities and not merely consultation. Achieving this would require a major shift in approach, as many authors have documented that participation is often employed as part of a top-down process of cooption and consultation, rather than participation that can lead to collaboration. Brown (2002) considers this as one of the reasons for the failure of many ICDPs.

Such collaboration in turn requires systematic discussion or deliberation in which people ponder over issues, exchange observation, reflect upon information, and negotiate matters of mutual interest. Deliberation is especially important when understanding requires interdisciplinary input, as in the case of Millennium Ecosystem Assessment that produced a consensus document by consulting the views of different disciplines, views of government policy-makers (as opposed to natural and social scientists), and in some cases, the views of community and regional (as opposed to national and international) bodies.

The basic idea behind deliberation, argues Stern (2005), is that democracies have multiple centers of power. This is also to some extent true in developing counties without long traditions of democracy; many of them do have traditions of local-level deliberation through village councils, elders' groups, *panchayats* and the like. In any case, deliberation provides correctives for error and bias. It "makes it easier to detect and sanction violations, and it therefore gives citizens incentives, as well as moral justifications, for upholding the norms" (Stern 2005: 980).

3. Establishing a common language and concepts

The field of conservation developed largely as a biological science, a branch of applied ecology. Development studies, by contrast, is an interdisciplinary social science field. The two areas have little in common in terms of language and concepts. Reconciling the two objectives of conservation and development is a major challenge that requires the development of a new interdisciplinary area that combines the relevant concepts and skills from these two areas. Such an integration requires developing a common language and a shared paradigm, and making better use of relevant findings in the area of community-based research.

3.1 Role of humans in the ecosystem: escaping people/nature duality

The duality of people and nature was established in Western thought in the Age of Enlightenment. Generations of environmentalists have been trying to replace this view with one considers humans as part of ecosystems. If humans cannot be defined out of the equation, it becomes important to incorporate the dynamic interactions between societies and natural systems into conservation planning, rather than viewing people merely as "managers" or "stressors." Although there is little agreement on how this can be accomplished conceptually or

methodologically, there is an accumulation of knowledge and understanding about the use of local and indigenous practices to manage ecosystems.

[note: how much traditional ecological knowledge should we put into this section? Environmental education?]

Take the example of tropical forests. Indigenous groups and other rural communities own or administer about one-fifth to one-quarter of world's tropical forests. These communities protect at least as much forest as included in parks and protected areas (Molnar et al. 2004). Much of the international conservation effort now goes to protecting these areas form the people who live there. For example, forest dwellers can be discreetly relocated elsewhere, or their seasonal migrations restricted (as done in the Equator Initiative case in Peru discussed later in this book) or they can be lured out of critical conservation areas by livelihood options made available elsewhere.

But one can turn this argument on its head: how about ensuring conservation by supporting local forest peoples? There exists a diversity of traditional practices that resemble contemporary scientific practices for ecosystem-based management. They include succession management, landscape patchiness management, resource rotation, and multiple species management (Berkes and Folke 1998). Among these, succession management is a particularly common practice, often involving the use of fire as a way to clear land and renew ecological cycles. The use of fire is well known in systems of shifting cultivation (swidden or "slash-and-burn") in tropical forests but also in some other kinds of forests, including the boreal forest.

Ecologically speaking, what these succession management systems have in common is that they all involve ecological renewal cycles, and they all start with a disturbance event. The disturbance could be a natural fire, a pest infestation, a blowdown following a storm, or it could be a human-made fire or a patch of forest clearance. A typical renewal cycle starts with an early succession phase of rapidly growing herbaceous plants. Gradually, bushy plants take over, shading out the grasses and other pioneer species. Larger trees gradually take over, leading to a climax phase, before the cycle can start all over again.

In many areas, the intensification of human activities has caused the degradation of tropical forest ecosystems and loss of biodiversity. The gradual shortening of the renewal cycle is one oft-cited cause. But in many cases, it is not the cutting by traditional shifting cultivators that can be blamed for forest destruction. In the case of the Brazilian Amazon, for example, it is not the traditional peoples, nor even commercial loggers who are the culprits. Logging is important in specific areas (Schwartzman and Zimmerman 2005), but large-scale Amazon deforestation is caused by the expansion of pasture for cattle and colonist agriculture (Hecht and Cockburn 1990: 266).

Blaming the local people is in many cases a red herring. Even in heavily populated biodiversity hot spots such as the Western Ghats of south India, researchers have found high levels of biodiversity, comparable to that in protected areas, in sacred groves and in multispecies plantations. Sacred groves are traditional systems and the multifunctional cultural landscapes have been produced by centuries-old and locally evolved systems of agroforestry. For integrated conservation strategies, these sacred groves and agroforest plantations can be as important as formal protected areas (Bhagwat et al. 2005).

The biodiversity hotspot of Western Ghats is not unique in this respect. In the leading megadiversity country of Mexico, the relatively highly populated State of Oaxaca has both the highest biodiversity and the highest cultural diversity of any state.

[More. Leticia Merino to add some wording]

Putting humans back into the ecosystem requires using all possible sources of ecological knowledge and understanding as may be available. Using knowledge and perspectives from the community level can help build up a more complete information base than available from scientific studies alone. The partnership of local communities with scientists is not unusual, and the positive effects of such partnerships have been documented from many parts of the world (Berkes and Folke 1998).

In terms of conservation action, partnerships local communities with international conservation organizations are not unusual either. In addition to the Guyana example and other Equator Initiative cases discussed later in this book, the Conservation International Kayapo project is a good example. The partnership involves Conservation International providing physical and technical support to the Kayapo, an indigenous group of the Brazilian Amazon, to protect their traditional lands from incursion by outsiders. The effectiveness of the conservation effort can be seen from remote sensing images that show part of the boundary of the forest land following the boundary of the traditional Kayapo territory (Schwartzman and Zimmerman 2005).

What other kinds of support can international conservation offer to indigenous peoples and other communities to conserve biodiversity? Forest communities can be financially compensated for the environmental services that their well managed forests provide for others. Such payments for environmental services (PES) may be used for hydrological functions (e.g., keeping upper watersheds forested to reduce erosion), carbon sequestration, species protection, and maintenance of scenic beauty. Such PES have the potential to support both conservation and poverty reduction objectives (Pagiola et al. 2005).

[note: are there other categories here?]

3.2 Relationships between communities and conservation

There has been a dearth of successful cases of community-based conservation. This is partly because biodiversity conservation, as conceived by international conservation agencies, often does not fit well with livelihood-oriented conservation, as conceived by communities. This "disconnect" between the discourses of international conservation and community-based conservation is of major concern.

One key question is the conflict between conservation policies set by the state and the rights of local or indigenous peoples. Biodiversity is a global commons, and its conservation is beneficial for the world. But is it also good for the local people? If biodiversity conservation is pursued through the creation of protected areas (PAs) and if these PAs exclude resource use for livelihoods, then local people are bearing the costs of a process that is providing global benefits. Further, given the inability of the state to enforce PAs, the usual experience is that when a local commons is turned into a PA, it effectively becomes open-access, benefiting neither the conservation cause nor local livelihoods.

The relationships between communities and conservation are being contested in several arenas. Here I refer to two debates: the one over the human use of PAs and the one on the question of why integrated conservation and development projects have been failing.

The debate over the human use of PAs is not new. There has been a growing realization at least since the 1980 *World Conservation Strategy* of the importance of understanding the needs and perspectives of local people (IUCN 1980). The 1992 *Convention on Biological Diversity* was developed to emphasize the sustainable use of resources and to stop the practice of excluding people, especially indigenous people, from new PAs. "Conceived as a practical tool for translating the principles of *Agenda 21* into reality, the *Convention* recognizes that biological diversity is about more than plants, animals and micro organisms and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment" (CBD 2006). Among other things, the *Convention on Biological Diversity* has resulted in the creation of new PA categories V and VI to allow for greater human use (IUCN 1994).

Some conservationists have opposed this development as giving social considerations higher priority over biological ones, and the increased human use of resources in PAs, as taking the PA agenda toward a "tragic failure" (Locke and Dearden 2005). More generally, "some members of the international conservation community argue that attempting to integrate local people and community needs into conservation efforts is a waste of time, finances and human resources that actually diminishes conservation's effectiveness, not enhances it. We could not disagree more" (Brechin et al. (2003: x).

In turn, some social scientists have claimed that large international conservation organizations have become increasingly influential in setting the agenda for global conservation to the detriment of local interests, rolling back the *Convention on Biological Diversity* commitment to social considerations such as livelihoods and equity (Chapin 2004). In particular, the emphasis on ecoregional conservation is seen by some critics as a mechanism for top-down decision-making, perhaps good for improving efficiencies and reducing transaction costs, but not good for local-level considerations (Brosius and Russell 2003). The issue is of intensive debate both within and outside of the conservation community (Borgerhoff Mulder and Coppolillo 2005; Steiner 2005).

[note: Susan Stone and Barbara Zimmerman, please check the balance in the above.]

The question of the failure of integrated conservation and development is a second arena of controversy. The Word Bank and Asian Development Bank started funding development projects, known as Integrated Conservation and Development Projects (ICDPs) in the 1980s. Assuming that poverty drives people to encroach on protected areas, the object was to target poor people in and around parks and protected areas. Over the years, these efforts have resulted in the establishment of some kind of participatory management in national parks in most parts of the world, but ICDPs themselves have often floundered (e.g., Brown 2002; Borgerhoff Mulder and Coppolillo 2005).

This has led to a debate regarding the merits of community-based conservation and to critical evaluations of these efforts. Two positions have been emerging. One holds that the failure of community conservation is not due to any weakness of the concept itself but rather its improper implementation, especially with regard to the devolution of authority and responsibility (Murphree 2002) and to participation, empowerment and institution-building

(Brown 2002). The second position holds that the conservation and development objectives, both important in their own right, should be delinked because the mixed objective does not serve either objective well (Redford and Sanderson 2000).

To address the two debates, the big question is whether local people are willing and able to participate in protected area management and in the conservation of biodiversity in general. "Does community-based conservation work?" is the wrong question. Sometimes it does, sometimes it does not. More important is to learn about the conditions under which it does or does not work (Berkes 2004). No doubt there are many ways to approach the debate. One promising approach is to focus on the livelihood needs of the local people, as done by the IIED (Roe et al. 2000), CIFOR, and IDRC among others.

Based on the results of IIED's international project on community-based wildlife conservation, Roe et al. (2000) start by observing that the late 19th century notion that people and wildlife are in conflict, and that wild areas should be set aside purely for non-consumptive purposes, is a historic anomaly. And so is the assumption of ownership of wildlife resources by the state, and idea that has come to dominate conservation policy worldwide. Roe et al. (2000) argue that PAs based on human exclusion merely sets up a vicious circle: exclusion and lack of attention to livelihoods leads to encroachment and poaching and this, in turn, reinforces the view that people do not have the will or capacity to conserve biodiversity. The solution is to break the vicious circle by linking conservation to improved livelihoods, thereby providing incentives for people to conserve (Figure 1).

<Figure 1 here>

Linking conservation to livelihoods, as a broad strategy, requires a search for implementation models. Salafsky and Wollenberg (2000) provide models of three conservation strategies. In the "protected area" model based on human exclusion, local livelihood activities merely appear as one of the internal threats to biodiversity. The PA implementation is designed to counter these threats ("fences and fines"). In the "economic substitution" model as used by some ICDPs, the project implements alternative livelihood activities as substitutes for those that adversely affect biodiversity. The goal here is to increase benefits from these other livelihoods, as a way to reduce the threat to conservation from local people. Finally, in the "linked incentives" model, a link is constructed between biodiversity and livelihood. This link closes the loop and becomes the driving force leading to conservation because it establishes a direct incentive to protect biodiversity in the long-term (Figure 2). Such an analysis brings out the necessity to learn from the some of the new interdisciplinary areas relevant to the conservation-development dilemma, in particular, commons theory.

<Figure 2 here>

[note: Elspeth, does this three models analysis work from a Equator Initiative perspective?]

3.3 Using lessons learned from commons research

A number of interdisciplinary subfields have been pursuing elements of the conservation-development question and have contributions to make. These include common property, traditional ecological knowledge, environmental ethics, political ecology,

environmental history and ecological economics (Table1). These subfields have a number of characteristics in common. All of them are recent, dating largely from the 1970s and the 1980s. All are "bridging" fields, spanning different combinations of natural science and social science thinking. Each of them has developed in response to needs or gaps in understanding the linkages between social systems and ecological systems.

<Table 1 here>

Could conservation-development practice be improved by making better use of relevant findings in these areas? With very few exceptions (e.g., Momberg et al. 2000; Zimmerman et al. 2001; Schwartzman and Zimmerman 2005), conservation science has not made good use of the lessons from commons theory and these other areas (Berkes 2004). Much of so-called community-based conservation of the last two decades or so has been half-hearted, misdirected, and theory-ignorant. This can be rectified by mainstreaming the use of commons basics and by generating guidelines that can be put into use by conservation-development practitioners.

The basic lesson of commons theory cannot be simpler. Take the example of *gaharu* which is a fragrant wood and a valuable non-timber forest product of Southeast Asia. To deal with the exploitation pressure on *gaharu*-bearing trees in a national park in East Kalimantan, decision-making over access to community-held lands was decentralized, and some extractive use of resources was legally recognized. This increased local incentives for commons management, built support by local communities for conservation of core protected zones, and mitigated overexploitation by outsiders (Momberg et al. 2000).

Locally used resources are rarely open-access or freely available to all. Rather, there often are local rules about how resources should be used. These sets of rules-in-use, or institutions, as commons researchers use the term, may facilitate or constrain conservation. If local commons institutions are consistent with conservation objectives, as in the case with traditional sacred groves in the Western Ghats of India, then the conservation task is to strengthen these institutions (as opposed to undermining or replacing them). More commonly, however, commons rules tend to be about allocation of use and conflict management, and not about preservation *per se*. In such a case, either we can decide that conservation goals are simply different from local goals, and pursue conservation independently of local needs. Or we can recognize that local resource users are potential conservation allies, and look for common objectives that would serve conservation while at the same time producing community benefits, as in the case of *gaharu*-bearing trees in East Kalimantan.

In many cases, local commons rules do not exist or are not adequate for the task. If resource users lack the rights or incentives to design and enforce rules that control the use of the resource, and government rules are not enforced, open-access exploitation may be real. In other cases, local institutions may exist, but the scope of the resource or conservation problem may be beyond the ability of local institutions to deal with it effectively. For example, in discussing tropical biodiversity conservation in Africa, Barrett et al. (2001) observed that local community-based institutions were often ill-equipped to deal with the issues. But at the same time, government agencies also tended to be weak, leaving biodiversity conservation in an environment of weak institutions. The authors suggest that the best management designs may involve distributing authority across multiple institutions and multiple levels, rather than concentrating it in just one.

Where institution-building is needed, institutions may be "crafted" using the elements of rule-making and self-organization that exists in any society (Ostrom 1990). The literature from commons and from participatory development fields suggests that institution-building at the community level may take on the order of 10 years. This is for simple, local-level institutions. In the case of institutions that span the scale from the local level to the regional and national, as in various co-management regimes, there is relatively little data on which to base conclusions. This is a current area of research, and UNDP Equator Initiative cases will help shed some light on this question.

3.4 Developing guidelines based on commons principles

An important element for improving conservation-development practice would be to develop guidelines based on commons principles. Such a project can start by going back to commons basics. Commons share two characteristics: (a) exclusion or the control of access of potential users is difficult, and (b) each user was capable of subtracting from the welfare of all others, or the *exclusion problem* and the *subtractability problem*, respectively (Ostrom 1990; Ostrom et al. 1999; Ostrom et al. 2002). Hence, a checklist for the conservation-development practitioner can start by asking if there is an exclusion problem and if there is a substractability problem in the project area (Table 2). The exclusion issue is important because community-based conservation is more likely to work if the users enjoy exclusive rights to the resource and have a stake in conserving the resource.

<Table 2 here>

The subtractability question is important because community-based conservation needs to build on existing local rules-in-use. Here the practitioner would need to know that common-property systems have two-way feedbacks that enable institutions (rules-in-use) to regulate resource use. By contrast, in open-access systems, there are no institutions to respond to signals from the resource and no negative or stabilizing feedbacks to regulate resource use. This has the consequence that open-access use is characterized by positive feedback loops (vicious circles) whereby resource depletion leads to more intensified use, which leads to even more depletion (Figure 3).

<Figure 3 here>

At the next level of inquiry, the conservation-development practitioner can turn to Ostrom (1990) principles, and the more detailed set of critical enabling conditions for commons sustainability developed by Agrawal (2002: 62-63). Especially important here are questions with regard to linkages, and the effectiveness of NGOs and other groups that have a bridging role in these. Linkages seem to be crucial for conservation-development project success. As we will examine in more detail later in this volume, UNDP Equator Initiative cases indicate that many projects tend to have links across four or five layers of organization, plus a large number of horizontal linkages providing rich networks of support. Finally, underlying all, are questions of political economy and power relations regarding linkages and networks.

[note: regarding political economy and power, how much detail should we get into? A subheading? A few references?]

Up to this point in Table 2, we are basically taking stock of the status of the commons and commons institutions in the area of the conservation-development project. For effective community-based conservation, the project needs to do something more: find strategies to strengthen existing commons institutions; build new linkages horizontally and vertically; engage in capacity-building, trust-building and mutual learning; and invest sufficient time and resources to achieve these objectives. Some of these strategies, liberally borrowed from Berkes et al. (in press), are itemized in Table 2. This table is offered here as a modest starting point for a checklist and is no doubt incomplete. As well, it is important to recognize that no one checklist could be applicable across the board, and no one set of strategies could work in all regions.

[note: the above qualification is needed. But we should be aiming for a more complete and useable checklist. Maybe a workshop on this later? Art Hoole, a quick critique, please?]

4. Complexity and integrated conservation-development

Community-based conservation is not only about communities. It is about governance that starts from the ground up but involves multi-level interactions. Complexities of this multi-level world create problems in achieving conservation success. Hence, there is a necessity of doing a better job of conceiving, researching and analyzing community-based conservation in terms of scale, organization, uncertainties and change processes. Community-based conservation in a multi-level world is a complex systems problem and should employ the tools and approaches appropriate for dealing with complexity. In this book, we put special emphasis on two areas of complexity and analyze a selection of Equator Initiative cases according to these two areas: self-organization and cross-scale institutional linkages. First we discuss some of the questions raised by a multi-objective approach, then we turn to complexity thinking.

4.1 Dealing with multiple objectives

If conservation and development can be simultaneously achieved, then the interests of both can be served. However, many ICDPs are either primarily about conservation or primarily about development -- but rarely both. More common are situations in which one objective or the other dominates (Brown 2002). For example, involving local communities in conservation is often used as a means of making conservation measures less likely to meet local resistance, but the ultimate objective remains one of conservation. Conversely, protecting the productivity of a resource may be used as a means to enhance local livelihoods and development options, but the main objective remains development. Management approaches that explicitly have more than one objective are far less common than those that have only one.

The Millennium Ecosystem Assessment terms this multiple objectives approach, "integrated responses". They are those responses that explicitly and purposely state that their objectives address more than one ecosystem service(s) and human well-being simultaneously (Brown et al. 2005). The Millennium Ecosystem Assessment report deals with four areas in which integrated responses are explored: sustainable forest management, integrated coastal zone

management, watershed and river basin management, and ICDPs (Brown et al. 2005). Note that all four of these areas satisfy the criteria that define a *problematique.*

[note: should we develop this some more?]

Integrated responses may be seen as a way of moving from problem-solving in simple systems to problem-solving in complex adaptive systems. Consistent with the needs of managing complexity, integrated responses tend to involve networks and partnerships of various levels of government, private sector and civil society (Kooiman 2003). Recent approaches such as the Millennium Ecosystem Assessment and *World Resources 2005* (WRI 2005) promote the integration of ecosystem management with human well-being. They recognize that biodiversity conservation and livelihood needs are complementary goals.

Why then is there such a resistance to dealing with livelihood and biodiversity conservation objectives simultaneously? This may be so in part because of the inability and discomfort of our conventional science and resource management to deal with multiple objectives. We have seen this in the area of fisheries management, for example, in moving from the management for a single biological objective (e.g., the MSY) to multiple objectives including biological, economic and social. In the area of water resources engineering, dealing with multiple objectives is common and the problem is approached for example with optimization models. In conservation-development, optimization models would probably not work, and there is no common language or concepts between the two kinds of practitioners that would enable the two sides to look for common goals and deal with the issue of tradeoffs. The issue is perhaps one of capacity-building among the practitioners, developing a new interdisciplinary science of integrated conservation-development. Developing a set of common concepts and tools may take some time, and may require the education of a whole new generation of integrated conservation-development practitioners.

4.2 Developing a complexity approach

Community-based conservation is a complex systems problem and should employ the tools and approaches appropriate for dealing with complexity. If community-based conservation is about governance that starts from the ground up but involves multi-level interactions, then it needs to be analyzed with attention to the ways in which such conservation originates and gets organized, the partnerships involved, and the linkages that connect the local-level to a multiplicity of other levels. All of these are considerations related to complex adaptive systems – they include a consideration of scale but it also includes much more.

Pursuing this theme further, using complex adaptive systems terminology, the aspects to be considered include: self-organization, path-dependency, scale, multiple perspectives, multiple stability domains, non-linearity, uncertainty, and emergence. Each of these features, briefly described in Table 3, is a characteristic of complex adaptive systems. That is, these are attributes not observed in simple systems (Levin 1999; Berkes et al. 2003).

<Table 3 here>

According to the ecologist Levin, self-organization provides a unifying principle for complex adaptive systems. "The specifics are in the often simple rules that govern how the

system changes in response to past and present conditions, rather than in some goal-seeking behaviour" (Levin 1999: 12). Most social scientists would favour a less mechanistic view that takes into account human agency. Analyses of conservation-development projects clearly indicate the overwhelming importance of factors such as feedback learning, trust-building and leadership – these are not mechanistic processes (Borgerhoff Mulder and Coppolillo 2005; Timmer and Juma 2005).

The idea of scale, as for example used in geography, predates the development of complex adaptive systems thinking but is now a major element of the latter. Both social systems and ecological systems are hierarchically organized, with each subsystem nested in a larger subsystem. The classic example in the commons literature is the Spanish *huerta* irrigation system, with its nested irrigation canals (small canals, larger canals, ... river basin) and the commons institutions that go with it (Ostrom 1990).

Complex systems theory holds that the levels are linked but that each level requires new concepts and principles. Thus, processes at the community, regional, and international levels require different but overlapping set of concepts and principles (Dietz et al. 2003). An important implication of multi-scale thinking is multiple perspective thinking. Each level of a scale is different, and the perspective from each level is different. The global lens of biodiversity conservation (global commons) is therefore likely to be different from the local lens on biodiversity (local commons for livelihoods).

[note: the above section probably needs more along the lines of Table 3, for example, importance of multiple options and flexibility in EI cases, i.e., issue of resilience]

5. The global change perspective

There are a number of factors related to global change that have been shaping the way UNDP Equator Initiative cases develop. These changes are not all negative or all positive. Many of the cases are successful precisely because communities and other rural groups have been able to "navigate" new global realities. Following a chapter on the development of the UNDP Equator Initiative, in the context of international efforts on ICDPs, CBD, and MDGs, we focus on four of these factors and deal with the ability of UNDP Equator Initiative cases

- to organize themselves in the face of social, economic and environmental change,
- to develop multi-level governance systems by forging appropriate linkages
- to develop capacity to mobilize knowledge to learn from experience
- to deal with external markets by developing entrepreneurship skills.

[note: these four headings refer to the four sections of the book. This part of the Introduction chapter will introduce and provide background for each of these four sections. To be completed after we have drafts of these sections]

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Box 1. Definitions

Biological diversity or biodiversity: The variability among living organisms ... and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (Article 2, CBD 2006).

Community-based conservation: conservation from a community perspective, for governance that starts from the ground up but involves a network of interactions at various levels.

Commons: resources in which (i) exclusion of beneficiaries through physical and institutional means is especially costly, and (ii) exploitation by one user reduces resource availability for others (Ostrom et al. 1999).

Complexity: an interconnected network of components that cannot be described by a few rules; generally manifest in structure, order and function emerging from the interactions among diverse parts (Levin 1999: 231).

Deliberation: any process for communication and for raising and collectively considering issues... In deliberation, people discuss, ponder, exchange observation and views, reflect upon information and judgements concerning matters of mutual interest, and attempt to persuade each other (NRC 1996: 215).

Exclusion problem (of commons): the condition in which exclusion of beneficiaries through physical and institutional means is especially costly.

Horizontal linkages: linkages across different levels of organization.

Livelihood: the whole complex of factors that allow households and communities to sustain themselves materially, emotionally, spiritually and culturally (WRI 2005).

Poverty: The denial of choices and opportunities for living a life one has reason to value. The Human Poverty Index for developing countries measures human deprivations in three areas (longevity, knowledge, and a decent standard of living) (UN 2006).

Self-organization: the development of structure and function on the basis of local interactions (Levin 1999: 238).

Subtractability problem (of commons): the condition in which resource exploitation by one user reduces resource availability for others.

Vertical linkages: linkages that cut across the same level of organization.

Well-being: a context and situation-dependent state, comprising basic material for a good life, freedom and choice, health, good social relations and security (MA 2003: 216); includes livelihoods.

Other:
Capacity-building, Community-based enterprises, Cross-scale linkages
Institutions, Open-access
Sustainability
Empowerment

Table 1.

Integrative subfields that explore new approaches to social-ecological systems (Source: Berkes 2004).

Common property: Examines the linkages between resource management and social organization; analyzes how institutions and property-rights systems can deal with the "tragedy of the commons".

Traditional ecological knowledge: Refers to a local or traditional knowledge base built, not by experts, but by resource users. Questions expert science and argues for a diversity of kinds of knowledge.

Environmental ethics: Recognizes a wide diversity of spiritual and ethical traditions in the world that help offer alternatives to the current Western views regarding the place of humans in the ecosystem.

Political ecology: Analyzes power relationships among actors in the way decisions are made and benefits shared; interprets events with reference to the behavior of actors in pursuit of their own political agendas.

Environmental history: Interprets landscapes in terms of their history; analyzes the dynamics of these landscapes, making ecological sense of resource use practices, and their change, that have resulted in these landscapes.

Ecological economics: Promotes an integrated view of economics within the ecosystem, viewing the economic system as a subset of the ecological system; it is concerned with a wider range of values and a longer time horizon.

Table 2.
Building community-based conservation: a checklist for practitioners.

Status of project area: commons basics

- Is the **exclusion** (or the control of access of potential users) difficult in the project area?
- Do the users have institutions (rules-in-use) to deal with the **subtractability** problem in the project area?

Status of project area, following Ostrom (1990) principles

- Are there clear **boundaries** that define the resource to eliminate open-access conditions?
- Are there clear **context-appropriate rules** and the recognition that no one set of rules will be suitable for all areas?
- Are there **collective choice arrangements** through which participants gain a stake in, and participate in, the creation of the rules and governance structures?
- Is there **monitoring** of resource use by appropriators to address issues of subtractability and status of resource?
- Are there graduated **sanctions** for appropriators who violate agreed upon rules?
- Are there platforms for low cost, effective **conflict resolution** mechanisms to address conflicts among appropriators or between users and officials?
- Is there **political space** for appropriators to devise their own institutions?

Status with regard to institutional linkages

- Are there **nested institutions** to provide a hierarchy of governance structures?
- What **horizontal linkages** (across the same level of organization) and **vertical linkages** (across levels of organization) exist in the study area?
- Are there boundary organizations involved in the project that can play **bridging roles** across levels of organization?

Strategies for strengthening community-based conservation

- Does the project allow for pluralism by recognizing a **diversity of perspectives**?
- Does the project foster the building of **mutual trust** among the parties?
- Does the project recognize a mix of methodological approaches and tools that allow for broad **stakeholder participation**?
- Does the project accommodate **local, traditional or indigenous knowledge**?
- Are there platforms for **deliberation**?
- Does the project use a diversity of modes of **communication** for deliberation?
- Does the project foster the development of **new skills** among stakeholders, particularly for those who have been usually excluded or marginalized?
- Does the project undertake **capacity building** and development of new skills for strengthening horizontal and vertical linkages?
- Does the project **report back** to the community and other parties on its findings?
- Has the project invested enough **time and resources** in capacity-building, trust-building and mutual learning?

Table 3.
Developing a complexity approach for commons governance: characteristics of complex adaptive systems.

Characteristic	Description
Self-organization	Self-organization characterizes the development of complex adaptive systems in which multiple outcomes are possible depending on accidents of history.
Path-dependency	Context (history, politics, culture) is important in understanding complex adaptive systems. Such a system is irreversible, meaning (among other things) that experiences from one case cannot readily be transferred to another.
Scale	Complex adaptive systems tend to be hierarchically organized, with each subsystem nested in a larger subsystem. Each level of the scale is independent, to some degree, of the levels above and below, and hence have some similarities and some key differences.
Multiple perspectives	"More is different": Processes at different levels require different concepts and principles, and the perspective at each level will be different. There is no one "correct" level: levels can be analyzed separately but also simultaneously across scale.
Multiple stability domains	Complex adaptive systems organize themselves around one of several possible equilibrium states or attractors. A system's feedback loops tend to maintain a given equilibrium up to a point, followed by a "flip" into a different equilibrium state.
Non-linearity	Mathematical solutions to non-linear equations do not give simple answers but a collection of values for the variables that satisfy an equation. That is, complexity implies not one equilibrium but many.
Uncertainty	Complex systems are characterized by inherent uncertainty. No matter how much is known about a system, there is still irreducible uncertainty related to non-linearity and multiple stability domains.
Emergence	An emergent property of a system is one that cannot be predicted or understood simply by examining the parts of a system.

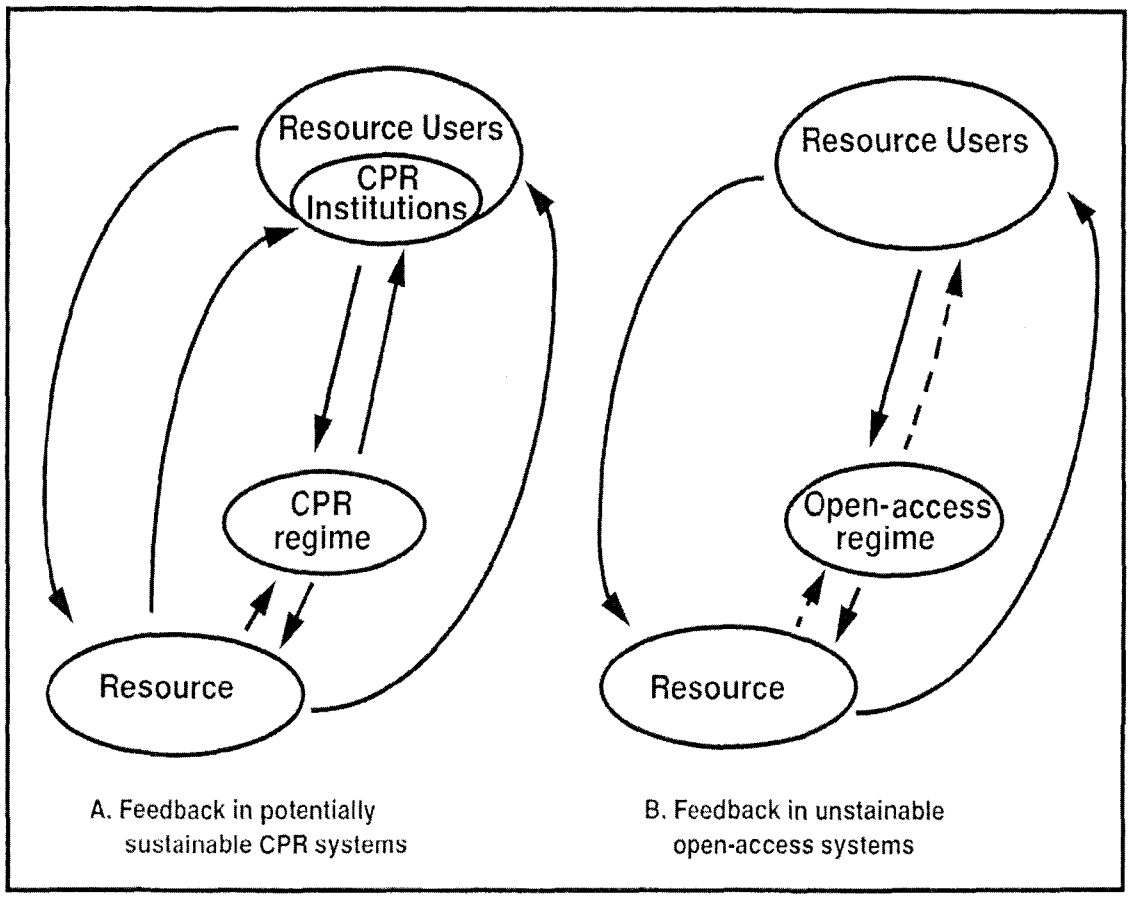

Figure 1.

Common-property systems have two-way feedbacks that enable institutions (rules-in-use) to regulate resource use. By contrast, in open-access systems, there are no institutions to respond to signals from the resource and no negative or stabilizing feedbacks to regulate resource use. This has the consequence that open-access use is characterized by positive feedback loops (vicious circles) whereby resource depletion leads to more intensified use, which leads to even more depletion. Source: Berkes (1996).

September '06 Conf call notes: use Berkes & Seixas technical report, including four case summaries; add the six summaries from March/April workshop (Cris editing them now); add EI checklist. Oct 20: Hoole, Senyk updates needed. Jackie in charge.

Section 2. The UNDP Equator Initiative and background to the cases

Co-authors: Case study authors, Cristiana Seixas, Fikret Berkes, others TBA

Outline

1 The development of the UNDP Equator Initiative

2. The UNDP Equator Initiative database and field methodology for cases

1. The UNDP Equator Initiative database
2. Case study methodology

3. Description of the case studies

1. Medicinal Plants Conservation Centre, Pune, India
2. Community-Based Arapaima Conservation in the North Rupuni, Guyana
3. Honey Care Africa Ltd., Kenya
4. Cananeia Oyster Producers Cooperative, Brazil
5. TIDE Port Honduras marine reserve, Belize
6. Pred Nai community forestry group and mangrove rehabilitation, Thailand
7. Casa Matsinguenka indigenous ecotourism project, Peru
8. Nuevo San Juan holistic forest ecosystem management project, Mexico
9. Tora Conservancy, Namibia
10. Pastoralist Integrated Support Programme, Kenya

1. The development of the UNDP Equator Initiative

Context of international efforts on ICDPs; Convention on Biological Diversity; Millennium Development Goals.
Borrow from EI documentation; Timmer.
Reduce the overlap with the Introduction; add more detail.

The Equator Initiative is designed to reduce poverty through the conservation and sustainable use of biodiversity in the equatorial belt by fostering, supporting and strengthening community partnerships (EI 2004). The EI is a partnership that brings together the United Nations Development Programme (UNDP) and a number of international and national agencies concerned with conservation and development. Through the cases it fosters, the EI also brings together UNDP and its partners with a diversity of civil society, business, and local groups to help build capacity and raise the profile of grassroots efforts that promote sustainable communities in developing countries.

At the heart of the EI programme is the observation that the world's greatest concentration of biodiversity is found in the tropics, mainly in countries with rural areas of acute poverty. Livelihood needs of these people create a threat for biodiversity conservation. However, many "experiments" are underway toward sustainable futures, using local biological resources in creative ways for food, medicine, shelter and improved livelihoods. The EI strives to identify these experiments, reward them, and learn from them. The EI has seven activities. Its flagship activity is the Equator Prize, which has been awarded twice so far, in 2002 and 2004, from hundreds of nominations from various countries.

Research and Learning is one of the seven EI activities. Research and Learning are fostered by enlisting networks of experts and practitioners to use community "best practices", from the list of Equator Prize winners and nominees, to inform policy and development priorities. Over 400 projects were nominated for each of the 2002 and 2004 Equator Prize competitions. Data on the diverse experiences of Equator Prize nominees is a rich source of information that may be used to understand the factors for successful initiatives. The EI nominees, and especially the projects that are short-listed, provide a set of cases that may be considered successful. In an area such as ICDP in which successes are few, the EI examples provide a particularly promising set of data to explore conditions of success.

There are a number of ways in which EI cases may be analyzed to provide insights. One analysis has used open-ended interviews with representatives for the 24 finalists of the 2004 competition attending the awards ceremony in February 2004 (Seixas et al., submitted). Others have used nomination documentation to search for factors of success (Jonas 2003), to explore possibilities of scaling-up (Hooper et al. 2004), and to develop indicators of conservation and poverty reduction (Rubian and Crowley 2003). Yet others have focused on entrepreneurship as central to understanding the effectiveness of innovations in conservation and development (Juma and Timmer 2003) and analyzed the ecoagriculture set of cases (Isely and Scherr 2003).

2. The UNDP Equator Initiative database and field methodology for cases

1. The UNDP Equator Initiative database

Need paragraph to describe the info base:

- *starting material: EI descriptions*
- *electronic data base (used in Berkes and Adhikari 2006; Adhikari thesis)*
- *interviews with 2004 prize winners: Seixas et al. paper*
- *detailed case studies*

The Equator Prize is the main mechanism by which the successful integration of conservation and development is rewarded. It has been awarded twice so far, in 2002 and 2004, from hundreds of nominations from various countries. There are 817 Equator Initiative cases from the Equator Prize competitions of 2002 and 2004. But so far only 400 nominations from 2004 are listed in the UNDP Equator Initiative database, and only 315 cases were actually available in the database for the work reported in Berkes and Adhikari (2006). Forty-two of these are categorized in the database as indigenous cases, covering three major regions of the world. This chapter uses information from these 42 cases, with emphasis on 12 of these, three from the Asia & Pacific region, three from Africa, and six from Latin America & the Caribbean. Among these 12 examples, we have case information on two of them, from Guyana and Mexico. summarize the cases by geographic scale (local, state/provincial, national, regional/international), for the full set of cases (N=315) and the indigenous cases (N=42), respectively.

The Equator Initiative database is organized by category. This chapter uses five categories of the database, each of which includes information related to business organization and income generating activities. These five categories are: Productive Sector, Poverty Reduction, Community Focus, Biodiversity, and Millennium Development Goals. The database also includes two other categories (Ecosystem; Ecosystem Services).

2. Case study methodology

This report contributes to the Research and Learning component of the EI program by synthesizing the findings of four field studies based on EI cases. Each study addressed the overall purpose of the EI (biodiversity conservation and poverty alleviation) and each addressed the goal of researching lessons from EI cases. Since the number of potential research questions that can be asked is very large (Agrawal 2002), it is necessary to use a targeted approach to narrow research down to a small number of questions. Hence, each study focused on two major common objectives:

1) What were the important factors in community self-organization?
What precipitated the project, in terms of trigger events and catalytic elements? How was the project funded and organized? How was capacity developed? What were the sources of information and the role of technical and local/traditional knowledge? What was the role of leadership in the evolution of the project?

2) How can the cross-scale institutional linkages be characterized?
How is the case connected to the various levels of government, to NGOs, and to development agencies through cross-scale linkages? What were the main horizontal (across space) and vertical (across levels of organization) institutional linkages? What cross-scale linkages were important in funding and in knowledge transfer? Which linkages were important for political support and which created institutional barriers?

These two objectives are based on both theoretical and empirical considerations. They emerge out of the theory of complex adaptive systems. A complex system has a number of attributes not observed in simple systems, including nonlinearity, uncertainty, emergence, scale and self-organization (Berkes et al. 2003). Early empirical findings on EI projects (Jonas 2003; Seixas et al., submitted) indicated that scale was important and that many EI projects were characterized by large numbers of cross-scale linkages. Similarly, the genesis of the case and aspects of community self-organization often showed intriguing patterns and variations. A number of meetings were held, involving University of Manitoba researchers experienced in community-based management systems, common property analysis and multi-stakeholder processes, and personnel from the International Development Research Centre (IDRC), Environment Canada and the International Institute for Sustainable Development (IISD). Based on the discussions of these meetings, the analysis of community self-organization and cross-scale linkages were chosen as the focus of the four studies.

Thus, the two common objectives were used in each of the studies, three of them undertaken toward a Masters thesis and one of them a PhD. A common checklist of questions was developed by Seixas and Berkes, in collaboration with the research students, covering the major headings under the two objectives and other important items to characterize the EI case. The four studies covered EI cases in Brazil (BR), Guyana (GY), India (IN) and Kenya (KE); all were from the 2002 Equator Prize competition. Three of the four were from the list of prize finalists; only the Guyana case was not. Each case was studied over a period of three and half to five months in the field, using a mix of quantitative and qualitative methods, including short questionnaires, participant observation, semi-directed interviews, key informants, focus groups and other small group interviews. A description of cases may be found in the next section of this report.

Table or box: Checklist of Questions to Compare Across Cases

1. **Contact information: Location, address, key persons**

2. **Community organization**
   a. Origins of the project
      i. Date of community initiation
      ii. Date of formally established (EI date)
      iii. What inspired or precipitated the project? What were the sources of inspiration for the project?

1. Whose idea was it? Locals, outsiders, gov't, NGOs, etc
2. Trigger event, if any.
3. Catalytic element, if any
4. Other?

b. Leadership and key people (note gender)
   i. Individuals: locals and/or outsiders (e.g., local leaders, researchers, entrepreneurs). What role did they play? How did their role change during the course of the project?
   ii. Key organizations: locals and/or outsiders (e.g., traditional authority, gov't, NGOs). What role did they play? How did their role change during the course of the project?

c. Funding and other resources
   i. If there was funding for initial community organization, who provided the funding?
   ii. If there was capacity building, including training workshops, who funded it?
   iii. If there was initial investments, who funded it?
   iv. If there was funding for office, office personnel, vehicles, etc., who funded them?
   v. Human resources for initial organization (in-kind work as opposed to money)
      1. Volunteer support from pre-existing groups
      2. NGO and Gov't personnel providing their time or services for free
      3. Enlisting free help from outside groups, e.g., proposal writing, information, contacts, communication, etc.
      4. Were there pre-existing relationships between these groups and the community?
   vi. Use of free facilities (e.g., community radio, office space, community television)

d. Knowledge (note gender)
   i. Sources of knowledge: local/TEK and/or outside knowledge
   ii. If there is local knowledge and if relevant, who holds this knowledge?
   iii. If there is outside knowledge used in the project, was there capacity building (education, training, knowledge exchange)? Who was involved in providing capacity (e.g., other communities, NGOs, Gov't, universities, researchers)?
   iv. Were there other ways of integrating knowledge systems?
   v. Were there *learning networks* (self-organized groups consisting of people from different organizations, who are engaged in problem-solving, subsequently recycling their experience to tackle new problems)?

3. **Cross-scale linkages**

a. Identification of main stakeholders (community groups, business groups, gov't, NGOs, development agencies) by levels of organization. Produce a table (see example attached) as way of checking off all the combinations, and enter the names of organizations/agencies into the matrix of the table.
   i. local/community/village level
   ii. regional administrative level: municipality, district, etc. as appropriate
   iii. state/provincial level
   iv. national, including national NGOs
   v. international, including international development agencies

b. Institutional linkages related to the project
   i. Produce a diagram (see example attached) indicating key linkages
   ii. Key horizontal institutional linkages (i.e., linkages across space and sectors, such as networking with other community groups, NGOs, development agencies, etc)
      1. facilitating/enabling the project
      2. as barriers/hindrance to the project
      3. Whose initiative established these linkages?
   iii. Key vertical institutional linkages (i.e., linkages across levels of organization, such as linking with key gov't agencies)
      1. facilitating/enabling the project
      2. as barriers/hindrance to the project
      3. Whose initiative established these linkages?
   iv. How does the policy environment impact the project? (e.g., policies, legislation, political space for experimentation)
   v. What change (if any) did the project trigger in government legislation or policy?

c. Are there any unusual interactions among gov't agencies, NGOs, development agencies, etc, that impact the project positively or negatively (e.g., competition over gov't department jurisdiction, or NGOs competing over funding)? What motivates these linkages? What are the drivers of positive or negative interactions?

4. **Biodiversity conservation and environmental improvements**

a. Conservation/improvement of what target resources (species and environmental resources)
b. Changes in resource state
c. Indicators of biodiversity conservation or improvement (e.g., birds or butterflies started to come back; water became clearer, etc)
d. Was there any reduction on threats to biodiversity?

5. **Poverty reduction**

a. Indicators of poverty reduction (e.g., number of jobs, increased income etc)

b. Improvements in community well-being (e.g., access to clean water, new village school, waste management etc.)
c. Was there any reduction on threats to human well-being?

6. Detailed analysis of community-based conservation (CBC)

a. Mechanisms, dynamics, drivers
   i. Analysis of catalytic element that made the initiative work
   ii. Decision-making process (e.g., participatory, transparent, responsible)
   iii. Conflict-management mechanisms
   iv. Conflict resolution and enforcement

b. Learning and Adaptive Management
   i. How did previous observations lead to project formation and development?
   ii. How was experience incorporated into subsequent steps of the project? What learning processes did the different parts of the project go through? (project – including all stakeholders)
   iii. What was the role of experimentation, if any?
   iv. Role of memory, novelty, innovation
   v. How monitoring (e.g., rare species) informs the project
   vi. Barriers to CBC, and how the barriers were overcome
   vii. Combining knowledge systems to solve problems
   viii. Was there adaptive management (learning-by-doing) with the organization structure and/or with ecosystem management?

c. Community benefits from biodiversity conservation and environment improvements
   i. What direct benefits were observed (e.g., improvement in resource base to be further exploited; alternative income sources (e.g., tourism))
   ii. What indirect benefits were observed (e.g., awards and recognition; publicity; increased funding opportunities for conservation)

d. Livelihood strategies, coping and adapting
   i. How did involvement in the project affect other livelihood pursuits, negatively (e.g., time, resources) or positively (e.g., synergies, increased capital)?
   ii. How did the project affect the ability of households and the community to adapt to changes (e.g., markets)?

e. Resilience of communities, livelihoods and management systems
   i. Did the project add options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?
   ii. Did the project create learning opportunities (see under learning)?

iii. Did the project create self-organization opportunities (see under community organization)?

f. Transferability of the lessons from this EI case
   i. Which lessons were likely transferable? Why?
   ii. Which lessons were not transferable? Why?

g. Recommendations (to improve your EI case), if any

3. Description of the Case Studies

1. The Cananéia Oyster Producers' Cooperative (Cooperostra), Brazil (BR)

Cooperostra works toward adding economic value to a natural resource (oyster) while intending to conserve the mangrove ecosystem. Cooperostra members collect oysters from the mangrove, keep them in human-made oyster rearing beds to grow to larger, more profitable sizes, and then purify the oysters in a depuration station in order to obtain health certification from the Federal Inspection Agency for commercialization. With such certification, Cooperostra members can command higher prices for their oysters and sell them directly to high-end restaurants, instead of selling to middlemen who would claim the large portion of the profits.

The Cooperostra idea emerged from a study on the socio-economic viability of extractive reserves (protected areas that allow certain kinds of resource use) in Cananéia, conducted by two São Paulo state government agencies (the Forest Foundation and the Fisheries Institute) and a university research group (NUPAUB/USP) with support from the Federal Environmental Agency (CNPT/IBAMA). These organizations, in particular the two state agencies, have worked together to obtain funding, build local capacity, organize cooperative members, and connect the cooperative with other organizations and the regional oyster market. Cooperostra was initially created for the Mandira community, situated within an extractive reserve, the population of which has relied on oyster harvesting for more than 90% of their livelihood earnings. Nevertheless, due to logistical considerations regarding the construction of the depuration station, oyster collectors from other communities also became members.

Cooperostra has succeeded in improving the incomes of its members who now harvest fewer oysters and have more time to pursue other activities. Cooperostra members mentioned that they have observed an increase in oyster stocks despite the lack of oyster stock assessment and biodiversity benchmark data. They have also learnt the importance of protecting the mangrove. In addition, the establishment of the Mandira extractive reserve (an initiative linked to Cooperostra) turned an open access area into a community-based one. Despite of such successes, Cooperostra has faced some problems including poor administration over the years (mainly by non-members) leading to debts; poor marketing strategies and transportation system (i.e., insufficient sales leading members to continually sell oysters to middlemen who compete

with the Cooperostra oysters); internal conflicts between members from the Mandira community and from other communities; and uneven allocation of benefits among cooperative members.

2. Community-based Arapaima Conservation in the North Rupununi, Guyana (GY)

The fish, Arapaima (*Arapaima gigas*) is a large, high-value species of the Amazon basin. The North Rupununi District Development Board (NRDDB) is a regional NGO that facilitates the management and development of its 14 member communities. NRDDB manages a number of projects including the Arapaima Management Plan. NRDDB works closely with Iwokrama International Centre (a national NGO) responsible for managing a rainforest reserve. Iwokrama has facilitated NRDDB projects by providing training, capacity building, and technical and institutional support, by creating links between NRDDB and government or other organizations, and by providing funding or helping NRDDB to search funding for their projects.

The Arapaima fishery is legally prohibited in Guyana, but due to lack of government enforcement, Arapaima populations have been over-harvested in some areas. In 1998, the North Rupununi communities identified Arapaima management as a local priority. Iwokrama facilitated then the link between NRDDB and the Mamirauá Sustainable Development Reserve in Brazil – a project that was successfully conducting adaptive co-management of *Arapaima gigas* using local ecological knowledge to assess populations and estimate sustainable harvest levels. Scientists and fishermen from the Mamirauá Reserve helped NRDDB with the development of the Arapaima Management Plan. In 2000, a ban of Arapaima harvest was locally imposed and enforced by NRDDB members. Between 2001 and 2004, the number of adult Arapaima counted in the managed area increased three-fold. However, there has not yet been any harvesting or direct income generation from Arapaima. But high value markets have been identified for future sales of Arapaima. In addition, alternative sources of income were created including small-scale aquarium fish trade, and salaries to fishers and rental of community equipment to conduct annual Arapaima surveys.

The government supported the project initially but has not contributed much for the development of the Arapaima Management Plan or its implementation. Indeed, lack of institutional memory and political commitment at higher government levels is argued to be a major impediment for the approval of this management plan, which is based on the assumption of eventual sustainable harvests of Arapaima. Although NRDDB has begun to create links with government and funding agencies independent from Iwokrama, it still lacks strong political links needed to approve the Management Plan.

3. Rural Communes' Medicinal Plant Conservation Center (RCMPCC), India (IN)

This initiative works toward *in situ* conservation and sustainable use of medicinal plants in the Maharashtra state by promoting a partnership among local communities, the Forest Department (government) and NGOs. RCMPCC facilitated the establishment of 13 Medicinal Plant Conservation Areas (MPCAs) and the creation of local organizations (local management committees and self-help groups of women) in charge of harvesting, processing, marketing and sale of medicinal plants within their designated areas. The initiative aimed to document and disseminate local knowledge of medicinal plants and help to revitalize local health traditions. Through participatory approaches, it was able to document some 50,000 medicinal plants representing more than 50 different species. The initiative was launched in December 1999 but community-based activities commenced in August 2002. Since then, it has inspired other states and the Government of India to include MPCAs in their conservation and development agendas.

The initiative emerged from the idea to expand an earlier project of the Foundation for Revitalization of Public Health Traditions (FRLHT) (a national-level NGO) with the support from Rural Commune (a regional NGO) who had previously worked with the state Forest Department. Funding availability created an opportunity to implement the project. Training and capacity building in different issues were provided by local and outside experts to community members and government agents at various stages of the project implementation.

This initiative is quite recent and has no baseline data collection; hence it is premature to assess impacts on biodiversity conservation and poverty reduction. Nevertheless, MPCAs are becoming a major gene pool of plant diversity in Maharashtra. As well, valorizing and popularizing the local low-cost alternative health products contributed to the improvement of health and nutrition of poor people. In addition, the initiative empowered women's groups to become economically self-reliant and participate in community decision-making processes.

4. Honey Care Africa's Beekeeping in Rural Kenya

Honey Care Africa (HCA) is a private company that has promoted over a dozen beekeeping projects in rural communities throughout Kenya. HCA has established partnerships with local development organizations (NGOs or community-based organizations) and rural communities, particularly with small-scale farmers (beekeepers). HCA introduced a new beehive technology in these communities and guaranteed to purchase all honey produced by individuals with cash payment at a competitive, fair price. The partnering organizations facilitated the project implementation in each area by providing training and capacity building, supervising the hives, in some cases providing loans for individuals to purchase beehives, and also by mediating the relationship between HCA and beekeepers so that the former does not exploit the latter. Government agents from the Ministry of Livestock and Fisheries Development (MLFD) are also engaged in some of the projects.

In our research, two of the HCA projects were investigated in the field: one in the Kakamega district (KE-I), a densely populated area near a rainforest; and the other in the Kwale district (KE-II), with a relatively low population density and located largely in a semi-arid region. Both HCA projects initiated in 2000.

In Kakamega, the Community Action for Rural Development (CARD – a community-based organization) supervises more than 600 HCA beehives, managed by beekeeping groups or individual beekeepers. A similar amount of hives is under the supervision of the Coastal Rural Support Program (CRSP) of the Aga Khan Foundation (a national NGO) in the Kwale district. In this area, CRSP partnered with government agents of the Ministry of Livestock and Fisheries Development, based in CRSP's office, in order to implement the beekeeping project. In Kwale, CRSP tried to organize Village Development Committees (VDC) and Village Development Organizations (VDO) to facilitate many of the AKF projects, including beekeeping. Nevertheless, many of these VDC and VDO were not functioning well due to lack of leadership and continuously technical and organizational support from CRSP.

In Kakamega, beehives are owned individually but often managed collectively, an arrangement that encourages information exchange. The existing local knowledge about bees and beekeeping using traditional technologies helped the project succeed in this area. In Kwale, beehives are owned and managed individually, and there is poor information management and dissemination of knowledge among beekeepers from different villages. Moreover, few people had previous experience with beekeeping. These facts, in addition to weak technical support and limited flower (nectar) resources due to low precipitation in certain months of the year has constrained the project's success.

The pollination service provided by bees to both wild and cultivated species is expected to help conservation. However, in none of these two areas a study on the impact of beekeeping in the environment has been conducted, despite some people mentioned an increase in fruit crop yields and more flowers and fruits being planted. The project contribution to reduce poverty is also mixed. Those few beekeepers that paid back their loans think the project is worthwhile, but the large majority have paid off very little of their loans yet. Another important point to consider is

that this project favors individuals with disposable income, or the wealthier members of the village, as the poorest villagers do not have the capital to purchase hives.

5. TIDE Port Honduras Marine Reserve, Belize

The establishment of marine protected areas (MPAs) in much of the developing world has been problematic because of enforcement problems and impacts of MPAs on the livelihoods of small-scale fishers. There often are strong cultural, economic and subsistence relationships between coastal communities and their resource base, necessitating development interventions that compensate for loss of any resource access.

The Port Honduras Marine Reserve was created by the Belize Government in 2000, incorporating an area of approximately 1300 km^2 within the larger Port Honduras Basin. There are three primary settlements bordering the Reserve. Although fishing is both a commercial and subsistence livelihood activity in this area, only an estimated 156 fishers live in the three communities (Heyman & Graham, 2000).

The Port Honduras Marine Reserve (PHMR) in Belize was developed through partnerships between local fishers and scientists from the Toledo Institute for Development and Environment (TIDE), a local NGO, and The Nature Conservancy Belize. Originally the Reserve was created to address manatee slaughter and illegal fishing in the area by non-Belizean fishers. However, restrictions on the use of gillnets in the Reserve threatened the livelihoods of many local fishers.

In response, TIDE initiated a series of interventions aimed at reducing the Reserve's impact on local fishers. These interventions included the gradual enforcement of Reserve regulations; awareness campaigns; direct employment of local people as Park Rangers; scholarships for the fishers' children; buy-back of restricted gear; tour-guide training; and the creation of a tour operator subsidiary of TIDE. These measures reduced illegal fishing in the Reserve, with most fishers perceiving a recovery of fish stocks.

Research methods involved a combination of Rapid Rural Appraisal techniques, including an archival review, informal and semi-structured interviews, and participant observation. Semi-structured interviews were conducted with 26 former gillnet fishers and tour guides from the three communities, three TIDE personnel, and the local representative from the Department of Fisheries.

This research identified a number of factors that appeared to have contributed to the success of the project, highlighting the importance of a multifaceted approach to community-based conservation that includes capacity building; the development of complementary livelihoods; and locally driven management, monitoring and awareness campaigns.

6. Pred Nai community forestry group and mangrove rehabilitation, Thailand

Pred Nai Community Forestry Group, located in the mangrove forests of eastern Thailand, is a community-based initiative. The community began conservation and management efforts after their mangrove forest was partly destroyed by logging and shrimp aquaculture run by large outside corporations. After successfully stopping the corporations, Pred Nai advanced from informal patrolling of their mangroves to the establishment of a formal conservation group which actively manages the local mangrove forest. The community works closely with government, NGO, university, and other community partners through formal and informal networks.

Pred Nai Community Forestry Group has developed a forest management plan, conducted reforestation, and increased crab populations through habitat improvement and harvest restrictions. The community has succeeded in improving local economic conditions through increased yields of crab, fish and shrimp, and through the establishment of a Village Savings Group. Despite their success, Pred Nai also continues to face many challenges, including the erosion of shoreline and destruction of the seabed by commercial fishing boats, the use of fish traps with small mesh sizes, growing socioeconomic disparity between the rich and poor, and declining interest in conservation, ironically due to their success and relative prosperity.

In Pred Nai's case, the creation of the formal conservation group and the concurrent active management of the forest grew as a natural progression from the community's informal conservation and environmental protection efforts.

Capacity building is widely recognized in the literature as an important part of community-based management. Pred Nai's success demonstrates the important role that capacity building can play once a community's project is under way. Pred Nai's case also demonstrates that a community's experience prior to engaging in formal management can contribute to the community's management efforts and can be seen as a form of informal capacity building.

Cross-scale institutional linkages are recognized as critical to the success of the community-based management projects. With projects that have grassroots origins, however, these linkages may not necessarily be present at the project's outset. In Pred Nai's case the NGO RECOFTC, was a critical enabling organization in developing the conservation group and management plan and in creating and developing both horizontal and vertical institutional linkages. Horizontal linkages were encouraged through the creation of community forestry networks at the district, provincial and regional scale. Vertical institutional linkages were facilitated with government agencies and universities through RECOFTC and resulted in collaborative research projects between the community and universities; study tours of the community by government officials, academics, and other community leaders; as well as greater collaboration between Pred Nai and local government departments.

7. The Casa Matsiguenka Community-based Ecotourism Lodge Enterprise in Manu National Park, Peru

Since the creation of Manu National Park (PNM) in 1973, local indigenous people have lived under restrictions within the Park. They have been prohibited from using firearms and from commercializing any resources from the forest. The creation of a community-based ecotourism lodge enterprise was proposed by foreigners and pursued by the indigenous leaders within PNM as a way to obtain some economic benefits for their communities.

In 1997 the two Matsiguenka communities of PNM formed the multicommunal enterprise, *Empresa Multicommunal Matsiguenka S.R.L.* (EMM). This lodge enterprise was formally established as a *pilot project* through agreements between INRENA (governmental institution for protected areas management), the German Technology Cooperation (GTZ) as the funding organization, and the two indigenous communities within PNM, under the auspices of the EMM. INRENA and the EMM signed a 20-year renewable agreement in which a 6-hectare land concession was granted to the communities for tourism purposes. In exchange, the indigenous enterprise committed to give 5% of their monthly profit to the PNM office.

The multicommunal enterprise has received support from governmental organizations and NGOs from 1996 to 2003. In this period the EMM received financial support from GTZ, which provided funding through their FANPE project. A coordination committee was formed, composed of the managers of EMM, the community leaders and the supporting institutions (GTZ/FANPE, INRENA headquarters and central office, and APECO, a conservationist NGO). Its role was problem solving. Unfortunately, this committee has been inactive since 2003, when GTZ funding support ended. After 2003, the EMM is supported by the indigenous managers who in coordination with the assistant manager, the only tourism professional of the enterprise, maintain and manage the Matsiguenka lodge enterprise.

Although managing an enterprise is not an activity that belongs to this indigenous people's traditional economic system, the Matsiguenka communities have successfully organized themselves to create and maintain their ecotourism lodge enterprise, while also continuing to practice their traditional livelihood system. Having an enterprise and owning a lodge is something for the Matsiguenka people to be proud of. For this reason, the EMM is considered a successful project in social terms. Another great success of the EMM has been about craft production, which are mostly made by the community women in their households. Through a learning-by-doing process, women have learned to improve craft quality and production, and these crafts are then sold at the lodge. The whole price paid by tourists goes directly to the producer. The profit generated by craft production has been steady and has become a main source of income for many women and elders, who otherwise would not have other options to obtain monetary income without disturbing their traditional livelihoods.

One main challenge of the EMM is to develop a support and business network within fair trade and international tourism market, national and international development and conservation institutions for their community-based business to continue growing; for instance, there is a need to develop partnership for marketing their lodge and bring more tourists. Another challenge is to find long-term support for ongoing education and training programs that enhance local capacity and leadership. Most of the learning has been accomplished through a learning-by-doing process.

8. Communal Enterprise of San Juan Nuevo in Mexico.

Through the initiative of a group of *comuneros*, a community organization process to promote communal use and management of forest resources started at the end of the 1970's. This community organization process subsequently gave birth to the communal enterprise of Nuevo San Juan. Since the early '80s, the enterprise has been leading one of the biggest collective efforts and most diversified productive activities to exploit and protect forest resources in the State of Michoacan, Mexico.

The Nuevo San Juan communal institutions have developed linkages with many other state-based, federal and international organizations. These linkages have helped the communal enterprise to develop the capacity of their human resources and establish ongoing training programs in a variety of skills, to adapt management strategies to new market demands in their interest of becoming more competitive and to diversify productive activities. In general, the linkages have contributed to the resilience of the system by helping it to readapt and survive to the pressure of exogenous and endogenous drivers of change.

The main body of knowledge used to put the enterprise in place and make it function was science-based. The processes to handle timber, in agreement with the legislation and the market, required technical specialized knowledge. On the other hand, local knowledge played a role in areas such as communal institution building, in the management of tree stands, and in dealing with communal issues, law enforcement agencies and outsiders in general.

The Communal Representative and Management Board drew on local skills from the members of the different interest groups to start the operations of the communal enterprise. They also directed efforts to train the *comuneros* on basic skills to run the different productive areas. Despite the occasional presence of outsiders in the management of the productive process, the primary goal of outsiders – based on the local leaders' vision – was to train *comuneros* for them to eventually take over the coordination of productive processes. Following this important objective, the communal enterprise has become one of the few experiences in Mexico – and maybe in the world – where large-scale timber extraction takes place with a 98% of labour from the community. This is another important lesson from this initiative.

When the Nuevo San Juan communal enterprise began it gave employment to approximately 100 comuneros. Presently it has approximately 600 direct employees who receive the social benefits established by the Mexican legislation. There are also approximately 89 persons in the non-timber adjunct productive areas, approximately 700 indirect employees and thousands of beneficiaries. The current annual sales of the enterprise exceed US$10 million dollars for the exploitation of about 70,000 m^3 of wood per year. The communal forest management system in Nuevo San Juan has received national and international recognition for its scale of operations, innovative management system and reinvestment of profits.

9. The Torra Conservancy, Namibia

The Torra Conservancy is a 2004 UNDP Equator Prize winner and is situated on communal land of Kunene region in NW Namibia, encompassing 352,200 hectares of semi-desert and sparse savanna, with an annual rainfall of less 100mm/year. The low density population of 1200 includes Damara and Riemvasmaaker tribal groups, with fewer Heroro and Ovambo people. Principal livelihood activities include small and large stock farming (goats, sheep, cattle) small-scale vegetable gardens, wage labour, and some absentee wage earners. Wildlife in the Torra Conservancy include elephant, black rhino, springbok, mountain zebra, giraffe, oryx, kudu, lion, cheetah and leopard, as well as many other endemic species. Many of these animals move through the much wider Kunene region that the Torra Conservancy shares with other conservancies and two national parks.

Torra Conservancy has 450 registered adult members and was established as one of Namibia's first communal land conservancies in June 1998, following promulgation of the *Nature Conservation Amendment Act* of 1996. This legislation enabled a national Community-Based Natural Resource Management Programme (CBNRM) that devolved certain rights of use and management of wildlife to communal land communities. Torra Conservancy is a part of the national CBNRM programme and is one of 44 registered communal conservancies today. It is recognized as one of the most successful, achieving operational self-sufficiency in 2002, following initial support from donors and NGOs. Torra Conservancy has a management committee of five men and one woman and employs five community game guards, a field officer, community activist and receptionist operating out of a conservancy office. It conducts annual wildlife counts and monitoring and earns wildlife-based revenues from a joint venture lodge, trophy hunting, live sales of springbok, as well as providing for own use hunting. A joint venture ecotourism lodge, the Damaraland Camp, operated under partnership agreement with a South African tour company, is the principal revenue-generating enterprise, providing annual land rent revenue, monthly bed levy revenue and 22 full-time jobs to the Torra Conservancy. This wildlife and wilderness based enterprise is the principal reason for the self-sufficiency of the Torra Conservancy.

Institutional History

In 1982, an ngo, Namibian Wildlife Trust (NWT), acting out of concern for severely depleted elephant, black rhino and other wildlife in NW Namibia due to drought, armed conflict and poaching, appointed a conservator with long experience in the region. He engaged local headmen, who shared concern about the loss of wildlife. The headmen appointed their own community game guards (CGGs), all respected hunters from local communities. The aim was to stop poaching and the CGGs monitored wildlife, reporting suspicious activity and poaching incidents to the headmen, who in turn informed government wildlife enforcement personnel. By the late 1980's, regional wildlife populations had noticably recovered. The CGG programme was considered to be a major factor in stopping poaching and contributing to wildlife recovery. Increasing demands for the programme led to formation of a new Namibian NGO, Integrated Rural Development and Nature Conservation (IRDNC) with regional programming in the Kunene and Caprivi regions of northern Namibia. In the same period, Namibia gained its independence in 1990 and the black majority government decided to extend rights in wildlife

enjoyed by private land white farmers to communal area residents. IRDNC, based on its successful experience working with communal area communities in the CGG programme, was invited by Ministry of Wildlife, Conservation, and Tourism officials (now the Ministry of Environment and Tourism) to help draft national policy and legislation for a community-based natural resources management programme. USAID provided major donor assistance to this process under the Living in a Finite Environment (LIFE) Programme, through its executing agency, the World Wildlife Fund WWF(US). USAID and WWF (US) have remained the main international donor agents in the Namibian CBNRM programme to the present day, although other international donors have come in. The resultant legislation and CBNRM programme features devolution of certain rights and uses of wildlife to communal area residents. Communal area residents must form a common property resource institution (cpr) called a conservancy to participate in the programme. The conservancy must be registered with the Ministry of Environment and Tourism. In order to be registered, it must have a defined boundary, a defined membership, a representative committee and a constitution recognized by government. The Torra Conservancy was one of the first to meet these registration criteria and become established, with considerable technical assistance from the IRDNC. Ostrom cpr design principles such as external recognition, defined boundaries and membership were explicitly considered in the formulation of conservancy registration requirements.

Key linkages and partnerships have evolved in Namibian CBNRM from a few simple ones between local communities, a national conservation NGO and the national government wildlife agency to multiple, cross-level linkages involving international donors, multiple national NGO's, private enterprise and the Ministry of Environment and Tourism. The Torra Conservancy borders two other conservancies and is based upon a fugitive wildlife resource that moves throughout a wider region containing other conservancies and two national parks. The rapid 'scaling up' of conservancies in Namibia (from 4 to 44 over 8 years) and an apparent evolution from a wildlife conservation and tourism focus to a broader integrated resources development approach, is not well researched to date. There has also been an evident evolution from an early period of self-organization and 'bottom-up' community-based conservation inn the 1980's (as represented by the CGG programme) to a multi-layered, national programme, featuring international, national and local players, as well as external, legal recognition and cpr registration requirements defined and administered by central government. Therefore, there are significant features of CBNRM in Namibia that are very much 'top-down', notwithstanding an early history of 'bottom-up' community conservation.

10. Pastoralist Integrated Support Programme, Kenya

The Pastoralist Integrated Support Programme (PISP) is a non-governmental organization based in Marsabit District in northern Kenya. It was founded in 1996 by a group of local development practitioners in consultation with traditional leaders of the Gabra ethnic group. Its focus has been on facilitating community-based water supply and management among the pastoralist populations of Marsabit District, especially the Gabra.

Marsabit District is the driest part of Kenya, and with the exception of Mount Marsabit the entire District is classified as either semi-arid or arid and is not suitable for agriculture. The local economy is based almost solely on nomadic pastoralism, and the two biggest constraints on this economy are the lack of reliable water sources in proximity to pasture and insecurity in the form of cattle raiding and inter-ethnic conflict.

PISP has been addressing the water issue by assisting local communities to construct and rehabilitate shallow wells and to construct rock catchments, sand dams, and rainwater harvesting systems. The location of water infrastructure is decided through consultations between PISP and local communities, and these communities contribute labour and materials for the construction. PISP works closely with the traditional political leadership structures of each of the five sections or *phratries* of the Gabra people—the *Yaa Councils*—and with traditional water management institutions at the local level such as well councils.

Baseline data on biodiversity and conservation is not available; however, there are signs that the work of PISP is having some positive effect. Open water sources such as rock catchments benefit wildlife to a certain extent as well as humans and livestock. Furthermore, PISP's work seems to be reinforcing and building the capacity of traditional commons institutions. Traditional commons institutions regulating the use of flora and fauna are likely to benefit from the strengthening of corresponding institutions for the management of water.

One key element in self-organization has been the key role played by certain social entrepreneurs—people involved in the formation of PISP. A key action taken by these people was to consult with and draw upon existing traditional leadership structures in the formation and operation of the organization. These individuals have also taken steps to establish strong linkages between PISP and various donor agencies (WaterAid, ITDG, CORDAID, Oxfam, SNV and others).

Section 3. Organizing processes in conservation-development initiatives

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3.1. Introduction

What makes a great cook ("chef"): one who follows all the recipes strictly or one who creates a delicious meal with the available ingredients? We stay with the second case. In this chapter we use the cook metaphor to introduce the theme of how successful community-based conservation projects originates. We believe that more than the amount and variety of ingredients, what makes a delicious meal is the cook's ability to visualize beforehand the potential meal he can prepare with the available ingredients, and to choose and combine them appropriately (i.e., use them wisely). Of course, some basic ingredients are required in most, if not all, meals, such as salt, oil and sugar. The same may be said for community-based conservation (CBC) projects. Our study aims to show that there is no definite recipe for promoting successful community-based conservation, but a vision (a goal) and some basic ingredients is often necessary and the success of a project results from its ability use the available resources and skills (ingredients) wisely.

Community-based Conservation (CBC) initiatives and/or Integrated Conservation and Development Projects (ICDPs), as defined in Section 1 of this book, aims to conserve biological diversity and natural systems while improving human welfare. We understand that CBC and ICDPs are integrated social-ecological systems (SES) (Berkes and Folke 1998), that is, ecological processes are influenced by human activities and, on the other hand, human institutions respond to environmental changes. According to Anderies et al (2004), "when social and ecological systems are so linked [as in the cases of CBC and ICDPs], the overall SES is a complex, adaptive system involving multiple subsystems, as well as being embedded in multiple larger systems".

Complex adaptive systems are "systems of people and nature in which complexity emerges from a small set of critical processes which create and maintain the self-organizing properties of the system" (Resilience Alliance 2006). Complex system has several attributes such as nonlinearity, emergence, uncertainty, scale, and self-organization (Levin 1998, Gunderson and Holling 2002). Most management systems, such as CBC and ICDPs, operates at multiple scales; that is, the governance structure encompass institutions at different political levels and the ecological processes affecting one ecosystem may run at multiple spatial and temporal scales. Ecosystem and social dynamics are often nonlinear and their outcomes uncertain. Self-organization is a characteristic of both human and natural systems. As Holling (2001 p. 403) puts it, "Self-organization of ecological systems establishes the arena for evolutionary change. Self-organization of human institutional patterns establishes the arena for future sustainable opportunities".

Here we argue that it is important to study self-organization of community-based conservation initiatives because:

a) CBC is a complex system and therefore self-organization as a characteristic feature of complex system can also be applied to CBC
b) Some complex system or common-property resources scholars like Berkes (2003) suggested that in the case of community-based conservation initiatives understanding the conditions under which such initiatives have worked would be more important than evaluating their success. For instance, a review of various research reports on community-based wildlife management cases in South Asia (Kothari et al., 2000) provides useful account on how they are performing in present, but the idea on how these initiatives were organized in past was least explored. To understand conditions under which community-based conservation initiatives have developed, Berkes focuses on five key characteristics that contribute to its effective functioning. These include the importance of cross-scale interaction, adaptive co-management (through self-organization), the question of incentives and multiple stakeholders, use of traditional ecological knowledge (TEK) and the development of cross-cultural ethics.

In this chapter we focus our attention on aspects of self-organization in human system, in particular, we explore key elements (i.e., ingredients according to the cook metaphor) that contribute to community self-organization in the context of CBC and ICDP initiatives. We pose two major questions: (1) How does one get people and/or organizations involved in a project, willing to take responsibilities and to act? Or put it differently, what capacities and institutions turn it possible for people and organizations to work together? (2) What contributes to community self-organization? In other words, how conservation-development projects originate, evolve, survive or disappear? In order to address these questions we examine several cases among the Equator Prize finalists and short-listed nominees, from both the 2002 and 2004 awards. These are successful cases (recognized by UNDP) and therefore, both self-organization and cross-scale interactions are studied in this book/chapter in our attempt to improve our understanding of the context, within which the selected cases have emerged. The case-study research was carried out by several researchers and involved: in-depth field-research, desk-analysis, and interviews with EI representatives (Berkes and Seixas 2004, Fernandes 2004, Fernandes 2005, Herrera 2006, Jones 2003, Maurice 2004, Medeiros 2004, Seixas et al submitted, Senyk 2006, Shukla 2004, Timmer 2004a).

Before examining how communities self-organize throughout CBC and ICDP initiatives, it is important to define what we mean by "community". Agrawal and Gibson (2001, p.1) state that "communities are complex entities containing individuals differentiated by status, political and economic power, religion and social prestige, and intentions". Communities may or may not share the same space and may range from few individuals to hundreds or even thousands of people. In this chapter, we take the above considerations and use the Singleton and Taylor (1992) concept of community as a set of people with some shared beliefs, who interact directly in frequent basis over multiple issues, and who expect to interact in the future. Hence, a community may be all the people living in a small fishing village, or a group of specialized people from one or more villages working together in a specific economic sector, such as honey producers. To give a better idea, the scope of the 2004 Equator Prize finalists varied greatly with

regard to resources used, areas managed, and population involved: from ecotourism, to agro-business and to water management; from an area of 140 ha to an area of 3.4 million ha; and from one community of about 200 people to 22 villages totaling 30,000 people (Seixas et al., submitted).

The Equator Initiative has a Technical Advisory Committee who selects the successful cases among all the nominees. Hence, we assume that all the cases here investigated are successful initiatives contributing to both biodiversity conservation and poverty reduction. Despite of that, Seixas et al (Submitted) found that 33 percent of the 2004 Equator Prize finalists (N=26) focused first and foremost on poverty reduction, 8 percent focused primarily on biodiversity conservation and 58 percent focused both on poverty reduction and biodiversity conservation.

The chapter presents five sections. Firstly, we investigate who are the major groups of stakeholders involved in the EI cases. Secondly, we investigate the origins of the conservation-development initiatives addressing motivation, the trigger events and catalytic elements (including incentives). Thirdly, we look at enabling elements that contributed to each initiative, including funding and other resources used, capacity building and knowledge systems, the role of leadership and key players, and the role of partnerships established in different cases – an issue that will be further addressed in the next chapter. Fourthly, we investigate governance issues in each initiative, including decentralization and power relations/shifts, and conflict management mechanisms. Finally, we present our conclusions on the fifth section.

3.2 Major groups of people involved in the EI cases and pre-existing assets

Effective CBC initiatives invariably require the involvement of various groups, and the assets they contribute. Each CBC and ICDP initiative experiences different phases such as planning, implementing, monitoring, re-planning (i.e., adapting) and so forth. Throughout these phases, a diversity of people and organizations contribute with resources (funding or in-kind), expertise, labor, and/or facilitate decision-making and legal frameworks (See **Table 3.1.**). What follows is an examination of the general types of groups involved in the initiatives, and the role they played in the various phases described.

Table 3.1. - Major groups involved in the EI cases and pre-existing assets

General Groups	Group types	Assets most often contributed to CBC initiatives	Phases of major involvement
Community and local-level organizations	indigenous groups, local non-governmental organizations, or community-based organizations	resources (funding or in-kind), expertise, labor, and/or facilitate decision-making	Problem identification, planning, implementing, monitoring, re-planning
Supportive organizations	research institutes, conservation NGOs, development agencies, regional/national indigenous organizations and the private sector	resources (funding or in-kind), expertise, labor, and/or facilitate decision-making	Resource mobilization, planning, implementing, monitoring, re-planning
Government	municipal, state, national agencies	decision-making and legal frameworks	Planning, implementing, and monitoring

Community Groups

By definition, local communities and/or local-level organizations (indigenous groups, local non-governmental organizations, or community-based organizations) are usually the major actors in these initiatives, despite the fact that some projects were initiated by outsiders. In many cases, local groups were critical in problem identification and bringing issues to the attention of outside groups. Following problem identification, however, there are two different trends seen in the initiatives. In some, the initial resource mobilization and planning phase were dominated by outside groups, while in others the communities continued to play a major role. However, as most of the initiatives entered the implementation, monitoring and adaptation phases, these local-level groups would again assume a major role.

In some cases community groups lead most of the development and implementation of the initiative. In the Thai example, the Pred Nai initiative started out as an entirely grassroots movement focused on the protecting their local mangrove forest from the exploitation and degradation by outside organizations. In the earliest stages the community had no outside support, the villagers simply banded together in crisis as they recognized that the loss of their mangrove forest would cripple local livelihoods.

Similarly, local people in San Juan played the lead role in the Mexican initiative. Elected communal representatives and other local stakeholders drew on local skills from the members of the different interest groups to start the operations of the communal enterprise. They also directed efforts to train the comuneros on basic skills to run the different productive areas. Local knowledge played an important role in areas such as communal institution building, in the management of tree stands, and in dealing with communal issues, law enforcement agencies and outsiders in general.

Local communities in the Peruvian case lead a successful grassroots lobby to gain governmental approval necessarily for the construction of the tourist lodges. Community groups also contributed building materials, labor, and local expertise to the *Casa Matsiguenka* lodge project. The lodge manager, who is an elected community member, is tasked with the on-the-ground management of the initiative, overseeing the day to day operations of the lodge. Local expertise is also used by the lodge staff and community tour-guides.

In Guyana, the disappearance of an important fishery (Arapaima fishery) was flagged as a major issue by a number of community leaders, and raised at meetings with government and environmental NGOs. Later in the project, an association of community leaders from a number of villages acted as the link/filter between communities and an international NGO. This local group played a major role in the implementation and monitoring phases of the Project through logistical support, and contributed local expertise and significant labour and logistical coordination to the project.

Similarly, local fishers in Belize expressed concerns over increased illegal fishing by foreign nationals. However, these initial concerns lead to the involvement of both local and international NGOs, who then took the lead in lobbying the government for the creation of a Marine Protected Area (MPA). In response to the associated restrictions, communities began to disengage from the initiative, and actively resist the development of the MPA. Later, with sustainable livelihood options becoming available through the initiative, community groups began again to enlarge their role within the initiative. In particular, local groups contributed social capital in their efforts to stimulate larger grassroots support for the initiative, as well as contributions of labor and local expertise to the monitoring of the MPA.

The Brazilian case again begins with local-level groups voicing concerns, specifically oyster harvesters dissatisfied over low prices for their oysters. However, the planning and development of the Cooperostra idea emerged from a study on the socio-economic viability of extractive reserves conducted by state agencies, not community groups. In this initiative, the communities and the Cooperostra contribute primarily to the implementation of the initiative (harvesting, purification and marketing of the oysters), which requires significant inputs of labor, local expertise, and human resources.

In India, the state played a major role in the conceptualization of the initiative. Later, with the formation of local management committees and self-help groups, community members took the responsibility of harvesting, processing, marketing and sale of medicinal plants within their designated areas. Local contribution in the form of expertise, human resources and financial capital were therefore paramount to the implementation, monitoring and adaptation of this initiative.

Sometimes the role of communities in the initiatives is limited to a business transaction. For the farmers in both Kenyan sites, involvement in the Honey Care Africa (HCA) projects is limited to the business arrangement they have with HCA for the sale of their honey. In the Kakamega case, the farmer's contribution is primarily the investment of capital to purchase hives, since they are not highly involved in the management of their hives, while farmers in Kwale contribute both capital and labor as they manage their own hives.

Supportive organizations
Most CBC and ICDP initiatives benefit from the involvement of supportive organizations – organizations working closely with communities to improve conservation and/or development, but not considered government. It is significant to note that these groups are present in all of the case studies, and often play a major role in some or all of the initiatives' phases. These groups are characterized by their diversity, and may include research institutes, conservation NGOs, development agencies, regional/national indigenous organizations and the private sector. They feature prominently in the subsequent resource mobilization, planning, implementation, monitoring and adaptation phases of the initiatives, depending on the type of project and the particular case. Perhaps their most significant contribution to CBC initiatives is their ability to link local-level groups with external resources, whether their own or from other outside organizations.

These groups can be found even in the most community driven initiatives. For instance, although the Thai initiative started out as a grassroots movement, the project eventually benefited from the involvement of numerous supportive organizations. Key amongst these was the NGO Regional Community Forestry Centre for Asia and the Pacific (RECOFTC). RECOFTC's contributions to Pred Nai's conservation and management program are diverse. They include new initiatives, such as the forest survey and the establishment of the Trat Provincial Forestry Network, as well as helping to expand and develop initiatives that Pred Nai had begun on their own, such as the village management plan and an "eco-tourism" program. RECOFTC has also played an important role in facilitating intra and inter-village meetings, as well as mediating and assisting in resolution of internal conflicts within the village. Through their involvement RECOFTC has helped to provide training and capacity building for members of the village and also helped to provide key contacts for village leadership within government, academia, and NGOs; which have further assisted the village in achieving their conservation and management goals.

This was also the case of the heavily grassroots Nuevo San Juan communal institutions in Mexico, where linkages were developed with a number of supportive organizations, mostly national or international NGOs. These groups helped the communal enterprise to develop the capacity of their human resources and establish ongoing training programs in a variety of skills. In particular, external expertise helped the communal institutions to adapt management strategies to new market demands in their interest of becoming more competitive and to diversify productive activities. In general, the linkages have contributed to the resilience of the system by helping it to readapt and survive to change. Also, in the project's initial phase, supportive "groups" took the form of individuals and companies from the private sector. These groups of people came from the network of friends of some of the leaders, who –through their businesses– vouched for San Juan before a sawmill manufacturer and a paper company was installed. In this way, sawmills were constructed in the community and, to start operations, payments to the community for cellulose material were made before delivery.

In the Peruvian case, the influence of supportive organizations is seen in the conceptualization of the initiative. Both an indigenous rights NGO and conservationists NGOs were important leading up to the initiative, as they planted the seed among the indigenous communities about

having an ecotourism lodge as their best income generating option within the national park. The enterprise, lodge and tourism were all new concepts that were introduced to the Matsiguenkas by outsiders. Following the creation of the initiative, a German funded Government Programme (FANPE) became involved in the project, and contracted an NGO to further develop the project. This NGO brought to the initiative expertise in working with different Amazonian indigenous communities on environmental education projects. NGO personnel provided training workshops to the Matsiguenka during the first four years of the project, with the main purpose of strengthening cultural identity while transferring knowledge, as well as basic enterprise management skills.

The influence of a supportive organization in the Guyanese case is apparent throughout most of the initiative's phases. Like the Peruvian case, an international NGO (Iwokrama) was a key player from the very early beginnings of the project. It sourced funding, created links between the association of community leaders (NRDDB), government and other organizations, facilitated training and capacity building, and provided human resources and technical expertise to the project. One of Iwokrama's most significant contributions to the project is the forging of linkages with the Mamirauá Institute for Sustainable Development (a Brazilian NGO), which had experience with a similar project in Brazil. This group brought further funding for the development of the initiative, and facilitated the transfer of knowledge and expertise, particularly a survey methodology pioneered in Brazil. Brazilian fishers who had experience in the methodology were brought to Guyana, and trained local fishers to monitor their stocks.

Supportive groups were again major players in the project initiation phase of the Indian case. This initiative emerged from the idea to expand an earlier project of the Foundation for Revitalization of Public Health Traditions (FRLHT) (a national-level NGO) with the support from Rural Commune (a regional NGO) who had previously worked with the state Forest Department. Funding availability created an opportunity to implement the project. Training and capacity building in different issues were provided by local and outside experts to community members and government agents at various stages of the project implementation.

In Belize, The Nature Conservancy's (TNC) local office played a major role in the creation of both the initiative and the local NGO (TIDE) charged with its implementation. TNC acted both as a donor and a funding link for TIDE and many of its early sub-projects. TNC assisted the young TIDE with personnel, technical advice, and organizational support. It sourced the funding and expertise for alternative livelihood training that became a critical part of the Project's success. TIDE is the primary manager of the Marine Protected Area and associated projects and was the lead agency in lobbying the Government to establish the PHMR. Being composed almost exclusively of local residents, TIDE has been able to contribute a significant amount of social capital, labour and local expertise to the project, while at the same time sourcing financial resources for further project development.

In the two Kenyan cases, supportive organizations took a number of forms. Firstly, project initiation was lead by Honey Care Africa Ltd. (HCA), a privately owned company that acts as honey wholesaler and manufactures movable frame hives. HCA entered into contracts to purchase all honey from both projects, thus providing a guaranteed market for the honey at set price, and cash-on-the-spot payments. As a private company Honey Care helped to ensure that

the projects operate under realistic market conditions, and are economically sustainable, something often lacking in government or NGO driven projects. Implementation of the project then fell to two different NGOs. In the Kakamega district, the Community Action for Rural Development (CARD), a non-political Community Based Organization, was the primary supportive group. In Kwale District, the supportive institution was the Coastal Rural Support Programme (CRSP), operated by the Aga Khan Foundation. Both NGOs act as conduits through which the beekeeping project can be introduced to interested local residents, owing to their established relationships with current members, and their ability to organize public meetings to demonstrate the hive technology. The NGOs may also be the initial financier of the project, providing loans to farmers so they can purchase hives, beekeeping equipment, and receive training. In both Kakamega and Kwale the projects were introduced in this manner, and the relationship between the rural population and the NGO/CBO were instrumental in the initial periods of the HCA beekeeping projects.

Government

Government agencies from different political-levels and economic sectors are often involved in such CBC and ICDPs initiatives, especially because these projects do not take place in a political vacuum. They may be directly involved by providing technical and resource support or by approving policies and laws which facilitates CBC and ICDP development. There are cases though that the government are involved later in the process, due to political pressures such as the case of the community-based Ecotourism Lodge in Peru or to political reasons such as being linked to a successful project as in the case of Pred Nai forestry management in Thailand. In other instances, state agencies played a very small role in the initial discussions leading to the initiative, and contribute very little to subsequent phases of the project. For one project, Government has become a major obstacle to project implementation.

The Brazilian initiative is a good illustration of significant Government involvement in a CBC project. The concept for this initiative emerged from a study on the socio-economic viability of extractive reserves in Cananéia, conducted by a university research group (NUPAUB/USP), two São Paulo state government agencies (the Forest Foundation and the Fisheries Institute) and with support from the Federal Environmental Agency (CNPT/IBAMA). However, rather than relenting further development of the initiative to supportive groups, these Governmental organizations, in particular the two state agencies, have worked together to obtain funding, build local capacity, organize cooperative members, and connect the cooperative with other organizations and the regional oyster market.

Governmental contribution to CBC initiatives is taken further in the Mexican case. In this initiative, the cooperatives benefited not only from Governmental funding, but also interventions that provided them with the legislative and decision-making room to implement the initiative, such as legal permission to exploit timber. In addition, some of the allies in government offices such as the Forest Sub-secretariat and the Rural Development Department provided technical support and information on application procedures for forest exploitation permits and the required general documentation.

Similarly, in the Indian project, the Forest Department played an important role in the initiative by establishing 13 Medicinal Plant Conservation Areas (MPCAs), and by granting legal

recognition and management rights to local organizations. State and national agencies continue to play an active role in the management of the MPCAs, and have contributed human resource and financial capital to the implementation of the project.

In Kenya, the Ministry of Livestock and Fisheries Development (MLFD) is responsible for the national government's interest in beekeeping. Of the two projects researched, the MLFD is much more involved in the beekeeping project in Kwale than in Kakamega, with several ministry field staff stationed at the local NGO (CRSP) office. The Government field officers are able to provide technical support to farmers involved in CRSP projects. Many of the beekeepers were introduced to the project by the MLFD and look to them for support. In the Kakamega case the MLFD is not involved in the HCA project except for receiving regular reports from the local NGO (CARD) on the state of the project. This case illustrates the diversity of government assets and involvement that can even be found within countries and initiatives.

In the case from Thailand, the government first became involved with the community's conservation efforts after community members began patrolling the mangrove forests to prevent charcoal production and illegal gathering of crabs. Government involvement has increased sharply over time as the project has expanded and matured, and in part because some offices wish to be associated with a successful project such as Pred Nai. Within Pred Nai, local ecological knowledge was useful for management but could offer the community little assistance in their mangrove restoration efforts. In this case the involvement of government agencies, which had knowledge on mangrove restoration, proved useful as the government agencies were able to provide needed, practical knowledge. Pred Nai has also received training and assistance in patrolling their mangroves from locally stationed army units, the local police force and the coastal police, with some training also provided by the Royal Forest Department (RFD) and the Fisheries Department. The RFD and Fisheries Department were also involved in more significant ways; the former in providing saplings for village reforestation efforts, and the latter by stocking young aquatic wildlife (shrimps, crabs and fish) into the canals of the local mangrove.

In the Belizean case, the Government also served a critical legislative and decision-making role. The Government created the space for the Project by declaring the Port Honduras Marine Reserve (PHMR), and by entering into a co-management agreement with a local NGO (Toledo Institute for Development and Environment - TIDE). They have since played a minimal role in the initiative, occasionally contributing labour and equipment to monitoring activities.

The Government's contribution to the Peruvian initiative included facilitation of the initial planning process and granting the communities a 20-year ecotourism concession in the National Park. Further involvement has been limited to the development and implementation of Protected Areas regulations.

Finally, in the Guyana case, Government officials were brought into the process through linkages with supportive organizations (NGO Iwokrama), and gave support in principle to the project. However, Governmental inaction on policy and co-management arrangements has undermined local institutions and Project implementation.

3.3. Origins of conservation-development initiatives: motivation, trigger events and catalytic elements, incentives

Projects may originate from locals' demands or from outsiders' agendas, but often they evolve by partnership and feedback learning. Moreover, as Isely and Scherr (2003) point out, "even if the impetus for a project may not originate within the community, the project must be owned by the community via participation and implementation.... If a project is not community based to begin with, it should become so."

Seixas et al. (submitted) observed that 63 percent out of 24 finalists of the 2004 Equator Prize seemed to be initiated by community-based organization or local NGO while 21 percent were initiated (or largely influenced) by outside supportive organizations. Among the seven EI cases researched by the University of Manitoba team, four were initiated by community-based organization or local NGO (Belize, Guyana Peru, and Thailand), and three by outside supportive organizations (Brazil, India, and Kenya). The trigger events and catalytic elements in these seven cases are presented in **Table 3.2**. By *trigger events,* we understand the motives or events, which led people to get mobilized around an initiative. By *catalytic elements,* we understand the factors that contribute to speed the process of organizing an initiative (*initial catalytic elements*) and to maintain the initiative running (*continuing catalytic elements*). We observed that funding opportunity, strong leadership, capacity building, and supportive organizations are major catalytic elements in most of the cases. Each of these elements is discussed in more detail in following sub-sections.

Table 3.2. Trigger events and catalytic elements leading to the organization of EI cases

EI case	Trigger events	Catalytic elements to start the project	Catalytic elements maintaining the project
Marine Reserve (TIDE) Belize	- increase slaughter of manatees - increase illegal fishing by foreigners	- strong local leadership - strong commitment of an int'l NGO - community support - involvement of key people, who had previous relation with the leader (i.e., use of existing network of friends)	- gov't approval of management plan - co-management arrangement - increased community awareness and ownership of the projects - capacity building: alternative and/or complementary livelihood options -successful fundraising
Oyster Producers Cooperative Brazil	- decreasing oyster yield due to over-harvest - gov't agency willing to create an extractive reserve	- involvement of research and government institutions to improve management and technologies - funding opportunities (call for project proposals)	- financial, technical and political support from a number of civil society organizations, gov't organizations and private sector - partnership between two gov't agencies providing capacity building and technical support
Arapaima Conservation Guyana	- Arapaima over-harvest - Iwokrama (Nat'l NGO) sponsored community workshops to identify priorities - workshop held in 2000 with Government officials, Brazilian and UK fish specialists, and Iwokrama scientists	- capacity building: knowledge transfer from a successful project elsewhere on fish monitoring - strong leadership - leader/organization acting as a funder/technical advisor/broker: able to make the rights connections to support the project	- creation of alternative sources of income - consistent funding, capacity building and organizational support by a nat'l NGO
Medicinal Plan Conservation India	- partnership between two NGOs (nat'l and reg'l) willing to promote community-based medicinal plant conservation - partnership among NGOs and State forest department encouraged through international funding in order to promote community-based medicinal plant conservation	- funding opportunity - replication of successful model - commitment of senior gov't staff - positive attitude and motivation of senior staff provoking enthusiasm among lower-level staff - series of state level project inception workshops for senior forest officials and project partners	- intensive capacity building provided by a diversity of NGOs strengthening community self-organization - alternative income source - reviving local knowledge - recognizing and networking among local healers

EI case	Trigger events	Catalytic elements to start the project	Catalytic elements maintaining the project
Honey Care Africa Kenya	- HCA saw an opportunity to develop a high-end honey supply to serve the domestic market in larger center which has been served by foreign honey producers	- secure market for all honey produced *Kakamega region* - strong leadership; - foreigners' support: skills and equipment - training and capacity building *Kwale region* - initial funding from NGO to buy beehives **- training and capacity building**	- fair price for honey - guaranteed market / alternative income source - debit from the purchase of beehives worked as an incentive to keep with beekeeping *Kakamega region* - NGO/leaders able to adapt *Kwale region* - individual nature of the project and profits worked as an incentive to continue the project
Community-based ecotourism Peru	- need to find economic alternatives for indigenous groups whose livelihood was restraint by the creation of a national park - outsider bringing the idea of ecotourism	- Pressure from indigenous org. and NGOs on gov't authorities to take action on improving the communities living conditions by giving them an economically sustainable alternative - int'l funding for lodge construction and capacity building - gov't agency logistic support	- community empowerment - community self-organization - the NGOs support in early years (1997-2003) - alliance with private business - increasing operation of the enterprise as tour agency.
Community Forestry Group Thailand	- logging of local mangrove forest for intensive shrimp aquaculture: a direct threat on local livelihood	- creation of an informal patrol group to protect the mangroves and enforce local conservation rules - establishment of a village savings group (assisted by a monk) promoted organizational capacity, management skills, leadership, and united the community. The monk also promoted environmental awareness - creation of rules governing villagers harvest of local resources	- involvement of a NGO (capacity building and technical support) - involvement of Govt. Depts (technical support and resources) - networking with other community forestry groups

Source: Equator Initiative Technical Reports by D. Fernandes, J. Herrera, S. Maurice, D. Medeiros, J. Senyk, S. Shukla,

Jonas (2003) noticed that many of 27 finalists of the Equator Prize 2002 began due to a post-disaster situation. Those projects started due to unsustainable resource extraction (48%), political/legal conflicts (22%), environmental disasters (e.g., droughts, floods and hurricanes) (18,5%), low social welfare (18,5%); and construction projects (primarily dams and roads) (15%). Two or more factors may have triggered some of the projects.

Seixas et al. (submitted) compared the initial motives (trigger events or elements) to start each of the 2004 Equator Prize finalists with the lead organization in starting each initiative and observed the following pattern: local lead organizations often fight for rights and cultural revitalization, try to solve conflicts, and/or respond to environmental degradation, threats or disasters (50 percent of the cases). The motivation of outside supportive lead organizations is usually related to the integrated conservation and development agenda (21 percent of the cases). For example, to promote conservation of protected areas and/or manage their buffer zones sustainably while providing livelihood alternatives for communities living in or around the protected areas; and to develop entrepreneurial activities to improve community livelihoods while promoting environmental awareness.

Among the eight cases, described in table 1, two major types of incentives or triggers are visible. The first is community's response to a crisis – mainly a dwindling supply of natural resources which hampered their survival needs. This is strongly evident in the cases of Mexico (caused by natural disasters such as volcano), Belize and Guyana (over harvesting of fish resources), Brazil (over extraction of oyster), and Thailand (logging of mangroves). The second incentive or trigger is income generation mostly through experimenting an alternative livelihood opportunity. The cases of Kenya (guaranteed cash supply and market for honey), Peru (eco-tourism) and to some extent India (International funding for Government/ NGOs and herbal products for communities) illustrate this point. These triggers or incentives closely correspond to reduced vulnerability (community's organization to crisis) and income generation categories in explaining linkage between biodiversity and poverty (Timmer and Juma, 2005).

Even when a project is community initiated, it often requires support from outside organizations. In the case of the 2004 Equator Prize finalists, a diverse group of ordinary people (e.g., school teachers, farmers, religious leaders, youth groups or community leaders) came together to search for solutions for social or environmental problems or threats to their livelihoods. In many cases, however, they lacked sufficient skills or negotiating power to carry out their ideas (e.g., they lacked power to overcome institutional barriers and to penetrate into market or policy-making processes) and asked some NGOs or government agencies already working in the area to help them throughout the process. Isely and Scherr (2003) observed a similar pattern among cases of Ecoagriculture initiatives extracted from the 2002 Equator Prize nominations.

In some cases there are trigger events leading to the establishment of an initiative, such as in the case of Pred Nai village in Thailand, where logging and shrimp aquaculture threatened to destroy the remaining mangrove forest – a direct threat on local livelihood[1]. In other cases though, there are a series of events (related or unrelated ones) that takes place throughout the years preceding the initiative establishment. In the latter case, some key people or organizations see an opportunity to build upon existing knowledge and institutions to solve current problems.

[1] The creation of Pred Nai's conservation group though came about after many years as the community matured.

Olsson et al. (2004) presents a good example of how a key leader built upon opportunities and existing knowledge and institutions (produced from unrelated on going activities and events) to develop wetland landscape governance in southern Sweden. The EI Oyster Cooperative case in Brazil built on a cumulative body of knowledge on oyster aquaculture produced by different projects over a three-decade period. The EI community-based Ecotourism Lodge in Peru shows a sequence of events, instead of *one* trigger event, leading to its implementation (Box I). In all cases, a sequence of workshops/meetings involving locals and outside players was critical to organize the community, to plan and implement the projects.

Box I: Events leading to the community-based Ecotourism Lodge in Peru

(1) NGO presenting a ecotourism lodge project, upon community request, to a government agency responsible for managing the National Park in 1994; (2) project not approved by the government agency; (3) continual request by community leaders to approve the project; (4) lack of response from the government agency; (5) community leaders, indigenous organizations and neighboring community leaders, pressuring by letters the Ministry of Agriculture and the Peruvian President to approve the project in 1995; (6) a national newspaper reporting the struggles of the communities in gaining approval for their lodge project; (7) international bilateral agreement to fund better management of protected areas in Peru; (8) the political and financial support from the government agency beginning in 1996; (9) the establishment of the community-based enterprise in 1997. (Based on Herrera 2006).

In addition to the aforementioned catalytic elements, another one that appears in most of the seven EI cases studied in detail is clear pre-existing relationships among some of the key groups or key people involved in the initiative before the project started (Berkes and Seixas 2004). For instance, in the Oyster Producers Cooperative in Brazil previous relations were built among the local community, an University research group and an government agency (the Forest Foundation) during the prior implementation of a protected area (Extractive Reserve) encompassing the community. Another instance, in both Kenyan beekeeping cases, the Honey-Care partnering organizations (a community-based organization in Kakamega and a NGO in Kwale) were already carrying out development work with local farmers before the Honey Care project started.

In India case, the successful model for Medicinal Plant Conservation Areas (MPCAs) had been already created, and the partnering NGOs such as Foundation for Revitalization of Local Health Traditions (FRLHT) in south Indian and Rural Commune from Mumbai joined hands with the State Forest Department to replicate MPCA model in Maharashtra State. The Maharashtra State Forest Department with the support of FRLHT and Rural Commune had established three MPCAs in 1997, prior to commencement of the EI initiative.

3.4. Enabling elements

3.4.1. Funding and other resources

Most projects need initial investment resources either funding or in-kind contributions. Funding is often needed to start a project (start-up funding) and sometimes to conduct the project

(operational funding). Very few initiatives start with no funding; this was the case of only 12% of the 2004 Equator Prize finalists (Seixas et al. submitted). Funding seems a less important element to start an initiative when environmental awareness and livelihood treats trigger immediate community action. In fact, all the three Equator Prize finalists in 2004 initiated with no funding were community-based initiatives promoting resource management to ensure local livelihoods. One of them, the Thailand case studied in detail by the University of Manitoba team, emerged in response to the logging of the local mangrove forest for intensive shrimp aquaculture: a direct threat on local livelihood (**Table 3.2**). An informal grassroots initiative created local rules for governing villagers' harvest of local resources and created an informal patrol group to protect the mangroves and enforce local conservation rules using only the villagers' resources and willingness to collaborate; i.e., no funding was initially used.

Even in cases where no start-up funding is used, operation funding may be used improve the initiative. In the Thailand case, after a formal Conservation Group was formed (about 10 years after patrolling had began), the Group received funding from the World Bank through a Thai government program to buy equipment and build infrastructure to improve patrolling activities. The Conservation Group also received a lot of support from NGOs and government agencies in the form of training - for leadership and in patrolling methods, trees and supplies for reforestation, and institutional and technical support. This case brings to light the importance of formalizing/ legalizing community organizations in order to access funding.

An important aspect of funding is also use or management of funds. The Indian initiative, for instance, used Equator Prize money to set up and disbursed revolving funds to the local management structures (such as Local management committees and women's self-help micro credit groups) in the year 2002. These funds were used to conduct locally-suitable income-generation activities such as small-scale production of herbal products etc. The long-term availability of funds was considered by some EI initiatives.

Funding may come from multiple sources and fundraising skill is often critical to the project's success. **Figure 1** shows how outside funding may be a major enabling factor and how a diversity of sources are often needed. There are cases where funding comes from one major source, such as the Ecotourism Lodge in Peru, funded by an international development agency (GTZ); however, in most cases it comes from five or more sources, mainly international ones, and are used for different tasks within an initiative. Hence, as expected, in all the seven EI cases studied in detail, one of the key organizations involved in the project had previous experience in applying for funding. This knowledge was used to access funds from different sources.

Seixas et al. (submitted) investigated possible ways of getting money for an initiative, based on interviews with the 2004 Equator Prize finalists. They identified at least nine channels of money flow in those cases (**Table 3.3**). Starting from the initiative side, initiatives may contact donors, on their own or with outside help, and apply for funding. Key, knowledgeable people seem to play a major role in securing funds – they either know about a funding opportunity and/or help locals to write funding proposals. Starting from the donor side, donors may have a fund to be used in a pre-established program and they use larger NGOs or government to redistribute the fund to small initiatives. In some cases donors may give money to a large NGO, research institute or government to be employed in building capacity at the local-level, but no direct

money is passed on to local-level organizations. The extent to which different channels of funding impact each initiative's outcomes concerning biodiversity conservation and poverty reduction deserves investigation – in particular considering that many countries around the Equator Belt have weak institutions and corruption is more the norm. Another point that is worth investigating is whether small grants (such as GEF-UNDP SGP grants) are better managed and more effective in achieving their goals than large grants. Some interviewees have pointed out, for instance, that small grants seem more appropriate to begin small initiatives.

Table 3.3: Ways of getting money to develop an initiative

FUNDING CONTACTS
Local level organization →[1] Donors[2]
Local level organization → Supportive organization[3] → Donors
Local level organization → Key person → Donors
Large NGO → Donors
Donors → Large NGO → Local level organization
Donors → Government → Local level organization
Donors →[4] Local level organization
Donors → Large NGO
Donors → National gov't → large NGO

[1] Information source: news, agencies working in the area
[3] Donors may be government, NGOs, or funding agencies
[4] Supportive organizations may be NGOs, Research institutes, Religious organization, Park managers, etc
[5] Donors heard about a local level organization and offer funds

In the large majority of cases (if not all), funding is used to cover capacity-building costs, including technical training by experts. Funding may be also used to cover costs of equipment, constructions, expansion, and operational costs as in the Oyster Producers' Cooperative in Brazil; and to carry out surveys and promote an alternative livelihood option as in the Arapaima Conservation initiative in Guyana. Funding may be used yet for innumerous other purposes in different projects, such as training and capacity building of local management structures as in Medical Plant Conservation initiative of India.

It is important to note that in some cases, funding or in-kind donations may be raised primarily inside the community; that is, community members contribute money to a community fund or donate goods to be used for different purposes. For instance, an innovative micro finance scheme was developed by the Pred Nai Village Savings Group in the Thailand case (**Box II**).

Box II: The Village Savings Group in Pred Nai, Thailand. "Established with the help of a local Buddhist monk in 1993, the village savings group was set up as an Accumulating Savings and Credit Association allowing members to pool their savings and make loans to members from the accumulated savings (Bouman, 1995).

The savings group is structured so that villagers commit annually to purchase a pre-arranged number of "stocks" each month at a set price. Villagers are limited to purchasing a maximum of 50 stocks/month/member of the household. Thus the savings group acts as a forced-savings mechanism encouraging villagers to save money.

Interest payments are paid out directly to the stockowners every 6 months, allowing them to make a small but secure amount of money from their savings. Once villagers reach 40,000 baht in stocks (approximately $1,000 USD) they are then permitted to withdraw up to half of the money from their savings.

The second function of the savings group is to provide low-interest loans to community members for social or economic development projects. A committee of 14 villagers administers the savings group (with the oversight of a monk) and makes decisions approving loan applications received from villagers. Priorities for approving loans are education and healthcare, and some money is always kept available in case a member needs money for an emergency or sudden illness. Loans may also be provided to community members for other purposes such agricultural improvement projects, or money to build a new home. Once approved for a loan the villagers are required to have 2 co-signers and in some cases are required to put up collateral (such as a home or motorbike). According to one of the administrators of the savings group the interest rate charged on loans is only 12% per year.

The village savings group has produced many benefits in Pred Nai. It has functioned to improve social welfare and economic development, subtly assisting with income redistribution in the village (the wealthy tend to buy more stocks per month and the poorest villagers are able to receive low interest loans for development) and to encourage savings within the village. The village savings group was also critically important to help build unity within the community. When established in 1993 it was one of the first formal organizations in the community, and whereas the community's first conservation efforts were informal and limited to a small number of people, the savings group was more structured and open to all community members. In addition to providing a structured group, the monthly meetings of the savings group became important community events, bringing the community together and providing a venue for the monk to teach the community as a whole about the importance of conservation. The savings group also helped to build money management skills within the community as participants were forced to commit to purchase stocks every month and, therefore, would have to budget their finances to ensure that they had the money to meet their commitment to the savings group. " (Senyk 2006).

In order to design and implement their projects, most initiatives use some voluntary help and/or free facilities and lent equipments provided by supportive organizations and NGOs, government, and university personnel. This included voluntary help from people paid from other sources but allowed to work in these projects during their free time. Such help included writing proposals, establishing contacts with outside organizations, helping to register community groups and/or cooperatives within the legal system, providing transportation for people to attend meetings, helping organize training, and promoting the project (Berkes and Seixas 2004).

3.4.2 Capacity building and knowledge systems

Key elements to start any initiative are knowledge and information about the social-ecological system and about possible ways to change it towards the initiative goals. Knowledge may be generated locally (*Local Knowledge*) or elsewhere. *Outside knowledge* may be either scientific knowledge or practical knowledge. How knowledge is mobilized for community-based conservation is an issue addressed in Section 5 (Seixas, Davy and Davidson-Hunt). Here, we wish to explore how knowledge and information are shared and transmitted among different actors (key players) in CBC and ICDP initiatives. In other words, how new capacities are built

to develop, implement and improve CBC and ICDP initiatives? We understand that *capacity building* is a major factor in community self-organization.

From 24 finalists of the 2004 Equator Prize, at least 50 percent of them built capacity in community organization, 42 percent in small-business development (including ecotourism), and 29 percent in environmental and resource management (Seixas et al. submitted). Concerning community organization, training was provided for institutional capacity building, financial management, organizational management techniques, board development, team building and community work, leadership skill, youth development and communication skills. Concerning techniques/methods for resource management and enterprise development, training was provided for: conservation planning, ecosystem management, sustainable agriculture, farming and agro-forestry, techniques for small enterprises (including agro-business and ecotourism) among others.

The term, capacity building, is usually used to mean government, NGO or other technical people "educating" the local people. However, in the cases studied in detail, it is clear that such education is a two way process: (1) government, NGO, and private sector personnel sharing technical information with community members, and (2) the latter sharing local knowledge with the former. Formal capacity building has been provided by both the major organization(s) involved in the project and many other organizations holding particular knowledge, which have been contracted by the project to carry out specific tasks (Berkes and Seixas, 2004).

Formal training programs in community organization and technical issues, meetings, workshops and guided visits are a few examples of how capacity may be built at community level. Formal training programs are the most common way of bringing outside scientific and practical knowledge to the community. In most, if not all, of the projects, the training that local people received has empowered them in economic terms as well as in social aspects, as in the case of women's groups in India (Berkes and Seixas, 2004).

Meetings, workshops and guided visits are good arenas of sharing both outside and local practical knowledge. Learning from successful example or from previous mistakes is a powerful way of building capacities. In some of these arenas, there is transfer of know-how and knowledge from previous positive/negative experiences at the same community or from experiences at other communities. Another way to build capacity among community members is to invest in youth leaders through higher education programs related to conservation and development in recognized universities.

One interesting aspect of capacity building as a two-way process was the establishment of informal 'learning networks' in some of the cases (Berkes and Seixas 2004). In the Brazilian case, a multi-level network of people from a diverse set of organizations worked together to tackle new problems during periodic meetings. In Guyana, several meeting involving the major organizations and scientists were designed to bring together local and scientific knowledge and experiences in a collaborative, problem-solving environment, as seem to be the case in adaptive co-management elsewhere (Olsson et al. 2004). In the Indian case, innovative training and capacity building programs such as village biologist program, helped in mutual exchange and strengthening of botanical skills and knowledge of local healers and formally trained botanists

(Shukla and Gardner, 2006). Indeed, one characteristic of all these projects is that they provided space to combine local and scientific knowledge to either improve resource management or human well-being (Berkes and Seixas, 2004).

The holders of local and scientific knowledge interact together to produce what Blaike et al (1997, p.223) called 'Knowledge in action'. The knowledge in action among these eight EI cases, represent a continuum in which local knowledge received different treatments ranging from denial or indifference to empowerment. **Table 3.4** presents these varied outcomes of 'knowledge in action':

Table 3.4. Knowledge-in action: Outcomes of local knowledge and formal knowledge interface in EI cases

Knowledge in action outcome	**Vision of local knowledge**	**Example from EI cases**
Knowledge-denied	Contribution from local knowledge disregarded	
Knowledge-appropriated :	Local knowledge has financial or commercial value such as bio-prospecting through use of ethnobotany	
Knowledge-ventriloquised	Local knowledge is given functional value with use of local message/metaphors/ culturally acceptable ways	
Knowledge esteemed	Local knowledge has intrinsic value with documentation and dissemination by academic scholars/scientists/agencies	
Knowledge-negotiated	Local knowledge mutually and synergistically interacts with formal knowledge to create outcome greater than both knowledge systems	Village biologist program by the India initiative
Knowledge-empowerment	Local knowledge becomes management tool and in greater control of development process (e.g. traditional forest management practices)	

Sources: Self-compiled based on Blaikie et al (1997)

Most of the EI cases, at the time of study, demonstrated some examples of the last three categories (i.e. knowledge-esteemed, knowledge-negotiated and knowledge-empowered).

Further, all these cases might have experienced different outcomes at different stages of maturity. The most desired outcomes, however, in such knowledge-in-action interface is local knowledge becoming instruments of dialogue (negotiation) and leading to empowerment

In addition to building capacity at local level, in some instances, capacity needs also to be built among government agents, NGO staff, and researchers involved in community work. One way towards this end is providing training in participatory methodologies and research for community-based conservation and development. The International Development Research Centre (IDRC), in Canada, has a long experience in both these matters...

Capacity building should be viewed not simply as the training activity but also the implementation of what was learned during this activity (Hari Kushardanto, pers. comm.). The issues of capacity building and community empowered is further explore in Section 5 of this book.

3.4.3 The role of Leadership and key players

The successful creation and development of CBC and ICDP initiatives can be partly attributed to the leadership of key players within these initiatives. Leadership may be provided by an individual, a group of individuals or an organization (e.g., NGOs, government agencies, private sector enterprises, or research institutions) involved in an initiative. Leadership can be defined in many ways but frequently implies the capacity to design and communicate a clear and compelling vision and to align and unite stakeholders in action towards fulfilling that vision (Fowler 2000: 167). In contrast to the political and economic capital that defines leadership in the political and private sectors, leadership within civil society (e.g., NGO and community-based initiatives) is grounded in a set of core values and derives its strength from building social capital through networks of trust, reciprocity, tolerance, and inclusion (Fowler 2000: 164). For example, stakeholder inclusion in decision-making and community self-empowerment require a commitment by leadership and key players to participatory democracy (Carroll 1992; Jeanrenaud 1999; Smillie and Hailey 2001).

A literature review on leadership in civil society initiatives suggests that successful leaders are likely to have one or more of the following characteristics: innovator, communicator, learner, bridge-builder, and systems thinker (Timmer 2004a). **Table 3.5** describes features of each characteristic, which Timmer (2004b) used to analyze five Equator Prize 2002 finalists. Briefly, leader as *innovator* refers to the capacity of leaders to be entrepreneurial, embrace uncertainty and risk, and to devise creative solutions to problems they encounter (Alvord et al. 2002; Banuri 2002). Leadership frequently involves an ability to *communicate* clearly and effectively to stakeholders whose interests and resources are necessary for the success of the initiative, and to facilitate the involvement of these stakeholders in defining the vision and action. The dynamic socio-ecological context within which the initiatives develop requires leaders and key players to be *learners* who scan for changes through acquiring knowledge and learning from their experience, who actively adapt to these changes, and who encourage and support learning throughout the initiative (Alvord et al. 2002; Hailey and James 2002). Leaders as *bridge-builder* refers to the capacity of a leader to negotiate diverse stakeholder interests, to

build networks across perspectives and scales, and to broker connections to promote capacity building and achieve technical, political and funding support for the initiative (Alvord et al. 2002; Segil et al. 2003). Finally, leaders and key players of complex, socio-ecological adaptive initiatives are embedded within multiple larger systems and therefore, benefit from the capacity for *systems thinking*, defined as the ability to take into account relationships amongst system variables, different types of complexity, points of high leverage, and system-wide solutions (Senge 1990).

Table 3.5. Leadership characteristics (Timmer 2004a)

Leadership Characteristics:	**Features:**
Leader as Innovator	• Embraces uncertainty and takes risks • Creates value through gap-filling, pulling elements and people together in a new way
Leader as Communicator	• Expresses a clear and compelling vision centred around common values • Facilitates an open and interactive dialogue amongst stakeholders and harnesses the leadership capacity of stakeholders
Leader as Learner	• Adapts to shifting relationships and circumstances • Actively promotes learning as a core value • Establishes mechanisms for monitoring progress and learning structures
Leader as Bridge-Builder	• Understands and works with diverse stakeholders • Creates networks of stakeholders to together address a challenge across boundaries and scales • Has the ability to manage conflict in a constructive way
Leader as Systems Thinker	• Sees interrelationships and processes and focuses on areas of high leverage • Distinguishes amongst different kinds of complexity • Moves away from blame and avoids symptomatic solutions • Surfaces underlying assumptions and mental models

From a complex systems thinking perspective, we can consider leaders and key players to be driving forces in the self-organization of CBC and ICDP initiatives. In the cases within this study, individuals and organizations have played critical roles in creating the initiatives. For example, in the Pred Nai Community Forest Group in Thailand, the initiating leader developed and communicated an innovative vision, reinforced motivation and commitment to the initiative, and promoted stakeholders' trust. In the Rural Commune NGO (RCMPCC) case in India, the NGO's top leader was an innovator, communicator and bridge-builder who created a vision and coalesced stakeholders across scales around medicinal plant conservation in Southern India. Through the leader's vision and charisma, local NGOs and state and national governments became engaged in the initiative. Similarly, in the Communal Enterprise of San Juan in Mexico, two important leaders, a Communal Representative and Community Commissioner, crafted a compelling vision that drew a broad array of stakeholders. Their work was supported by a key player at the state government level who provided legal and open support for the initiative to move forward.

Leaders are often viewed as agents of change who lead the process of transformation of the socio-ecological system. Initiatives move through different phases as they shift from their initiation phase into later phases of development. Korten (1980) argues that there are a series of higher order phases that can be identified in the development of a successful initiative and leaders need to adopt a learning approach in order to adapt to this evolution. Korten argues that initiatives move from learning to be effective, to learning to be efficient, to learning to expand their activities. An initiative may have different key players leading different tasks concomitantly or in sequence, or else the role of one key player can change. Our analysis of the eight EI cases shows that key players and their roles have transformed over time in all of the projects (Berkes and Seixas 2004). **Table 3.6** presents the sequence of government agents and researchers that played a leadership role through the initiative design and implementation of the Cananéia Oyster Producer's Cooperative in Brazil. Coping with these transitions requires leaders to consider succession strategies and to assess the types of leadership that are appropriate for each phase (Fowler 2000: 178). For example, in Kenya, the departure of the initial strong leadership by volunteers in the Kakamega district resulted in a period of decline before an effective institutionalized management structure was established. In Peru, the indigenous ecotourism enterprise was initially led by a supporting organization that provided critical bridge-building capacity; however, since the organization's departure, a female professional from outside the community has undertaken this key role and maintains connections across scales.

In general, women play a minor role as agents of change and local leaders in formal organizations, government departments and NGOs. Exceptions include the Peruvian professional described above, the female head of the Pred Nai community in the Thailand case, and the outside female government agent / researchers leading the Brazilian case in equal proportion with outside men. In all the other cases, the leaders are male. At the community level in three of the cases (India, Kenya and Peru), women have become increasingly involved in livelihood opportunities promoted by the project. Some of these local women became local leaders within their own groups (Berkes and Seixas 2004). As initiatives develop, leaders can become increasingly committed to the initiative; for example, in the case of TIDE in Belize, the motivation of leaders and community members has increased with their involvement in managing and promoting the initiative.

In Guyana, the committed leaders are not fishermen directly affected by the local initiative but other community members that have the management skills to facilitate the development of the project. Management skills become increasingly important as initiatives transition from their initial phase into their development phases (Fowler 2000). In addition to these skills, there appears to be a strong correlation between leadership and level of education. We identified agents of change in at least seven out of the 24 finalists of the Equator Prize 2004 (Seixas et al. submitted). Some were religious leaders and all of them were well-educated, holding Masters or PHD degrees or achieving a level of education (e.g., completing more school years or speaking a second language) above the average level in the community. A higher level of education can lead to a greater capacity for innovating, communicating, learning, and systems thinking, and can build intellectual bridges to inspirational information. For example, in the Indian case, leaders were influenced by the Gandhian philosophy and activist approach, which inspired their concern for self-reliance and rural development at the grassroots.

Table 3.6: External leaders and their roles, affiliation and connections in the Brazilian case. Source: D. Medeiros, 2004.

	PHASE				
Phase	I	II	III	IV	V
External Leader	Leader I (1990-1996)		Leader II (1995-1999)	Leader IV (2000-mid2004)	Leader V (mid2004 – present)
			Leader III (1995 - present)		
Org. Affiliation	State University Research Institute	State Forest Foundation	State Forest Foundation	State Forest Foundation	State Forest Foundation
			State Fisheries Institute		
Role	grad student: research socio-ecological viability of extractive reserve	government researcher: start attempt to implement the extractive reserve	government researchers: contact all oyster harvesters, initiate cooperative	government researchers: capacity development of oyster harvesters, establish extractive reserve	government researchers: assist Cooperative secure a market
Connections	Environmental Ministry, State Secretariat of the Environment [which encompasses State Forest Foundation]	State University Research Institute, State Fisheries Institute, Community-Based Organization, Leader II and III,	State University Research Institute, State Health Organization, Municipal Government, Local NGO, Local Religious Organization, Leader IV	National and International Funding, State University Research Institute, State Health Organization, Local NGO, Education Agent, Economic Planning Agent, Market Development Agent, Leader V	National Funding, State Health Organization, Market Development Agent

3.4.4 The role of Partnerships

We have pointed above that CBC and ICDP initiatives often establish partnership with supportive organizations (e.g., conservation or development NGOs), government agencies, and/or private sector at local, municipal/district, regional, national or international levels. In essence, community self-organization evolves in a multi-level governance system. The issue of cross-scale interactions in a multi-level governance system will be addressed in the next section. In this section, we aim to introduce the nature of partnership and how it contributes to community self-organization.

We observed that there are both formal and informal partnerships. Formal partnership takes place when government and other supportive organizations provide organizational expertise, legal support, training, and/or funding. These partnerships often take the form of formal agreements, such as a Memorandum of Understanding. Informal partnership may evolve by informal learning processes; that is, when certain arenas (e.g., workshops, meetings, visits, bar talks, one-on-one talk) promote knowledge and information exchange among people, including sharing of lessons learned from success and mistakes. This people may be community members, supportive organization staff, government agents, members of other communities doing related work, etc.

The number of formal partnership established in each initiative changes over time and is likely to reflect a balance among available resources within the community, new needs created by the initiative, and leadership ability to maintain or establish new partnership. Among 21 finalists of the Equator Prize 2004, the number of partnership per initiative varied from two to 16 (Median 5, Mode 4) (Seixas et al. submitted). From these 21 finalists, 71 percent (15) of the initiatives had some kind of support from at least one international-level organization (development and environmental NGOs, development agencies, funding agencies and embassies); 48 percent (10) of the initiatives had the municipal or district-level government as a key partner; the same amount (10) had at least one national-level environmental and/or development agency/ministry as a partner; and, 43 percent (9) of the initiatives had at least one academic or research organization working in collaboration with them.

Fritjof Capra (no date) says that, "Partnership is a key characteristic of life. Self-organization is a collective enterprise". These words explain much of what this chapter is about. Partnership is crucial for community-based conservation and ICDP initiatives. It is one of central pillars of community self-organization. That being said, it is important to note that partnerships are sometimes unbalanced, and can result in one partner dominating other weaker groups. In at least three of the initiatives examined (Guyana, Belize and Kenya), imbalances of power fostered dependencies among weaker groups.

In the Thai case, two separate partnerships were critical, one between the community and an NGO (RECOFTC), and the other an informal link between community and Government. The NGO partnership was a critical in developing the formal conservation group, the management plan and in facilitating linkages to other groups. RECOFTC first became involved with Pred Nai Community Forestry Group in 1999 and one of their first

actions was to organize study tours to other community forests in Thailand in order for Pred Nai's leadership to learn first-hand from their peers. Later, RECOFTC developed a three-year Participatory Action Research (PAR) program with Pred Nai, in which they assisted the community: to conduct surveys and inventories in the mangrove forest; to begin capacity building programs; to establish of community forestry networks; and to enter into collaborative research projects between the community and RECOFTC. RECOFTC fostered the creation of additional partnerships through the creation of community forestry networks at the district, provincial and regional scale. Linkages were also facilitated with government agencies and universities through RECOFTC and resulted in collaborative research projects between the community and universities; study tours of the community by government officials, academics, and other community leaders; as well as greater collaboration between Pred Nai and local government departments. An informal partnership between the community and government (The Thailand Royal Forest Department – RFD) was also important in the early stages of the initiative. Local officials from the RFD encouraged Pred Nai to create a formal conservation organization and assisted them in the development of their initial management plan. In 2002, the Department of Marine and Coastal Resources (DMCR) was created and the mandate for mangrove forest management was transferred from the RFD to the newly formed DMCR. Since this time RFD has played no official role in the mangroves of Pred Nai, but individuals from the RFD still maintain informal contact with the community.

Like the Thai case, the Indian project also involves three major groups, albeit in a three-way partnership. This partnership involves local communities (Local Management Committee (LMC), Self-helped Groups (SHG) and a network of local healers), non-governmental organizations (RCMPCC) and State/district/sub-district forest departments working towards the conservation of medicinal plants and the revitalization of local health traditions. The positive interaction between local communities and the Forest Department resulting from the transfer of management rights to communities has resulted in greater cooperation between the two groups, and thus greater local involvement in implementation and management of the MPCAs. There are examples where members of local management committees have successfully prevented the illegal removal of certain rare medicinal plant species by commercial interests. The communities involved in the initiative are thus empowered by joint ownership with the Forest Department not just in conservation of medicinal plants but also in the protection of MPCAs. The RCMPCC initiative helped form a critical mass of people drawn from all levels of the Forest Department and NGOs, including retired government bureaucrats, activists, donor agencies, research institutions and universities, to work collectively on the conservation of medicinal plants, not only in Maharashtra but also in other regions. For example, the forest departments of Maharashtra, the Ministry of Environment and Forest at national level, and other NGOs involved in similar initiatives are now seeking the help of the forest officials who had worked closely with RCMPCC.

The important partnerships seen in the Mexican case is somewhat similar to informal relationships active in the Thai initiative. These partnerships were primarily between individuals in the comuneros, and NGOs and Government. Of particular interest is the

strategy the communal enterprise and its institutions have used of keeping constant contact with comuneros working for governmental and non-governmental organizations, to develop strong relations with the organizations and to access available funds for rural development, environmental protection and poverty reduction. These partnerships facilitated the formation of the communal enterprise, lead to government required approval to start an ambitious forest exploitation venture and finally established regular channels for inflows of governmental and non-governmental funds for the comuneros and the initiative. Partnerships between the communities and governmental representative facilitated the flow of resources to the initiative, and the related diversification of productive activities under the project. It is important to note that these partnerships became stronger after the comuneros' land ownership rights were recognized by the Presidential Resolution in 1991. The affiliation of the comuneros to the Institutional Revolutionary Party also contributed to the establishment of other strategic partnerships, to the formation of alliances to overcome pressure from private land owner, and to further foster the flow of government funding to the initiative, the comuneros and the community. Partnerships with researchers also played an important role, mostly during the second decade of the enterprise. In some cases, such as the link the community has with the Autonomous University of Mexico (UNAM), such roles have been decisive in the self-organization and adaptive management of the enterprise to deal with exogenous drivers of change (market economy, rationalization of management processes, competitiveness, etc).

Like the Indian case, the Honey Care (HCA) beekeeping projects in Kenya are built upon a three-way partnership. However, in this instance the actors are the private sector, development organizations, and small-scale farmers. In practice this partnership is usually four-way, with the Government being the fourth partner, though their role is not always one of direct participation. Due to the way the HCA beekeeping projects in Kenya are structured with their partnerships between organizations nested at different scales there must to be proficient co-ordination between the numerous partners for the projects to function well. HCA typically seeks to partner with development organizations (NGOs and CBOs) that are already established in an area with adequate beekeeping potential. The two cases also demonstrate the importance of partnerships in bypassing non-functional vertical linkages. In the Kakamega case the strong relationship between CBO (CARD) and the HCA Office allows for a small number of people to manage a large number of hives. In both cases the NGO/CBO has forged a close relationship with one of its partners to overcome some of the difficulties facing the two projects.

In the Kenyan Kwale case the partnership between the NGO (CRSP) and a Government ministry (MLFD) helped to overcome the failure of the CRSP to effective interact with the local-level beekeepers. CRSP provided office space and motor-bikes to MLFD officers that the government is unable to provide. This allows for the government staff to perform their jobs more effectively and in turn CRSP gets several field staff who have relevant training and close relationships with the farmers to help promote and support CRSP's projects. The arrangement also ensures a close working relationship between the government and the NGO that has built trust between the two institutions to the benefit of

both. Many of the beekeepers were introduced to the project by the MLFD and look to them for support.

In Guyana, the core partnership was between an international NGO (Iwokrama) and organization of community leaders (NRDDB). This partnership was the catalyst for the linking of institutions at different scales, and was the first step to regaining control over the fishery. As a regional level institution, the NRDDB allow for collective decision-making and management institutions on a regional scale. This scale was much more closely matched to many regional resources, including the Arapaima fish, than centralized laws and policies. The NRDDB also served as a link to the North Rupununi communities, and brought increased recognition to local concerns, such as the overharvest of the Arapaima. For its part, Iwokrama acted as a key linkage organization between donor groups, Government, the NRDDB. Iwokrama's international contacts also allowed the organization to link to a number of donor agencies, and bring additional resources to bear on community issues. By bringing human and financial resources to local concerns, Iwokrama facilitated a shift in how wildlife management is conducted in the North Rupununi. Rather than the usual centralized, command and control approach of the Government, Iwokrama facilitated a number of participatory forums and focused more on partnership-based processes.

The Belize case offers another example a core partnership between international (TNC) and local-level (TIDE) NGOs. These partnerships lead to a multi-facetted initiative with the creation more than a dozen major supportive partners. The TIDE-TNC partnership acted as a linkage node, bringing together different actors at multiple scales of organisation. On one hand, TIDE serves as strong link to the communities involved in the initiative, addressing the community's local development needs by providing training and high-income livelihood alternatives for some fishers and local residents. The Nature Conservancy's local office as the other major partner, has played a key role in the development and growth of the initiative. TNC acted as both a donor as well as a funding link for TIDE and its implementation of the initiative. TNC Local assisted a young TIDE with personnel, technical advice, and organizational support. The partnership has also lead to the creation of links with other support organizations, Government agencies and funding agencies.

Unlike other initiatives, the primary partnership in the Peruvian case is the relationship between the two Matsiguenka communities involved in the initiative. In 1997, these two indigenous communities formally established a joint venture the Empresa Multicomunal Matsiguenka S.R.L. (the Matsiguenka Multi-community Enterprise). Since then, both communities have worked as business partners and co-owners of this Matsiguenka lodge enterprise, sharing 50/50 the benefits from enterprise revenues. The subsequent involvement of German funded Government Programme (FANPE) lead to the development of a formal partnership with a national NGO. This partner brought with it expertise in project planning and management, and resulted in the transfer of expertise to local communities through training and capacity building, as well as the structured administering of the initiatives early finances. Although the NGO's relationship with the

initiative later ended (due to termination of funding), this partnership was crucial to the start-up phase of the project

Finally, although community members are central to the Cooperostra in Brazil, it is a partnership between two external groups that seems to play a leading role in the development and implementation of the initiative. Financial support for the project was secured by the combined efforts of both the Forest Foundation and Fisheries Institute. Researchers from both institutions actively engaged in seeking financial assistance and writing subsequent applications for support. The Forest Foundation and Fisheries Institute also coordinate the various partners of the project. The Fisheries Institute has been instrumental in the development and ongoing support of the Cooperative's aquaculture methods employed to rear the oysters. The Fisheries Institute was also key in helping the Cooperative obtain health certification (S.I.F.) through its linkages with the Adolfo Lutz Institute. The Forest Foundation, along with NUPAUB, conducted socio-economic studies of communities within the region and played key roles for the creation of the Mandira Extractive Reserve.

3.5. Governance issues

3.5.1 State of property-rights before and after the initiative started

3.5.2 Decentralization and power relations/shifts

Decentralization[2] is often hailed as a way to move government closer to its citizens. Sparked by the inability of many federal governments to adequately deliver public services in the 1980's, decentralization is supported by donor organizations and national governments around the world as a means of strengthening democracy and improving service delivery (World Bank, 2001). With regards to conservation, proponents argue that decentralizing power over natural resource management affords the poor a greater say in the decisions that affect their livelihood (Ribot, 2002). However, efficient and equitable decentralization depends democratic local institutions with significant discretionary powers: there are few cases where democratic institutions are being chosen and truly empowered (Ribot, 2002). Critics further suggest that decentralization creates political and bureaucratic entities that are able to pass and enforce by-laws and collect taxes in order to contribute to local budgets and running costs (Ellis & Freeman 2004).

Ribot (2002) cautions that decentralization may be too new a phenomenon to fully assess its impacts on poverty reduction or environmental management. What then are the implications of decentralization and shifting power relations in terms of the EI case studies? Certainly decentralization and other approaches that emphasize 'the local' or 'bottom-up' decision-making (e.g., PRA, participatory poverty assessments) have provided a policy platform that supports the establishment of community based

[2] Decentralization occurs when a national government cedes responsibility and authority over some aspect of its role to state, municipal, or local institutions (Ribot, 2002).

management initiatives (e.g., community fisheries, community forestry, community protected areas management and co-management) (Mosse, 2005).

Each of the EI cases illustrates the complex interplay between a variety of actors, in some cases being able to take advantage of decentralization processes to support effective, local decision-making processes (e.g., co-management in the case of Belize, with the backing of a TNC). In other EI cases, it appears that power was co-opted by local elite or higher administrative levels (e.g., in Mexico a centralized management strategy was maintained, although struggles exist between Elders and youth). Best case scenarios from the EI experience suggest that respect between actors (e.g., between cooperative members and technical agents in Brazil) increased and lead to greater negotiation and learning between various actors. Across the EI case studies, it appears that greater voice was given to local actors (recognizing that 'the local' is not homogeneous and such power shifts varied).

3.5.2. Decision-making processes at different levels: "Who makes a decision and who benefits from it? How rules are defined?

Without long-term ethnographic data (which rarely exists), understanding decision-making processes and rule-making is challenging for the outsider. For example, reading rules does not capture the discussions that took place to arrive at an agreement of such rules, nor indicates who was influencing the rule-making agenda (Mosse, 2005). Multiple actors are involved in each EI case, each with varied (and sometimes shifting) interests. When discussing decision-making and management planning, we run into the danger of presenting this process as something that involves homogeneous actors striving towards one consensual desired outcome. This arena is a place of complex and often hierarchical social relationships and power relations (Mosse, 2005).

One commonality within the EI cases is the creation of some type of local committee, often involved in creating a resource management plan (e.g., in Peru the Integrated Conservation and Development method was use for planning; in India local committees decided on rule-making themselves). Decision-making, therefore, may lie with the committee through taking a consensual approach (which appears to be the case in India) or may be co-opted by local elite (in Brazil local decisions remain rather centralized i.e., lie with the Cooperative president). In each of the EI cases, decision-making and rule-making according to the rules found in management plans or other regulations may be different from the practice of decision-making!

The EI cases also illustrate how decision-making is sometimes formalized and sometimes remains strategic (or may be a combination of both). For example, some projects have Advisory Committees, Boards of Directors, hold monthly stakeholder meetings, and face regular reporting requirements meant to ensure decision-making structures are fair and inclusive. Such structures most likely work more effectively at some levels than other levels (e.g., in Brazil it was acknowledged that their decision-making structure worked better at higher administrative levels than lower administrative levels and that there was a need for greater inclusion of fishers' representatives). In other places, decision-making

appears strategic and vested with different stakeholders, depending upon the issue. In India, project sites were chosen by the State along with NGOs and other development professionals, whereas local management committees were provided with the funding and autonomy to adapt programs locally. What these EI cases suggest is that decision-making involves constant (re)negotiation between various sets of actors, across various levels.

3.5.3 Conflict-management mechanisms

When it comes to natural resources, conflict is nearly inevitable! With on-going resource declines and increasing scarcity, there is a trend of more and more people competing for fewer resources. Conflicts may be inter or intra village, or may pit local interests against more powerful 'outsiders' (e.g., mining or logging companies). Within the EI cases, conflict appears to be handled in a variety of ways. While none of the research discusses specific conflict resolution mechanisms (in the sense of a formal mediation mechanism specifically adhered to for conflicts), each case illustrates how conflict was handled in practice.

For example, in the Peru case, managers of the indigenous enterprise attempted to solve conflicts. When conflicts were unresolved, a mediator was called in to work with community members and other actors. This is in stark contrast to Brazil where it appears that conflict-management mechanisms were non-existent for non-elite actors within the Cooperative (i.e., only a certain group of co-op members felt their issues could be voiced and solved). In Belize, the Board of Directors and Advisory Committee dealt with major conflicts (i.e., major conflicts were handled by this Board whereas tensions over smaller issues remained unresolved).

In other cases, there were no formal conflict-management mechanisms. However, issues might be raised in monthly meetings or other such venues (e.g., in Guyana people first raised their issues in local meetings, and only if they could not solve them chose to have their concerns voiced at broader meetings). Specifically, in India conflicts that arose would be discussed at length during monthly meetings with local officials sometimes playing a key role in helping to facilitate conflict resolution strategies. Or, in other cases verbal agreements were established between actors, and these agreements were re-visited and re-negotiated while solving conflicts (e.g., in Mexico). Even in the absence of formal conflict resolution mechanisms, these EI cases illustrate that actors often found ways to negotiate their issues and to solve at least some of their tensions.

3.5.4 Level of collective-action (social capital, trust, transparency, reciprocity, network)

3.5.5 Monitoring of the initiatives' dynamics and its outcome (monitoring of financial resources, sanctioning, monitoring of impacts, etc)

3.5.6 Learning and adaptive mechanisms

Conclusion

This chapter aimed to answer two questions. (1) How does one get people and/or organizations involved in a project, willing to take responsibilities and to act? Or put it differently, what capacities and institutions turn it possible for people and organizations to work together? (2) What contributes to community self-organization? In other words, how conservation-development projects originate, evolve, survive or disappear? In the following paragraphs we hope to answer these questions, at least partially.

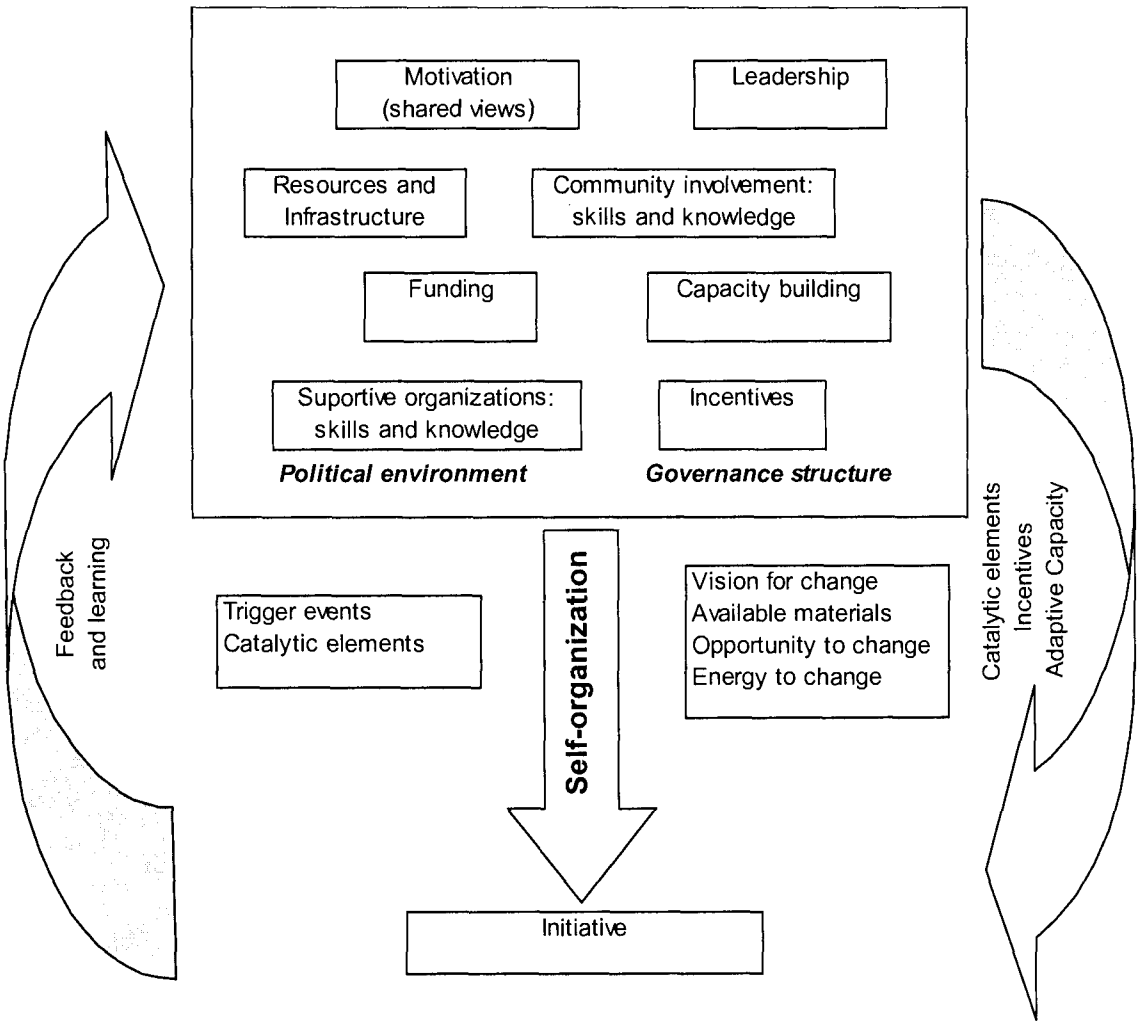
How does one get people and/or organizations involved in a project, willing to take responsibilities and to act? We observed that in some initiatives, people had previous experiences working with community mobilization (e.g., through religious groups or CBOs - Community-based Organizations such as panchayats or village cooperative, as in India) and awareness development. In others, capacities regarding social mobilization and social-environmental awareness had to be built throughout the process. Key leaders providing a vision of the potential outcomes and working as facilitators and internal conflict managers had played a major role in guiding the process. Incentives, particularly economic ones, increase peoples' commitment to the initiative. In many cases yet, the initiative worked with existing institutions and social networks. Building on existing institutions and capabilities has served as a catalyst to some initiatives. Sick (2002, p.19) calls attention, however, to the fact that "while existing institutions are likely to be more enduring than those created artificially by outside organizations... [they] may be prone to co-optation by local elites". Sustaining the involvement of local people in a project is not an easy task. Some initiatives may face barriers that are external to the local group (e.g., dealing with guerillas, dictatorial governments) as well as those that are internal (e.g., internal group conflicts, and lack of trust of outsiders' ideas) (Seixas et al., submitted).

How conservation-development projects originate, evolve, survive or disappear? Going back to our cook metaphor, we observed throughout this chapter that there is no perfect recipe for conservation-development projects. Some ingredients though are often necessary (e.g., vision of possible change and motivation to promote change, leadership, and community involvement) and others may serve as catalytic in the self-organization process (e.g., knowledge and skills of supportive organization, funding and other resources, capacity building, social-economic incentives). **Figure 1** attempts to provide a model of the dynamics of the self-organization process in CBC and ICDP initiatives. It provides the key elements that have contributed to the origin and development of most the projects analyzed by our research team. Each project used different 'amount' of these elements and not all projects used all the elements. Basically, a self-organization process starts when someone or a group of people *envisions a potential for transformation* to improve a social-ecological system. The envisioning process may be a response to a post-disaster situation, a conflict situation or some other trigger event. This vision is often shared and adapted in consultation with community members and potential partners. A shared vision of a social-environmental problem and motivation to tackle it is essential to the success of the project. When a *window of opportunity* (Olsson et al. 2004) appears (such as favorable institutional environment, potential partnership with government and

supportive organizations, and/or capacity building opportunities) one or more key people (leaders) start to mobilize the available materials and energy for the project. Materials may be in-kind resources, infrastructure, funding, information and knowledge. Energy refers to the actual involvement of different actors into the process. Leaders - as dexterous cook mobilize various ingredients (resources) to make a recipe (project) a successful one.

After the initial self-organization process, the project is often reconfigured through feedback and learning; that is, although not all projects have a monitoring systems, lessons of what works and what does not works is often incorporated (though it my take a long time) into new arrangements (configurations) of the project. Catalytic elements and social, economic and/or ecological incentives often moves the project forward. However, it is the capacity to adapt to internal forces (e.g., new demands, internal conflicts, etc) and external forces (e.g., markets, central government policies, international economic policies ("globalization") and donor policies) that dictates the ability of a project to survive or disappear.

One hypothesis that emerges from our research is that complexity of an initiative structure (e.g., partnerships, resource and knowledge mobilization) increases as the initiative broadens its initial goals and needs; and the complexity of structure decreases after capacity is built and/or the initiative tends to become self-sustained while maintaining focus on its initial goals/needs.



Vision: leadership, community motivation, incentives
Materials: in-kind resources, infrastructure, funding, informantion/knowledge
Opportunity: institutional envirionment, partnerships, capacity building
Energy: leadership, community involvement, supportive organization involvement

Figure 1. Self-organization of conservation-development projects: origins and evolutions

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September '06 Conf call notes: Held workshop at the NRI with 7 of 10 case study authors to generate tables on cross-scale linkages by case. The text is underdeveloped as of 25 October but most of the tables and figures are in place (need more on Mexico, Belize, Thailand). Fikret in charge.

Section 4. Cross-scale institutional linkages between the community and other groups and agencies

Co-authors and contributing authors: mainly case study authors: Vanessa Timmer, Sandra Grant, Prateep Nayak, others to be determined

Outline

1. Introduction: Why cross-scale analysis?
2. A wealth of linkages
3. Analyzing linkages
4. Funding and other resources
5. Capacity-building and knowledge systems
6. Shifting power differentials regarding linkages

4.1 Introduction: Why cross-scale analysis?

The study of cross-scale interactions is one of the two major objectives of the EI research and learning project. This section of the book is concerned with cross-scale institutional linkages, that is, *horizontal linkages* (those that connect the same or similar organizational levels across space or across sectors) and *vertical linkages* (those that connect across levels of organization).

[more text on why cross-scale analysis]

[contributions from: Timmer, Hoole, Adhikari]

4.2 A wealth of linkages

All of the EI cases seem to have an unexpectedly large number of institutional linkages and interactions that cut across many levels of organization, typically five. In most cases, there is a local or community level; a regional or district level; a state or provincial level; a national level; and an international level. The high diversity of linkages and partnerships may be related to the diversity of functions and roles of the partners.

How can the major cross-scale institutional linkages be characterized? **Figures 1 to 5** show the main interactions in the five cases: Brazil (BR), Guyana (GY), India (IN) and Kenya (KE-I and KE-II). The striking finding is that in all cases, institutional interactions

cut across many levels. These projects are anything but isolated. They all operate at the local level, but tracing the important linkages with respect to funding, organization and key partnerships, one finds linkages all the way to the international level. Typically, there are five levels present. In all cases but one (GY), there is a local or community level; a regional or district level; a state or provincial level; a national level; and an international level.

The Guyana case has no state level. In the India case, the national level is not important in the main interactions but the State and protected area levels are active. Linkages are not equally important at all levels. For example, in the case of Kenya (KE-I and KE-II), there is a division level and a provincial level (**Tables 3 and 4**), but these two levels do not show up in the main linkages sketched in **Figures 4 and 5**. Thus, major links across four levels seem to be the norm, even though five or even six possible levels are present.

[Adhikari, Orozco, Maurice]

4.3 Analyzing linkages

Figures 1 *to* 5 distinguish between the stronger links and the weaker links among the main interactions. The striking finding here is that each EI case has certain key linkages that make the project possible. In the Brazil case, it is Forest Foundation and the Fisheries Institute, two agencies of Sao Paulo State Government acting in tandem, that connect the Cooperative with national and international funders. In the Guyana case, the supportive tandem is the national NGO, Iwokrama, and the District Board, NRDDB, which is not a government agency and which acts like an NGO. The India case is different: instead of a key supporting agencies, there is a network-like arrangement around RCMPCC at Pune. In the Kenya case, the local level is weak; some of the beekeepers are organized and some not. Again there is a supportive tandem. In KE-I, it is CARD, an NGO, acting with the HCA project officer.

The lesson from the Kenya cases is interesting in another way. Even though both KE-I and KE-II are HCA cases, the main players are different in the two. In KE-II, support comes from CRSP, an NGO, acting with the District Office of a government department. In four of the five cases, there is one very strong horizontal linkage providing a tandem of support for the local level, and connecting it to sources of funding, information and other support. In the India case, the support has the form of a network, with the Pune Center at the middle. Of the main supporting organizations in each case, one finds both NGOs and government organizations. The key government agencies are always at state or district level, providing the extremely important function of political support.

In our four cases, they are not found at the national level; the central government seems passive or benign. It does not have much of a support function, but at least it does not create barriers either. In at least one of the cases (KE), we know that the organizers stay away from central government agencies and actively pursue partnerships with the district level government instead. One researcher characterized central agencies "as an omnipresent threat." The State level, by contrast, is a key level in political support in two

(BR, IN) of the four cases. In the India case, it is the State government that created a favorable policy environment (without creating new legislation) that led to the "issuing of government notification" to empower local groups and agencies to participate in the conservation of medicinal plants.

[need more on some of the following]

- Strong and weak linkages
- Key linkages that make project possible; their characteristics
- Key individuals crossing scales and serving a "bridging" function

Regarding key individuals, two points can be made with respect to cross-scale linkages. One is that leadership roles are consistent with the kind of linkages characterizing the case. In three of the four cases, there are individual leaders. In the fourth one (IN), linkages are in the form of a spoke-and-wheel and there is no one clear leader. Instead, there is a collective leadership of four or five people.

The second point is that the key people operate at multiple levels. That is, leaders do not seem to be active at only one particular level (e.g., the community). Rather, they seem to be straddling two or more levels of social and political organization, often making the linkages and translating local concerns to the levels above and *vice versa*. This mode of operation is consistent with what Cash and Moser (2000) refer to as "boundary organizations", that is, groups (or in this case individuals) that translate findings or messages from one level of organization to another.

- Time dimension; dynamics
- Skill set around making linkages
- Limitations, e.g., NGO accountability
- Impacts of policy, markets, other drivers (cross-ref to self-org section)

[Nayak, Adhikari, Grant, Maurice]

4.4 Funding and other resources

Just how do these key organizations connect the project at the local level to sources of funding and other resources? Unraveling the sources of funding is anything but simple. The larger picture hides operational complexities. Often, different sources are needed for different stages of the local operation or different functions of it. For example, **Figure 1** (BR) shows a "black box" of financial support. **Figure 6** shows the same Brazil case, but this time focusing only on the linkages that enabled the Cooperative to obtain health certification for its oysters. The resulting organizational chart is considerably more complex than **Figure 1** and provides a realistic picture of how the group went about seeking funds and where the funds went (designing the oyster depuration station; land for the station; construction materials and so on).

The Kenya case again holds a surprise. Even though both KE-I and KE-II are HCA cases, the funding sources are different. In KE-I, funds are coming through CARD, the NGO.

But in KE-II, funds are coming through the national office of the Aga Khan Foundation, an international organization of Ismaili Muslims, and its district level program office.

[need more on some of the following]

- How do key organizations connect the project with sources of funding?
- Size of funding; strings attached
- Transaction costs
- Different sources are often needed for different stages
- Different sources are often needed for different functions.

[Robinson]

4.5 Capacity-building and knowledge systems

How do the key organizations connect the project at the local level to sources of know-how, technical and practical information? On this point, the experience in each case is different. In the Brazil case, technical information came from NUPAUB (University of Sao Paulo), and the two State agencies. In the Guyana case, however, there was no knowledge available within Guyana. Iwokrama and the local fishers attempted to develop a survey methodology that yielded inconclusive results. As a result, linkages were pursued with a reserve in Brazil, leading to the subsequent transfer and adaptation of Brazilian survey methodology to assess Arapaima populations using local knowledge and expertise. (The GY project area is inland, within the Amazon basin and not far from the Brazil border.)

In the India case, sources of information are from within the country but from a different part of the country. *In situ* conservation and cultivation of medicinal plants has become a big issue in many parts of India in recent years. Much of the technical knowledge came from south India through State level agencies but perhaps more importantly from FRLHT, an NGO based in Bangalore. In the Kenya case, the sources of information are diverse: there was a great deal of capacity-building, training in the use of modern beehives, using international knowledge. In KE-I, the role of local knowledge was important in the training of new beekeepers, whereas in KE-II (not a traditional bee-keeping area) little local knowledge existed.

In all cases, demonstration effect is important. This includes the HCA project officer who taught by example (KE-I); the vertical transfer of expertise with beehives through training; the visit by NGO and fishers in the GY case to learn how the Brazilians were counting Arapaima; and the horizontal transfer of medicinal plant conservation expertise through the NGO based in Bangalore (IN).

One additional aspect of capacity-building merits mention. In each of the EI cases, one finds spin-off groups and activities. In Brazil, for example, the organizational experience with the Cooperative resulted in the transfer of skills to establish a women's seamstress group. In Guyana, the experience with Arapaima problem solving led to the application

of new skills to a range of other activities. In India, the project led to an increased appreciation of women's role in the conservation of medicinal plants, it spawned a variety of women's groups, and facilitated the increased participation of women in village political structures. As well, the project contributed to the revival of interest in traditional medicines; it had cultural implications, in addition to economic and environmental ones. Such revival was an outcome but also an objective of the project. In the four projects as a group, empowerment appears to be an important outcome, even though it is rarely an explicit objective of the project at the start.

4.6 Shifting power differentials regarding linkages

- Building of knowledge, trust, networks (=social capital)
- The empowering effect of this social capital
- Enabling and fostering empowerment

[Timmer, Nayak, Orozco]

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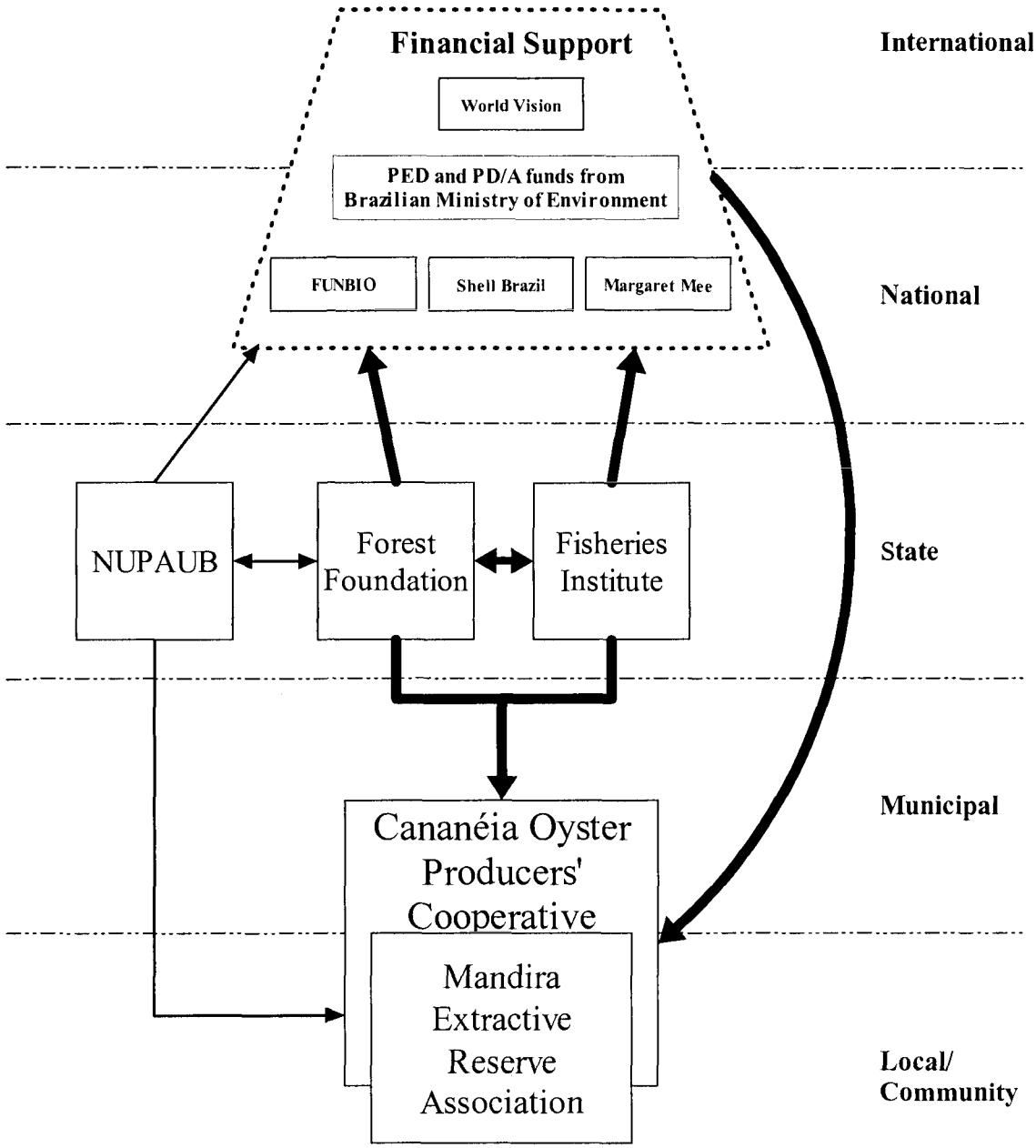


Figure 1. Key institutional cross-scale linkages that facilitated creation and development of the Cananéia Oyster Producers' Cooperative (Source: Medeiros 2004).

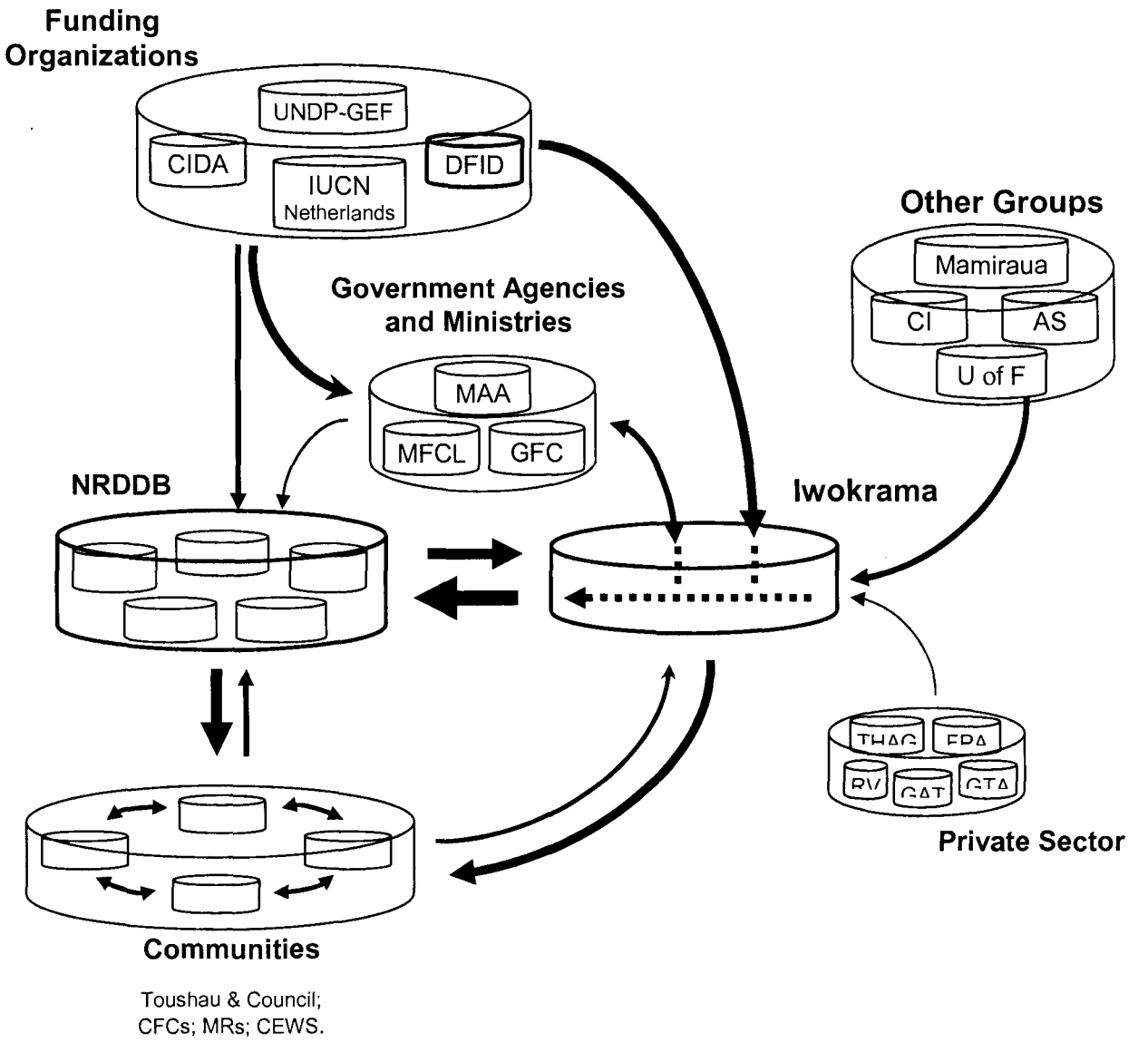


Figure 2. Key institutional linkages facilitating the activities of the North Rupununi District Development Board (NRDDB). Source: Fernandes (2004)

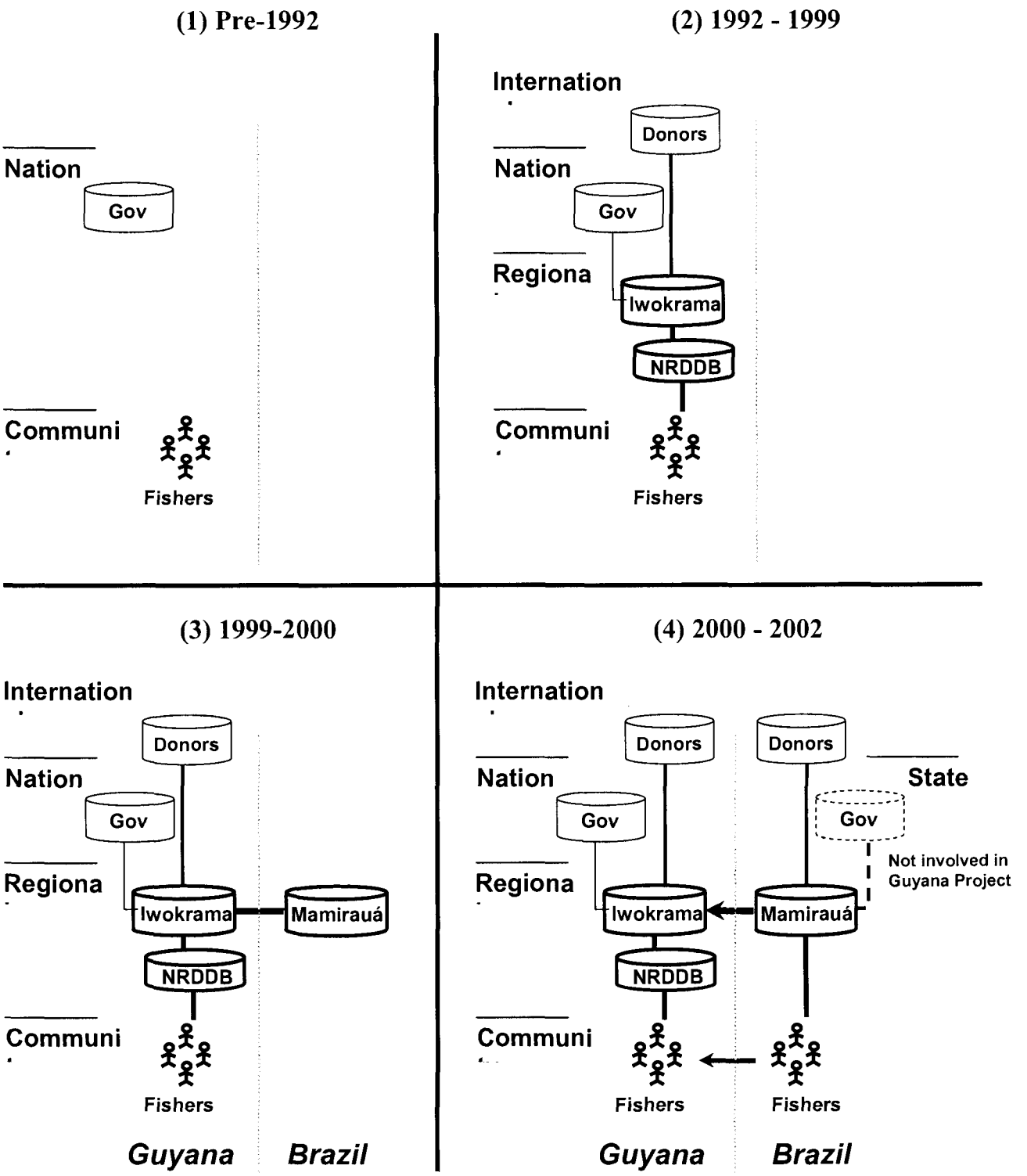


Figure 2b. Institutional linkages leading to the *development* of the Arapaima Management Project.

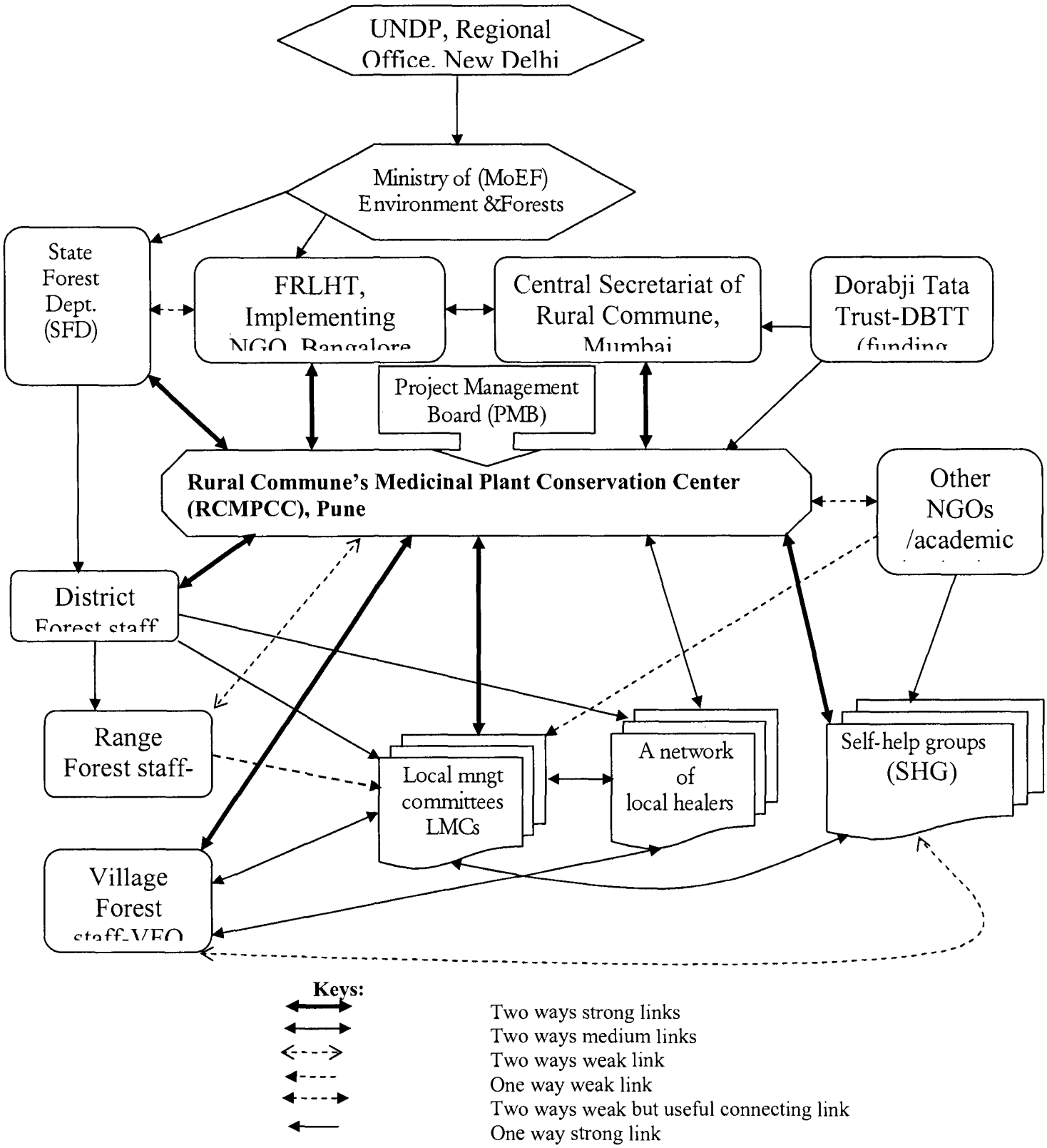


Figure 3: Enabling cross-scale linkages helped achieve project goals, Rural Communes' Medicinal Plant Conservation Center, Pune, India. Source: Shukla (2004)

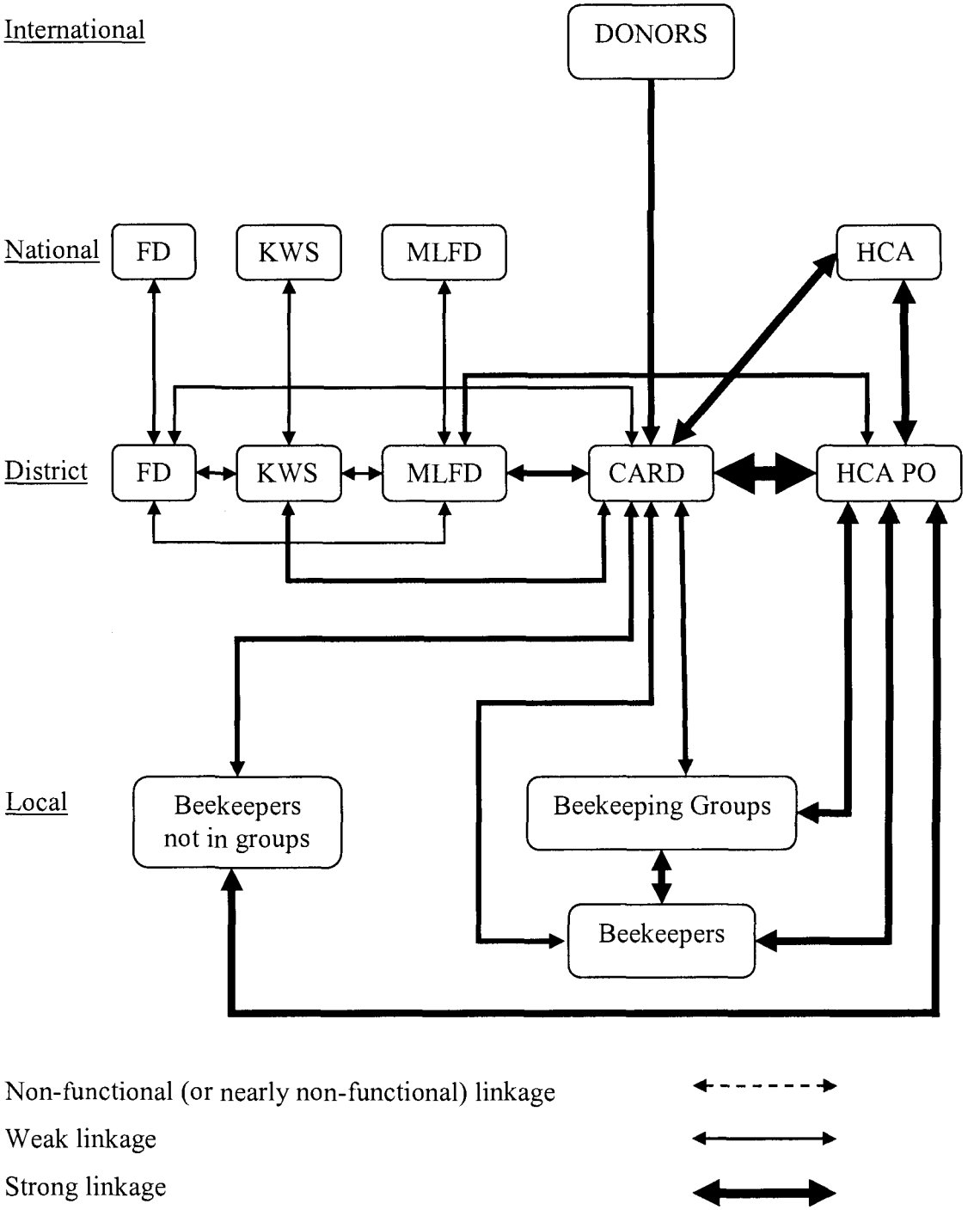


Figure 4: Cross-Scale interactions of stakeholders in Kakamega HCA project.
FD: Forest Department; KWS: Kenya Wildlife Service; MLFD: Ministry of Livestock and Fisheries Development; HCA: Honey Care Africa; HCA PO: Project Officer; CARD: Community Action for Rural Development (community-based organization). Source: Maurice (2004)

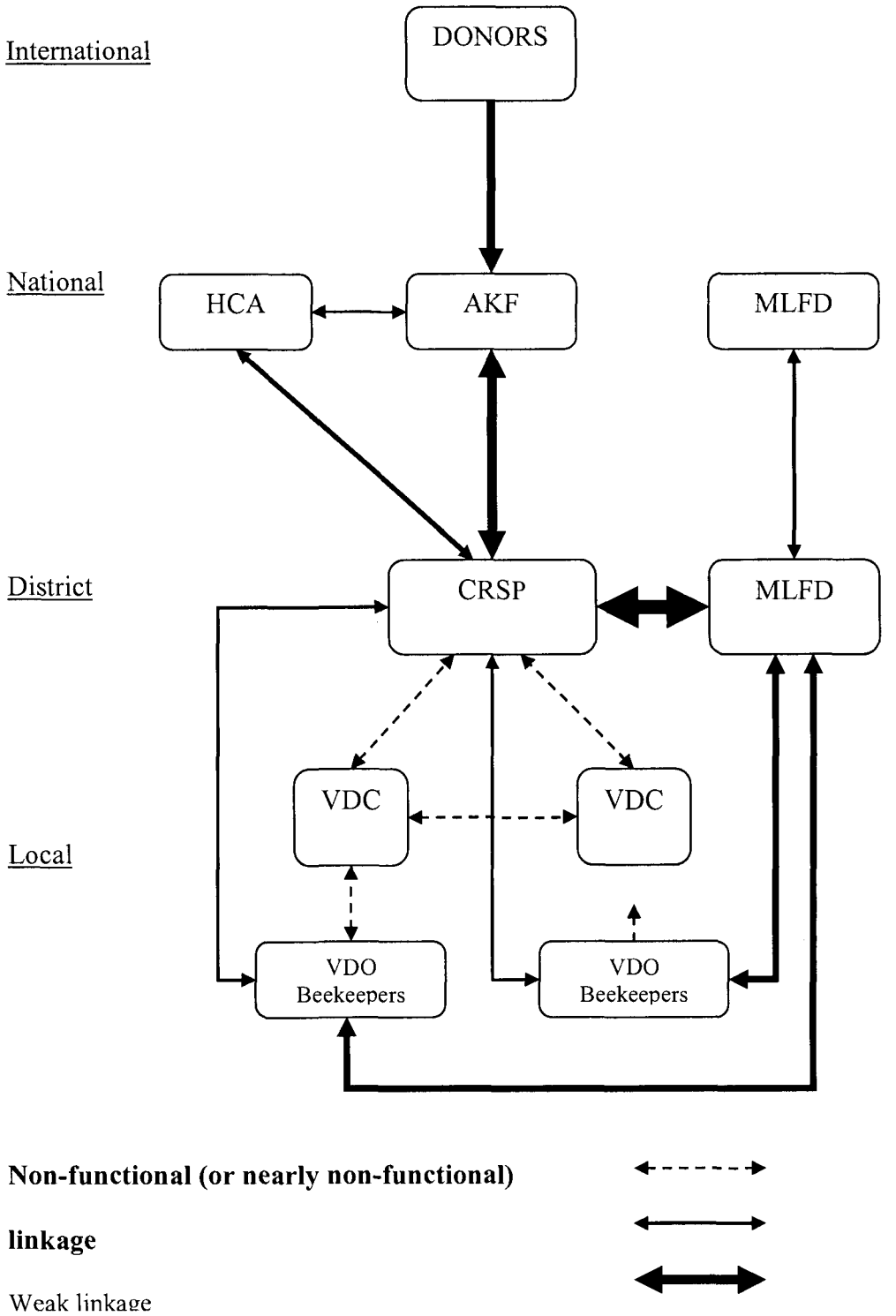


Figure 5: Cross-Scale interactions of stakeholders in Kwale HCA project. HCA: Honey Care Africa; AKF: Aga Kan Foundation (National NGO); MLFD: Ministry of Livestock and Fisheries Development; CRSP: Coastal Rural Support Program of AKF; VDC: Village Development Committee; VDO: Village Development Organization. Source: S. Maurice (2004)

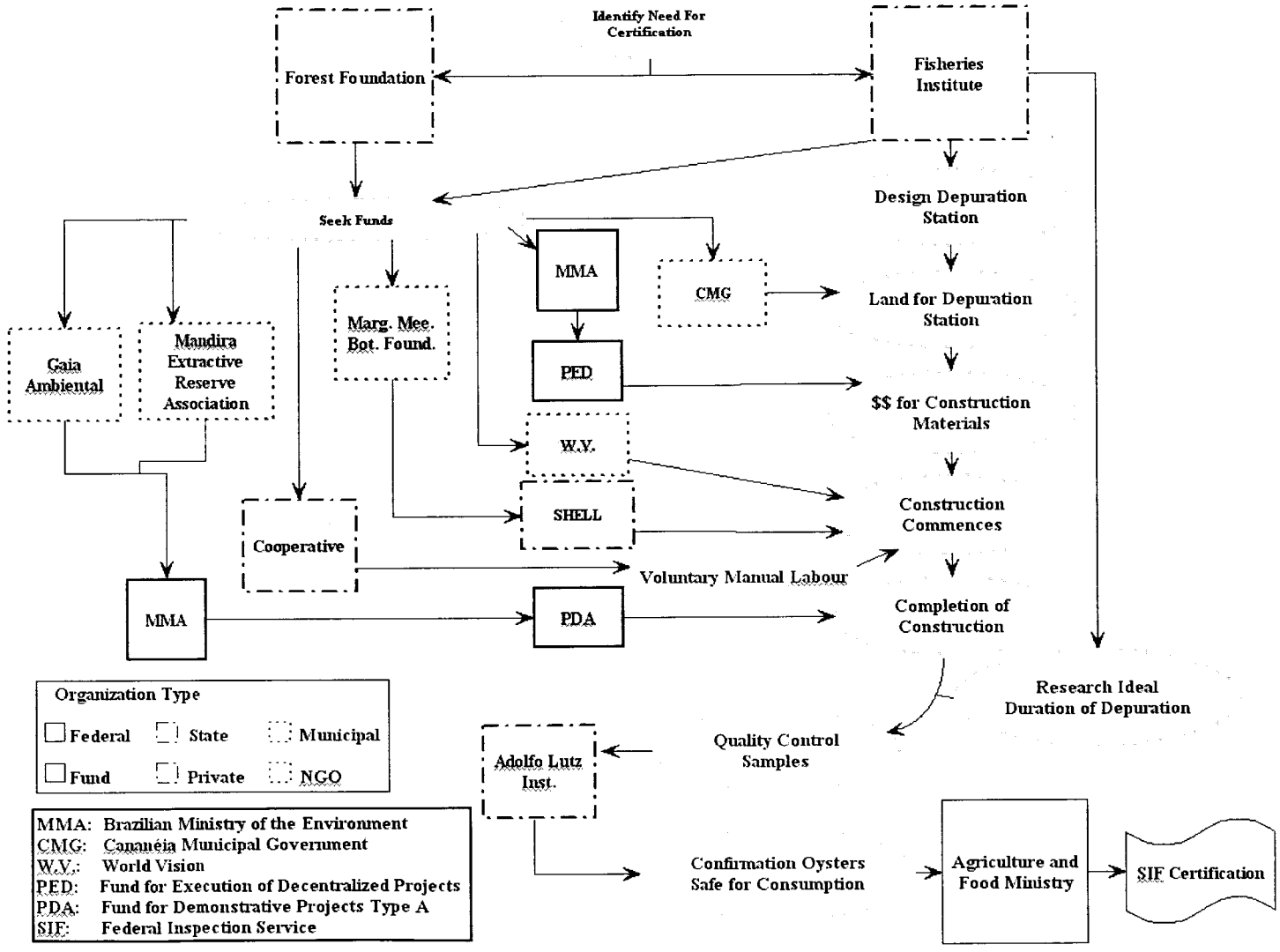


Figure 6. Organizational cross-scale linkages which enabled the Cooperative to obtain health certification from the Federal Inspection Service for its oysters (Source: Medeiros 2004).

Table 1: External leaders and their roles, affiliation and connections in the Brazilian case. Source: D. Medeiros.

	PHASE				
Phase	I	II	III	IV	V
External Leader	Leader I (1990-1996)		Leader II (1995-1999)	Leader IV (2000-mid2004)	Leader V (mid2004 – present)
			Leader III (1995 - present)		
Organization Affiliation	State University Research Institute	State Forest Foundation	State Forest Foundation	State Forest Foundation	State Forest Foundation
			State Fisheries Institute		
Role	grad student: research socio-ecological viability of extractive reserve	government researcher: **start attempt to implement the extractive** reserve	government researchers: contact all oyster harvesters, initiate cooperative	government researchers: capacity development of oyster harvesters, establish extractive reserve	government researchers: assist Cooperative secure a market
Connections	Environmental Ministry, State Secretariat of the Environment [which encompasses State Forest Foundation]	State University Research Institute, State Fisheries Institute, Community-Based Organization, Leader II and III,	State University Research Institute, State Health Organization, Municipal Government, Local NGO, Local Religious Organization, Leader IV	National and International Funding, State University Research Institute, State Health Organization, Local NGO, Education Agent, Economic Planning Agent, Market Development Agent, Leader V	National Funding, State Health Organization, Market Development Agent

Table 2: Role of key individuals: Honey Care Africa Project Officer, Kakamega, Kenya. Source: S. Maurice.

	Phase I (2000 - 2002)	Phase II (2002 – 2003)	Phase III (2003 – Present)
Organization Affiliation	CARD	CARD IBG	HCA CARD IBG
Role in Organization	Individual Beekeeper	CARD Beekeeping Officer; IBG Chairperson	HCA Project Officer; IBG Chairperson
Connections - Contacts		Beekeepers (Village level); MLFD Divisional Officer	Beekeepers (District level); MLFD Divisional Officer, MLFD District Officer

HCA: Honey Care
CARD: Community Action for Rural Development (Community-based organization)
IBG: Ivihiga Beehive Group
MLFD: Ministry of Livestock and Fisheries Development.

Table 3: Cross-scale representation of stakeholders in Kakamega HCA project, Kenya.
Source: S. Maurice.

	Local	Division	District	Province	National	International
Honey Care					X	
HCA PO			X			
CARD			X			
Local Groups	X					
Forest Dept					X	
KWS					X	
Livestock/Agr					X	

HCA PO: Honey Care Project Officer
CARD: Community Action for Rural Development (Community-based organization)
KWS: Kenya Wildlife Services
MLFD: Ministry of Livestock and Fisheries Development.

X Level at which institution is based
Level at which institution is active in relation to the HCA project
Level at which institution is not active in relation to the HCA project

Table 4: Cross-scale representation of stakeholders in Kwale HCA project, Kenya.
Source: S. Maurice.

	Local	Division	District	Province	National	International
Honey Care					X	
CRSP			X			
AKF					X	
VDC	X					
VDO	X					
MLFD					X	

AKF: Aga Khan Foundation (National NGO)
CRSP: Coastal Rural Support Program of AKF
VDC: Village Development Committee
VDO: Village Development Organization
MLFD: Ministry of Livestock and Fisheries Development

X Level at which institution is based
Level at which institution is active in relation to the HCA project
Level at which institution is not active in relation to the HCA project

Table 2. Cross-scale representation of stakeholders in the EMM, Peru.

Stakeholders	Local/Community	District	Province	National	International
EMM	X				
Matsiguenka communities: Tayakome & Yomibato	X				
PNM*		X			
Ecotour-Manu ASSC			X		
INRENA*				X	
GTZ*					X
FANPE*				X	
APECO*				X	
CEDIA				X	
CCBS (biological research center)					X
FENAMAD			X		
COHAR-YIMA	X				
COMARU	X				
Defensoría del Pueblo (ombudsman agency in Peru)				X	
Tourists					X

X	Level at which institution is based
	Level at which institution is active in relation to the EMM
	Level at which institution is not active in relation to the EMM

* Institutions that have supported the implementation of the EMM.

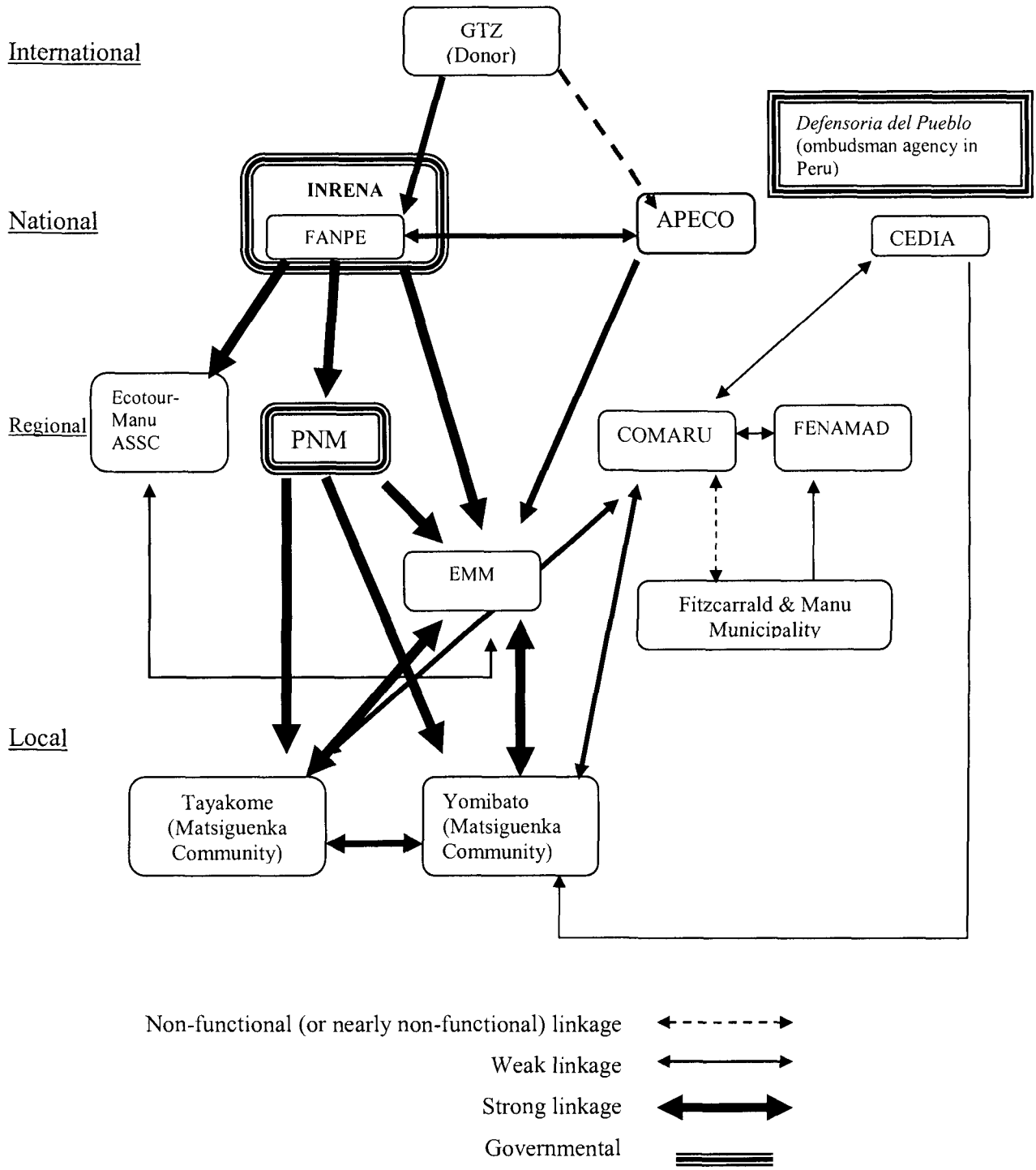


Figure 3. Cross-scale interactions of stakeholders in the first years of the EMM (1996 – 2003)

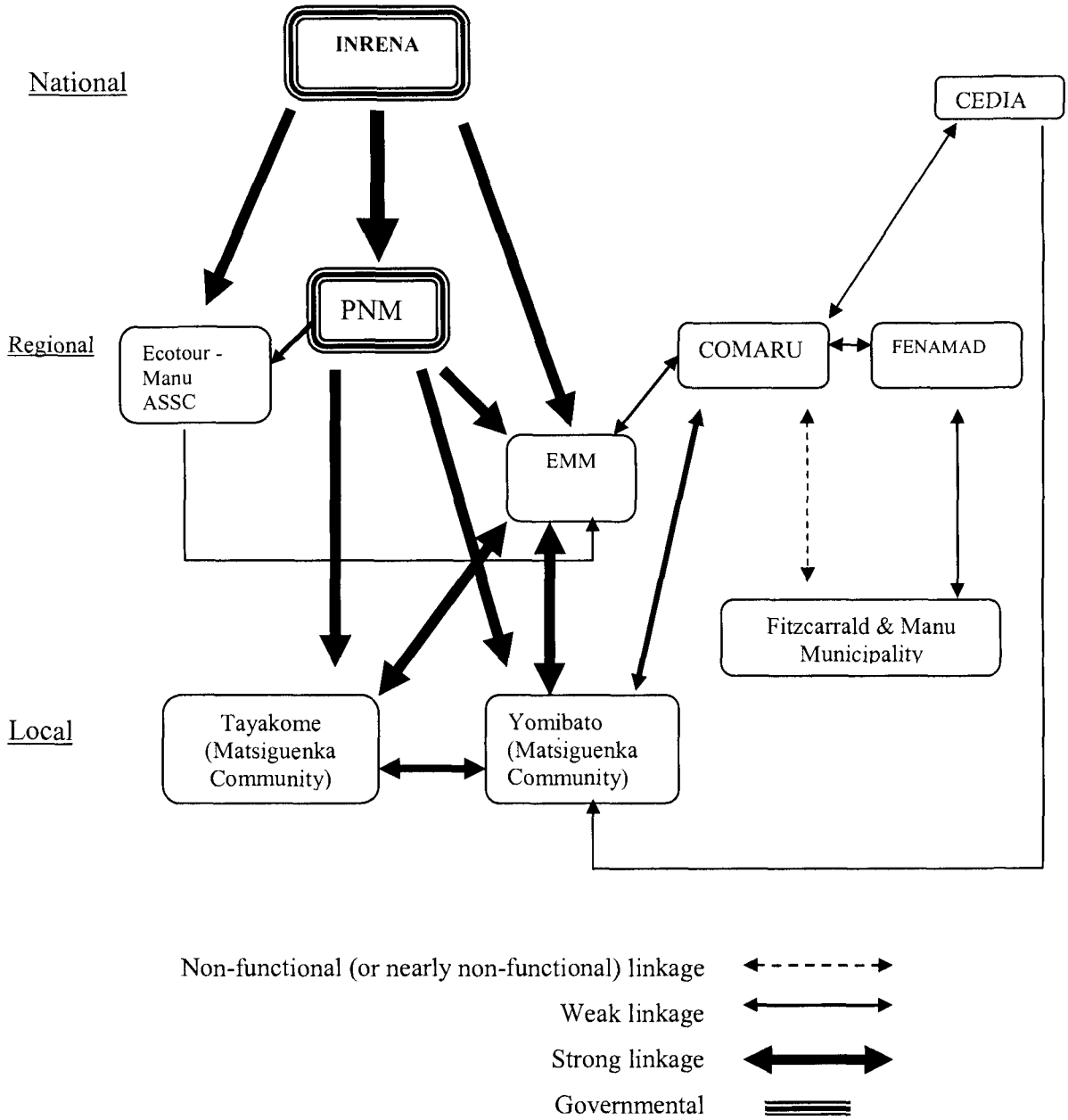


Figure 4. Current cross-scale interactions of stakeholders in the EMM

Add figures and tables:

TIDE case (Fernandes):

Pred Nai case (Senyk): four figures showing cross-scale linkages

Nuevo San Juan case (Orozco):

Table 10: Linkages and partnerships, number and kinds of cases. Total N=42.

Cases involving	N
Number of partnerships	
One to three	12
Four or more	20
Unclear/unstated	10
Linkages involving	
Local NGOs	12
National NGOs	10
Local governments (includes local educational/research organizations)	14
Regional/state governments	4
National governments	9
Financial institutions (including local/national foundations)	6
International organizations (including donor agencies)	21
Kinds of partnerships for	
Business networking	33
Fund-raising	21
Training/research	18
Technical support	13
Institution building	15
Legal support	2
Innovation and knowledge transfer	24
Gender empowerment & equity	27
Unclear	17
Joint ventures*	4

*** Note: We defined joint ventures according to explicit profit-sharing provisions with other groups in case descriptions. According to this criterion, two Equator Initiative cases are joint ventures with non-indigenous partners (Mesoamerican Ecotourism Alliance; the Comunidad Nativa Infierno project) and two are joint ventures with indigenous partners (CEFI; Camp Ya Kanzi).**

Table 12: Types of Partners*

Total cases in this sub-category	**Forestry/Agro-forestry (N=95)**	**Non-Timber Forest Products (N=41)**	**Medicinal Plant (N=37)**
Local NGOs	46	18	13
National NGOs	28	20	18
Local government	26	24	19
Regional and/or state government	37	17	14
National government	34	16	15
Financial Institutions	11	5	8
International organizations/institutions	59	25	19
Joint Forest Management	19	5	6
Universities and research centers	35	19	18
Private sector	6	9	3
Community associations/organizations	52	27	17
Unclear	25	10	11

** Coding Based on Case Description*

Table 13: Kinds of Partnerships*

Total cases in this sub-category	**Forestry/Agro-forestry (N=95)**	**Non-Timber Forest Products (N=41)**	**Medicinal Plant (N=37)**
Business networking	57	30	27
Providing and raising funds	56	27	17
Training, education and research	58	28	23
Institutional capacity building	61	29	28
Legal support and conflict resolution	25	18	11
Innovation and knowledge transfer	50	28	18
Technical support, assistance and advice	43	12	14
Infrastructure building	30	11	11
Facilitating social enterprises and change	36	24	23
Harvesting, sales, and marketing (including exports)	37	30	23
Cooperative business activities	17	10	13
Health promotion programs	28	9	18
Extension services	35	17	9
Land, forest, resource management	50	30	28
Joint venture	8	5	11
Promoting cultural well-being and preservation	4	2	1
Access and benefit sharing	52	32	25
Unclear	25	10	11

** Coding Based on Case Description*

Table 1 (Aug 06 workshop)

CASES	# of levels
Medicinal Plants Conservation Centre, India	6
Arapaima conservation, Guyana	4
Honey Care Africa Ltd., Kakamega Honey Care Africa Ltd., Kwale	5 5
Cananeia Oyster Producers Cooperative, Brazil	
TIDE Port Honduras marine reserve, Belize	4
Pred Nai mangrove rehabilitation,Thailand	5
Casa Matsiguenka indigenous ecotourism, Peru	3*
Nuevo San Juan forest management, Mexico	5
Torra Conservancy, Namibia	
Pastoralist Integrated Support Programme, Kenya	

* There was an international NGO level until 2003

Table 2. (Aug 06 workshop)

CASES	# of partners
Medicinal Plants Conservation Centre, India	11
Arapaima conservation, Guyana	16
Honey Care Africa Ltd., Kenya - Kakamega Honey Care Africa Ltd., Kenya – Kwale	8 6
Cananeia Oyster Producers Cooperative, Brazil	
TIDE Port Honduras marine reserve, Belize	13
Pred Nai mangrove rehabilitation,Thailand	20
Casa Matsiguenka indigenous ecotourism, Peru	7
Nuevo San Juan forest management, Mexico	22
Torra Conservancy, Namibia	
Pastoralist Integrated Support Programme, Kenya	

Table 3 . "Maturity stages for EI cases (adapted from Pretty and Ward 2001)

Criterion	Early Stage	Middle Stage	Mature Stage
Reason for being	Initiated by top-down intervention or self-organized in response to crisis	Successful self-organization to respond to management challenges - India + Kakamega+ Kwale Guyana + Peru	Addresses a series of challenges, including those not originally in the mandate - Mexico - Thailand
Worldview and sense-making	Reacting to past events and resource crises - Peru + -	Making sense of new realities and developing a consensus - Belize - Kakamega - Kwale	Shaping reality by looking forward, planning and developing a shared vision of the future - Guyana - Thailand - Mexico (1) - India
Rules and norms	Tend to be externally imposed; no effective local rules - Belize - Peru	Beginning to develop own rules and norms, both formal and informal - Guyana - Kwale - India	Rules and norms tested and developed as needed - Kakamega - Thailand - Mexico
Horizontal links and networks Vertical links	Few links and informal networks; tends to be local and regional in nature - Peru -	Small number of links; Sorting out of roles; information starting to flow upward as well as downward - Guyana - India + - Kakamega + - Kwale +	Many links with partners with diverse functions and changing roles; redundant links with other levels of management - Thailand - Mexico
	Only as formally mandated		Robust and
Use of knowledge	Uncritically using available technical and scientific data	More attention to different kinds of knowledge and how	Using local knowledge; combining different

	or local information - Kwale +	to use them together - Belize - Peru - Kakamega	kinds of knowledge - Thailand - India - Guyana - Mexico -
Capacity to experiment	Little or no capacity or willingness to experiment	Developing capacity to plan, carry out and learn from experiment - Thailand + - Guyana - Kwale - Peru - India +	Experimentation leading to adaptation and innovation - Kakamega - Mexico *
Learning	Instrumental learning	Adaptive learning - India (2) - Guyana - Belize - Thailand - Kwale - Kakamega - Mexico + (3) - Peru (4)	Double-loop or transformative learning; "learning to learn" - -

Footnotes:

(1) Case may have become post mature with factions.

(2) Here and elsewhere different partners may be at different stages at learning which is holding back the system / project as a whole

(3) Transformative learning took place earlier but the current situation doesn't seem to reflect this. The case is good in capturing technical learning but not other kinds of learning. (change in generation)

(4) This project receives very little technical help but there is a great deal of learning by doing locally.

*

Section 5: Capacity development as learning to learn and learning to do
(Seixas/Davy/Davison-Hunt)

5.1. Introduction

In keeping with the approach of this book we address capacity development from the framework of complex adaptive systems. What is the process by which people can mobilize knowledge and turn it into action consistent with biodiversity conservation and poverty reduction?

In a working figure developed for this chapter we start from the premise that people mobilize knowledge intentionally in response to a change event. Capacity development is not undertaken for its own sake but as part of a process in which a community decides to undertake a new direction. This also helps to provide a scope for the chapter as we recognize that every community has its own knowledge system that it applies in day-to-day problems and develops over time. While this is an important source for capacity development our goal in this chapter is to understand how learning processes have been catalyzed and capacity developed for biodiversity conservation and poverty reduction within EI cases. It should also be clear from our working figure that we do not see capacity building as a one-time event. Rather, it is part of an ongoing process that builds upon existing capacity and develops capacity that is brought to future events.

In order to clarify our discussion on capacity development it is important to delineate what we mean by the word capacity. In general, the word capacity focuses our attention on the **ability, power or aptitude** of an individual, or a collection of organized individuals to both learn and do. Capacity development requires both the development of the mechanisms/processes by which people can learn new skills and the skills themselves. Skills can refer to both abilities and techniques that can be learned from others and written materials as well as that gained through experience. Ability being a more general term emphasizing that one holds the power to perform or accomplish a stated goal and can include things like information, values and institutions. Technique is narrow in definition focusing on the methods, or system needed to accomplish a task.

This brief discussion on definitional issues emphasizes that capacity development focus on both building processes by which people can learn skills as well as apply skills to actions. While some of these processes might be internal to the community as people learn how to mobilize their knowledge to undertake a new action this perspective also draws attention to the fact that external agents also require the capacity to build their own capacity to work cooperatively with local communities. We want to explore both aspects of capacity development in this chapter through an examination of EI cases as well as cases that share similar goals: the capacity to learn as well as to do in order to achieve goals consistent with biodiversity conservation and poverty reduction.

While we focus on specific change events, or projects, it should also be clear from the diagram that the development of new abilities and skills become part of a community's human and social capital and, in some cases, lead to the empowerment of marginalized, poor people.

5.2. Knowledge systems

All societies have knowledge systems that provide its members with the ability to survive on a day-to-day basis and to produce new knowledge over time. The study of knowledge systems is not new but rather has a long and rich history within western philosophic traditions. It is not our intention in this chapter to provide an overview of knowledge systems in general. However, capacity development can be informed by work on knowledge systems as this work has focused attention on the processes of knowledge production as well as the content of knowledge.

What can theory from knowledge systems bring to our understanding of capacity development? First, knowledge is not just what people know (ontology) but also how people learn what they know (epistemology). Simply put, knowledge is both what individuals hold in their heads (information, techniques), or embody through their actions, as well as the social and cultural processes by which knowledge is produced and transmitted within and amongst members of societies.

This supports the importance of both the processes by which people learn as well as the abilities and skills that they learn to undertake action. Recent work on knowledge transmission also supports this dual focus as learning is not just the transference of skills from one head to another but the process of also learning how to apply skills within the context of action. While much of the focus on the transmission of knowledge is within a community there has also been a lot of work on how knowledge moves between communities. Much of the work on transmission is now considering both the structure of linkages by which knowledge flows as well as the processes that both constrain and facilitate the movement of knowledge. It is now recognized that linkages were not contained amongst members of a bounded community but that linkages transcended community boundaries and could include linkages amongst members from many communities. By focusing on the process of exchange it also allows us to consider the power that an individual within a community, or a community as part of multiple communities may, or may not, hold in negotiating the conditions of a knowledge exchange process in a way consistent with their institutions, values and worldview. Exchange, in and of itself, is simply a structure that can equally facilitate processes of colonization as well as empowerment.

So, what does this have to do with capacity development? As we have stated at the outset of this chapter most communities have an internal capacity that on a day-to-day basis can provide for the survival of a community. However, there are events that require a community to search out new capacities (power, ability or aptitude) to allow them to undertake action in response to the event. This may mean learning how to apply their own existing knowledge in a new context or entering into an exchange of knowledge to develop new capacities. Either way it means working with a knowledge agent, internal or external, who can recognize the right type of knowledge for the change event, identify potential sources of knowledge, structure a learning process and develop decision support systems that facilitate individuals and communities transfer knowledge into action as they pursue goals consistent with biodiversity conservation and poverty reduction. It also suggests that we need to pay attention to the capacities that individuals and communities develop to negotiate such exchanges in ways that are consistent with their institutions, values and worldview in relation to such shared goals. Knowledge exchange is an important mechanism by which communities can adapt to change events, however,

equally important is the capacity an individual or community holds to negotiate the conditions of exchange. Otherwise, capacity development runs the risk of becoming a mechanism for acculturation and colonization.

Mobilizing Knowledge

The knowledge base tapped in the Indian initiative was mainly local knowledge (codified and un-codified) about medicinal plants and their uses. The codified local knowledge derived from an Ayurvedic system, which is the classical Indian traditional knowledge systematically documented in ancient scriptures (an herbal-based alternative to allopathic medicines). The initiative hired Ayurvedic practitioners as community researchers, who helped in developing suitable Ayurvedic products such as herbal face pack and other herbal remedies for locally-identified common ailments. This body of knowledge was then shared with the local communities by the NGO (RCMPCC) staff through training. The un-codified form of knowledge (traditional medicinal plant knowledge or folk knowledge) has been mainly passed on through oral transmission. Some of this folk knowledge was already documented by other NGOs in the form of databases and was useful in ecological monitoring of local medicinal plants and their habitats. Knowledgeable guards and foresters were identified as barefoot biologists or village biologists - persons who are knowledgeable about and interested in local flora and fauna, and keen to improve his/her existing knowledge. Women's knowledge in some areas was used in developing and processing the herbal products such as face pack and herbal powder for locally prevalent diseases. Besides, these two streams of local knowledge, the initiative also used a formal or scientific knowledge, which is normally acquired through degree granting academic institutions, and practiced by local forest staff, project staff and educated members of local communities. The formal knowledge related to demarcation of the boundaries of the conservation areas, constructing structures in and around these areas to protect them from cattle, fires and trespasses. All three types of knowledge used in this initiative were held by different groups of people and served different purposes.

5.3. Capacities gaps and learning needs

In most, if not all cases, local people have some familiarity with and knowledge about the ecosystem they depend upon as well as some skills to pursue their livelihoods. The development of a conservation plan (which often is coupled with the development of alternative livelihoods) or a community-based enterprise often requires developing new capacities. Capacity may be developed to manage resources, to operate business enterprises, to search for funding and other resources, and to negotiate with government and other stakeholders, among other things. In this section we investigate: What was the goal of an EI initiative (these might be multiple)? What were the perceived capacity gaps for different actors and who perceived them? Who identified the sources of capacity (it may just be that local knowledge had to be put to a new use so the gap was not lack of information but applying it in an effective manner)?

Capacity gaps

In the Guyana case, there is still a significant gap in local institutional and management capacity. Currently, management capacity is still very concentrated at the leadership level, and within particular families. The lack of training and experience among researchers and managers seems to have undermined important negotiations and institutional linkages.

In the Brazilian case, Cooperostra members do not have time or capacity to manage a successful business and market their product. Profits are not sufficient to sustainably pay the salary of a professional business manager, and negative experiences with three previous external managers have resulted in a lack of confidence in hiring external help to manage the cooperative. In response to this situation, cooperative member youth are taking courses on business administration, computer usage, and marketing to address these capacity gaps in the future. Nevertheless, there exists a possibility that some of the Cooperostra youth may be lured by higher wages and greater options of urban living than contributing to the future of Cooperostra.

In the Mexican case, the ongoing training processes help communal representatives and administrators to identify other capacity gaps, such as to carry out some value-added processes.

In Honey Care projects in Kenya, capacity had to be developed at local level for beekeepers to use a new technology, Movable-Frame Hives (MFHs); and training was provided initially by outsiders. .

In the Thailand Pred Nai's case, capacity building was often provided by partner organizations in response to a need identified by the community, such as in reforestation techniques and in the development of a management plan.

In the Belize case, most capacity building exercises focused on the tourism market, and sports fishing in particular. Some fishers were intimidated by training courses and the legally required certification process for tour-guides in Belize and chose not to participate in the programmes. Although TIDE's has begun to offer new training options (small business management, general tour guiding, kayak guiding, and bird identification) there is still a need for capacity development for livelihoods outside of the tourism industry

Learning needs
Peru: training, such as in English language to communicate with tourists, was the main demand from the indigenous leaders and other participants in the ecotourism lodge enterprise.

5.4. Developing new capacities: processes and frameworks

Here, we investigate how new capacity was developed in the EI and other cases. In particular we look at the processes utilized for capacity development amongst different actors.

5.4.1 Processes for developing capacity

At community level:

Generating information locally (e.g., participatory research methods, learning from mistakes/successes, monitoring)

In the Indian case, local knowledge was mobilized through two programs: 1) *vaidu sammelan* or local healer's workshops, and 2) the village biologists (previously known as

barefoot botanists) training programs. The first program: 1) document the knowledge of local vaidus about plants; 2) encourage value-added activities by promoting local use and sale of herbal products; 3) provide a platform for vaidus to demonstrate their products; and, 4) to provide a platform for the vaidus and other health practitioners to interact and encourage participation in local biodiversity conservation efforts. The village biologist program was broad in terms of coverage, with 3 or 4 local experts identified at each location. Selection of village biologists was based on: 1) good knowledge of local plants and their uses and cultural significance; 2) interest in local environmental and conservation issues; and, 3) ability to read and write. Most village biologists identified were *vaidus*, forest guards and knowledgeable elders. These approaches have also generated positive outcomes at different levels, such as the legitimization and recognition of the folk knowledge of the village *vaidus* in the district, state and (externally-aided) national plans of the Forest Department, the mobilization of collaborative research and funding commitments by the government departments, NGOs and research institutions at the state and the national levels and, most importantly, the pre-testing of community-based educational models for facilitating transmission of folk knowledge associated with uses of medicinal plants at the village or the sub-state levels. These outcomes show a way to achieve the larger goals of equity and empowerment as conceived in community-based conservation (Shukla and Gardner 2006).

In Peru, the initial construction of the tourism lodge cabins was done by the indigenous people with the assistance of architects, and now the indigenous people are using that experience to renovate the new cabins in the lodge by themselves.

In the Guyana case, the use of local knowledge in monitoring Arapaima population has demystified management for many community members. They see that their existing knowledge can play an important role in the conservation of their resources. Their involvement in monitoring has also led to local ownership of the survey findings, and the project in general. As the primary actors in the monitoring programme, trained counters are exposed to resource conditions at a regional scale. As a result, many seem to have gained more of a regional perspective on management and monitoring. Counters also acted as community advocates of the Arapaima fishery ban and contributed to increased local awareness of management efforts.

In the Thai case, informal capacity building took place through the participation of villagers in various NGOs' research projects, such as in conducting social and biological inventories. Local ecological knowledge on fauna e flora allows villagers to accurately monitor ecological variables, and such information is used locally and also by government and NGOs. In addition, this case also shows how lessons from successful experience with informal management were incorporated into the development of a formal conservation group.

In the Brazil case, knowledge on the development of new technology and better processes for oyster production was developed locally through trial and error and through mobilization of existing local ecological knowledge. Informal monitoring also generates information on the status of oyster stocks.

In the Mexican case, generation of information at the local level has been done with the help of academic institutions through monitoring resources and evaluating impacts of livelihoods activities for instance.

Transferring and sharing information (negotiation spaces/fora; EI community dialogues, peer-to-peer horizontal exchange; training, learning networks, etc)

In the Peruvian case workshops strengthened the Matsiguenka communities' cultural identity and transferred new knowledge and understanding to both the community members (such as basic concepts of the monetary system and Spanish language skills) and the supporting organization in order to initiate the Matsiguenka into managing their lodge enterprise.

In the Thai case, formal capacity building consisted in participation in training courses and workshops provided by NGO or government departments in other to fulfill community needs and to network with other communities. Examples of courses include training in forest management, reforestation, and mangrove ecology. The Thai initiative is also involved with community forestry networks operating at three different scales, sub-district, provincial, and regional. In some network meetings, small-group discussions centered on problem-solving provide an important opportunity for community leaders to learn from each other (i.e., horizontal exchange of knowledge) as well as from the NGO personnel who participate.

In both Honey Care projects researched, there existed a large number of people with experience in beekeeping using different hives. At community level, informal capacity building took place as informal transmission of beekeeping knowledge between different members of a village, often from traditional beekeepers or other experienced beekeepers to those new to the livelihood activity. In Kakamega, formal capacity building has focused on individuals who are deeply involved in the management of the project; while in Kwale, the formal capacity building strategy in terms of technical beekeeping skills developed by the project has not been successful.

In Brazil, peer-to-peer horizontal exchanges have helped disseminated oyster rearing bed technology locally developed throughout the region. Also, horizontal exchanges with inhabitants from other extractive reserves helped refine regulations and the management plan for the Mandira extractive reserve. To deal with the lack of local capacity in running business among cooperative members, local youth are undertaking higher education degrees and the cooperative is hiring external market companies and seeking the free support of universities to provide marketing assistance and guidance.

In Mexico, the spaces to share information and negotiate changes to management and productive strategies are not numerous internally. Many processes seem to be driven by elected representatives instead of by the General Assembly of comuneros.

In Belize, informal network of individuals and partner organizations played an important role in providing information for TIDE's early funding and development. In addition, training of local fishers in alternative (i.e., Park rangers) and complementary (i.e., sport-fishing guides) livelihoods was provided by TIDE in face of restriction imposed by the establishment of a protected area. Because sports-fishing did not represent a major departure from their primary livelihood, thereby allowing them to stay on the water and use their pre-existing knowledge and expertise, it turned out to be a very important entry point in gaining the fishers support for the Reserve. This demonstrates the importance of focusing on complementary livelihoods, rather than just alternative ones when

developing training programmes for local people within protected areas, particularly where traditional livelihoods are restricted.

In Guyana, the NRDDB acts as an import institution for the sharing of information, challenges and solutions among North Rupununi communities.

Role of experimental learning - shortening the learning curve (e.g., guided visits, learning by doing)

In Thailand, village leaders took part on study tours to other community forests in order to learn from them (this also contributed to networking). This experience inspired them to begin their own "eco-tourism" program in which the village plays host to leaders from other communities and students in order to instruct and share information about community-based management. More than ecotourism, the village operates an important learning centre.

In Peru, the ecotourism lodge staff changes every six months or so in order to distribute job opportunity among all the indigenous people. The indigenous managers, maintaining and operating the tourism lodge, transfer their knowledge and skills to new indigenous managers and staff through a learning-by-doing process. This has been a very slow process of training and retraining, taking into account that the Matsiguenka are not familiar with western concepts and their Spanish is limited. Another example of learning-by-doing is the improvement on the quality and production of crafts sold in lodge and made by indigenous women after supportive organizations left the ecotourism project.

The development of the Guyana initiative was fast-tracked due to transfer of knowledge and experience from the Mamirauá project in Brazil. Such international horizontal exchange involved both researchers and fishers.

In San Juan, Mexico, experimentation on new livelihood activities is taking place as well as informal monitoring and evaluation activities to learn from experiments. Nevertheless, although there is a lot of learning by doing, replication of positive experiences does not always take place due to interest or vision of representatives.

At other institutional levels:

Government (e.g., processes for modifying policies, changing legislations)

In positive outcomes of the Iwokrama-NRDDB partnership led to: a greater focus on co-management in the Guyana National Biodiversity Action Plan; shifts in focus for drafting fisheries legislation; and greater focus on consultative processes for policy and legislation within the Guyana Ministry of Amerindian Affairs.

In Brazil, government agencies (Forest Foundation and Fisheries Institute) worked cooperatively, perhaps even synergistically, to increase capacity between each other for the benefit of the oyster cooperative.

In Kenya, the dissemination of a new beekeeping technology led the government (Ministry of Livestock and Fisheries Development) to begin training some of its field officers to assist farmers who are now using this new technology.

The success of Pred Nai appears to have improved the opinions of many local government officials towards community forestry. In Thailand, however, all policies are set at the national level and the community's success has not had much of an impact at the national level

Academics (e.g., training graduate students)

All the case studies examined here have served to build research capacity among the University of Manitoba graduate students involved in the Equator Initiative research project. In addition, most, if not all, case studies have been researched independently by graduate students from the same or other countries. For instance, a German Ph.D. student produced a thesis on economic monitoring of the Ecotourism project in Peru. Another instance, the Universidad Autonoma de Mexico (UNAM) have developed strong relations with the community of San Juan; and they together have implemented programs to provide a venue for graduate students to learn and the community to benefit from research findings. In Thailand, there are numerous universities involved in Pred Nai, from individual students to entire classes; some are involved with a particular project, while others are there to conduct their own research or to learn from Pred Nai.

NGOs and CBOs (e.g., changing field approaches to being more sensitive to community needs)

By emphasizing the role of local knowledge in management, the Guyanese NGO Iwokrama demonstrated that it was open to alternative forms of knowledge, monitoring, and management. This approach was a major show of respect for local knowledge and abilities, and served as an important foundation for trust and relationship building between scientist and community members. Iwokrama's subsequent approach to community involvement and participation has been patterned off of this initial engagement with communities.

In Mexico, some NGOs have benefited greatly from the interaction with San Juan. In some cases such interactions have helped NGOs to generate information about community development processes and to share this information with other communities. They have also become more knowledgeable about adequate approaches to interact with communities and about the needs of these communities.

At the level of the development organizations that manage the Honey Care projects there has been a growing awareness of the need to improve the level of beekeeping knowledge and technical skill. In Kakamega, the NGO staff and volunteers are able record data about all the individual hives in the project as they conduct their hive management activities; and this has allowed them to quickly alter some of their practices as they observed better success with other practices. In Kwale, the NGO has recognized the inadequacy of previous capacity building efforts in the project and attempted to remedy this by training the best beekeepers in each village to teach what they know to the other project participants in their villages.

UNDP (e.g., feedbacks on how to better manage Equator Initiative activities)

UNDP is involved with Pred Nai primarily through a local community-forestry network which operates at the sub-district level. Personnel from the Thailand UNDP office maintain close ties with Pred Nai through this network, not only helping the community when needed, but also learning from Pred Nai and their experiences.

5.4.2 Role of different actors in supporting capacity development to achieve community goals

Insiders

In the Kenyan Kakamega case, the CBO's project manager recognized the need for increased capacity building so that the management of the project may become less centralized; however financial issues have hindered further formal training sessions, or the ability of the NGO to retain individuals to help manage the project. In the Kwale case, the NGO trained village para-professionals (the most experienced beekeepers) to disseminate beekeeping knowledge and skill at their villages in order to address the failure of the first attempt to build beekeeping capacity in the villages.

Outsiders (academics, NGOs, government agents, etc)

In India, a range of training programs were organized at various stages of the initiative implementation. The orientation of the local management committee (LMC) members and the range forest officer was conducted by the regional NGO RCMPCC during the initial stage. Local NGOs imparted training on issues like processing and marketing of herbal drugs and value addition activities for the members of local management committees. At the state level, RCMPCC organized hands-on training for LMC on marketing of herbal products. In addition to these project-linked workshops, RCMPCC also provided an opportunity to LMC and Self-helped groups (SHG) to showcase their activities in Mumbai at an International gathering called 'herbal 2000' and 'herbal 2001'. A national NGO (FRLHT) had conducted CAMP (Conservation Assessment and Management Plan) workshops, which provided practical training on botanical inventories and participatory rapid assessment of medicinal plant diversity. The Botany Departments of Pune and Nagpur Universities were also involved in the CAMP workshops. FRLHT also organized workshops for senior Forest Department officials and other project partners on issues such as the ecological significance of various Medicinal Plant Conservation Areas and the geographical distribution of medicinal plants to be incorporated in the working plans of each districts. FRLHT and RCMPCC have been organizing village biologist programs, where the local healers, LMC and SHG members, and village forest staff can exchange and enhance their knowledge of medicinal plants with formally-trained field botanists and scientists in participatory and interactive ways (e.g. guided forest walks by local healers, preparing herbarium records with local and botanical names of plants). Another NGO provided training on safer methods of honey extraction (bee-friendly) to LMC members. A State government training organization named Maharashtra State Industrial Technological Consultancy Organization was also involved in providing training on an issue of enterprise development through herbal products.

In Brazil, much of the knowledge within the initiative was built upon twenty years of academic and government research on oyster biology and production. Such knowledge was passed to oyster producers through training courses and workshops.

In Guyana, the Iwokrama NGO, and the Brazilian scientists and fishers from Mamirauá, were key actors in helping developing local communities capacity to monitor Arapaima fish and develop the Arapaima management plan. Nevertheless, these actors and the local communities have not been successful yet to lobby the government to approve the Arapaima management plan.

In the Mexican case, outsiders have been key in developing the capacity of the local people through a number of strategies:
- *Through the recruitment of foreigners with specific knowledge needed at the local level.* The administrators of the enterprise assign local people to work closely with these skilled persons and once the local people learn the new skills, the manager of the enterprise does not renew the contract of the foreigner but recruits local people.
- *Through the identification of and application for available governmental or non-governmental funding for rural capacity building.* Once the community learns about new fundraising opportunities, they develop contacts with academics and/or NGOs to design and present proposals and to partner with them in carrying out the training activities. Community members and friends working with government agencies also participate in the process of identifying opportunities and in the process of applying for funding.
- *Training processes driven by academics and NGOs.* Academics and NGOs also develop contact with San Juan whenever they see new opportunities to get government or private funding for capacity development.

In both Kakamega and Kwale Districts in Kenya, the Honey Care projects were introduced by outsiders, who initially promoted and supported efforts to build local capacity on beekeeping techniques. Such technical training was provided by both Honey Care and its partner development organization (NGO) in each area.

In Belize the Nature Conservancy (TNC) personnel assisted the initiative (TIDE) in developing management plans, funding proposals, project planning and conducting research. TNC Belize also served as a major fund raiser and important link between TIDE and other supportive organizations and donor agencies.

Leaders, brokers, agents of change

- *<u>Knowledge agent</u> – this is the idea that there needs to be someone within the community, maybe an outside intervener, with the type of knowledge that is needed for a particular project – this person may also recognize the type of capacity development that is necessary – usually this is a leader within the community who can mobilize both local people and external actors.*
- *<u>Technical agent</u> – this is the idea that there is a need for a community to develop their own technical expertise so that they can use things like GIS and other techniques to achieve their goals – again the key is that someone within the community begins to move forward the capacity development within the community to develop these skills.*

In Peru, community leaders play a fundamental role in the indigenous ecotourism enterprise. Some were elected managers of the lodge and took on responsibilities that

implied tremendous sacrifice for their own family such as leaving their gardens (agricultural plots) and houses to work in the lodge during the first years of the project. They were the main protagonists in learning about the enterprise management and are now teaching their experience to the new managers.

In Guyana case, three key people contributed to the project development. (1) The president of Executive Fisheries Committee, a village leader, was involved in the development of the Arapaima management plan from the beginning, and is responsible for outreach, patrolling, consultations with outside communities, and meetings with government officials; (2) The Mamirauá scientist prepared the first draft of the Arapaima management plan through consultations with key community members and Iwokrama (a NGO) scientists. He then conducted meetings in all 13 communities to present the plan and receive community feedback. Subsequent drafts of the Plan were prepared and presented to the Guyana Environmental Protection Agency, Department of Fisheries, Ministry of Amerindian Affairs and the Ministry of Local Government and Regional Development. He also met with the then Minister of Agriculture to submit the final draft of the Plan. He has since had very little contact with the project (initially due to funding restrictions). (3) The former Director General and Senior Wildlife Biologist at Iwokrama was directly responsible for sourcing project funding, and establishing links between the communities, the Ministry of Amerindian Affairs, the Fisheries Department, and the Mamirauá project in Brazil. He facilitated many of the fishery related workshops, and led early outreach activities in communities. He still provides advice to project and is involved in obtaining project funding.

In Belize, TIDE's Executive Director, after helping establishing the organization, pushed for the creation of the Marine Reserve by lobbying Government officials and promoting the Reserve in the surrounding communities. He is heavily involved in fund raising activities, and increasing TIDE's visibility both nationally and internationally. A former TNC Local scientist has also played a key supportive role in the development the Marine Reserve by conducting a number of social and biological research projects in the area and by being involved in developing the Reserve Management Plan and the alternative livelihood training programmes. In addition, the reserve managers, important members of their communities, were involved in early community outreach activities, increasing community awareness, and ownership to a certain extent, of TIDE projects and the Reserves.

In San Juan, Mexico, there are many *knowledge agents*. They can be: outsiders that have been consultants for the community and are knowledgeable about its need; local people who are working outside the community with NGOs and government agencies and who see the opportunities that could be taken by the community; and, in a minor way, current local leaders (however, because of the size of the enterprise and all the issues to take care of, they play mostly the role of facilitating local processes, keeping represented interest groups happy, ensuring future economic stability for themselves and the group they represent, etc). Also there are local people that act as *technical agents* or that have identified the need for rationalization of some processes and developed the required contact outside the community. Outsiders from NGOs and other agencies also act as *technical agents* whenever they identify positive opportunities for them and the community.

In Kenya, *knowledge agents* in both Honey Care projects in Kakamega and Kwale were outsiders, with the exception of the Kakamega NGO (CARD) project manager. Two foreign volunteers best filled this role in the first few years of the project in Kakamega. They were the ones who introduced Honey Care and the project to communities in the district, and established a management structure to administer the project. While capacity building was not a top priority during their tenure, prior to their leaving they identified a need to alter the management structure and build technical beekeeping capacity of the project to compensate for the limited resources and transportation ability that the NGO would possess after their departure. In the Kwale case, the NGO (CRSP) was the party that has best identified the knowledge required for the Honey Care project and mobilized people to meet the needs. Concerning *technical agents*, the project manager (officer) in Kakamega had more than 20 years of traditional beekeeping experience (log hives), as well as more than 10 years of beekeeping experience with different types of top-bar and movable-frame hives(MFH). Due to his positions as the project officer and chairman of a local beekeepers group ideally suited to pass on his knowledge and skills to the next generation of beekeepers – who due to the decline in traditional beekeeping in Kenya will likely utilize either top-bar or MFH. In Kwale the para-professionals that the NGO began training in 2004 may be considered *knowledge agents*, at least in the techniques of MFH beekeeping. These are members of various villages that are involved with the Honey Care projects. While the training of the para-professionals was NGO's idea, there was an obvious need for improved technical training at the village level expressed by many project participants. As the para-professionals are locals they will be able to pass on their improved technical knowledge to others in their villages independently of the NGO.

Media *(radio, TV, internet)*

In Belize, TIDE hosts a one hour radio program called "The Rising TIDE" every week on the local Wamalali 106.3FM station. It is the longest running program on the station, having begun in March 1997. The show aims to increase awareness of local environmental issues and provide updates on TIDE's activities. The programme is currently sponsored by the Protected Areas Conservation Trust of Belize

5.5. Outcomes of capacity development

What were the outcomes of capacity development?

In the Indian case, the most visible development of capacity could be seen in terms of developing new skills and knowledge on the part of a local NGO (MPCC). This NGO for examples gained significant experience in the areas of : a) Promotion of home gardens; b) management of nurseries; c) formation and strengthening of women's self-help groups; d) creation of community herbal garden; e) processing technology of medicinal plants; f) development of databases on trade, cultivation and other aspects of medicinal plants found in the Medicinal Plants Conservation Areas; g) planning and conducting botanical surveys; h) development of herbarium; i) conducting studies on sustainable harvest and trade of important medicinal plants; j) use of IUCN' threat assessment methodology; k) development of educational material for public awareness and advocacy, l) participatory research approaches such as community knowledge register, village biologist program, m) approaching and networking with international funding organizations; n) Research and development for herbal drugs

In Pred Nai's case in Thailand, capacity development appears to be a key component of the village's success. Capacity building was often delivered on "as needed" basis, helping the community to overcome any obstacles or problems that they faced. Although it is difficult to differentiate between internal and external capacity building, Pred Nai's case demonstrates that communities can, through their own means and organization, undertake internal or self-initiated capacity building which, although often limited in depth and breadth, will assist in conservation and management efforts. Pred Nai's case also shows a considerable amount of capacity building which was provided in the form of training, carried out mostly by NGOs and government agencies. The case shows however that successful capacity building by outside agencies does not necessarily have to be in the form of classes or formal training but may be delivered simply by facilitating or providing opportunity for the village to undertake activities which will provide members with valuable experiences and learning opportunities.

In Belize, the primary thrust of TIDE's community development programmes is training and capacity building, and has played a major role in the Marine Reserve's achievements to date. For instance, former gillnet fishers are now earning significantly more as tour-guides, and have become advocates for conservation and the Marine Reserve in their respective community. In addition, TIDE's Rangers (all former fishers) continue to benefit from training exercises like law enforcement, SCUBA and coral identification, to name a few. This knowledge and skills were very practical from the Ranger's perspective, and complemented their existing "knowledge of the land". It would seem that the training has contributed to more effective monitoring and enforcement by both the Rangers, and tour-guides at the community level. As a result, the Reserve is in very capable hands and benefits in the long run. Involvement with the project has also increased some community members' understanding of the management and funding process, increasing their capacity to self-organize and, in the Monkey River case, undertake their own initiatives.

In Guyana, capacity enhancement in the Arapaima Project involved training local fishers in the survey method. Many of the Community Environmental Workers (CEWs) and members of the fisheries committees also benefited from training under other programmes. In many of these programmes, training needs were identified through meetings with the NGO Iwokrama, the District Development Board (NRDDB) and other community members. The resulting training programs seemed to be very situational and needs-based, particularly that of the CEWs. Participants therefore developed skills that were practical and context specific. Some of the participating individuals have gone on to become influential in their communities, and key players in local conservation and development projects. Interestingly, the individuals most often referred to as being reliable and dedicated were often the persons who visited Mamirauá Programme and experienced the project first hand. In this case, observing the benefits of a successful Project might have played a role in making the difference between commitment and ambivalence among some local project personnel.

In San Juan, Mexico, the outcomes of capacity development included: Rationalization of productive processes; Building of capacity on all current administrative and productive areas (99% of workers of the enterprise are from the community); Acquisition of facilities and technology required to compete with other companies in the national and international markets; Survival over time (an enterprise that is more than 25 years old and

that has already passed and survived critical moments of mismanagement of funds and other crises); Diversification of production – a highly resilient system; Economic and financial stability, reduction of extreme poverty at the local level.; Ability to claim and ensure that government and others respect and fulfill their duties towards the community.

In the Kakamega case, in Kenya, the outcomes of the capacity development were mixed. Numerous individuals were trained as beekeeping officers under the second management structure of the project. However, the failure of this management structure and the transition to a more centralized management structure, as well as financial constraints resulted in the majority of beekeeping officers being no longer involved in the project in such a role. The exception to this is the Honey Care project officer who is still very much involved with the management of the project. In Kwale, initial capacity development was largely insufficient. Later improvements in this area are expected to improve project success, considering that where initial capacity development was better, beekeepers were quite successful especially considering the poor climatic conditions they were forced to deal with.

In Peru, the Matsiguenka people, in particular the leaders, have expressed that they have been acquiring great experience in managing the lodge, as well as in providing appropriate quality service to their visitors. Although formal training was not completed, the Matsiguenka staff felt that they had improved the quality of their work over the six years of operating the lodge; most of the improvement has been accomplished through a learning-by-doing process. Because the lodge staff is organized through a rotating system, every new shift usually involves the training of new, inexperienced staff. So, the initiative has displayed a very slow learning process of training and retraining, which has taken into account that the Matsiguenka are not familiar with western concepts and languages (Spanish and English). Therefore, the Matsiguenka are constantly demanding ongoing and specialized training sessions by qualified people in ecotourism services.

Does it contribute to empowerment?

In the Thai case, it is difficult to determine whether or not capacity building contributed directly to empowerment, however, it is clear that the community's successful conservation and management efforts have been empowering, helping to instill both confidence and a sense of accomplishment and pride in the community.

In Peru, one of the relevant outcomes of the ecotourism lodge project is the pride of the indigenous community leaders in building and owning a lodge. The fact that they do not need to rely only on donations, but rather work in their own lodge for money, despite small scale earnings, increases the sense of empowerment in these indigenous communities. Also, their sense of self-determination has increased, especially in their hopes that their children will acquire the education to manage their lodge and turn it in a profitable enterprise.

In Brazil, the technical and organizational capacity development, along with improvements in self-esteem, empowered most Cooperative members (i.e. those inhabiting the Extractive Reserve) to improve their living conditions. They are currently actively exploring alternative livelihood options for the community, such as cultural and eco-tourism. In addition, the women have also started a Seamstresses' Cooperative.

In Mexico, capacity development was the vision of founders of the San Juan enterprise and is the vision of a number of locals. Empowerment is one of the outcomes of such capacity development, which is reflected on the success of the initiative.

In both Kakamega and Kwale, in Kenya, capacity development provided improved beekeeping expertise and a better understanding of how their project fit into the larger economy. More importantly, capacity development has been a source of self-confidence for those involved. They have developed improved skills and a better understanding of beekeeping and of how bees behave using Mobile Frame Hives and that can be transferred to other types of beekeeping.

Does it contribute to sustainability?

In the Thai case, it is difficult to ascertain whether or not capacity building directly contributed to sustainability in the community, however, the success of the conservation and management program has contributed to both social and ecological sustainability in Pred Nai.

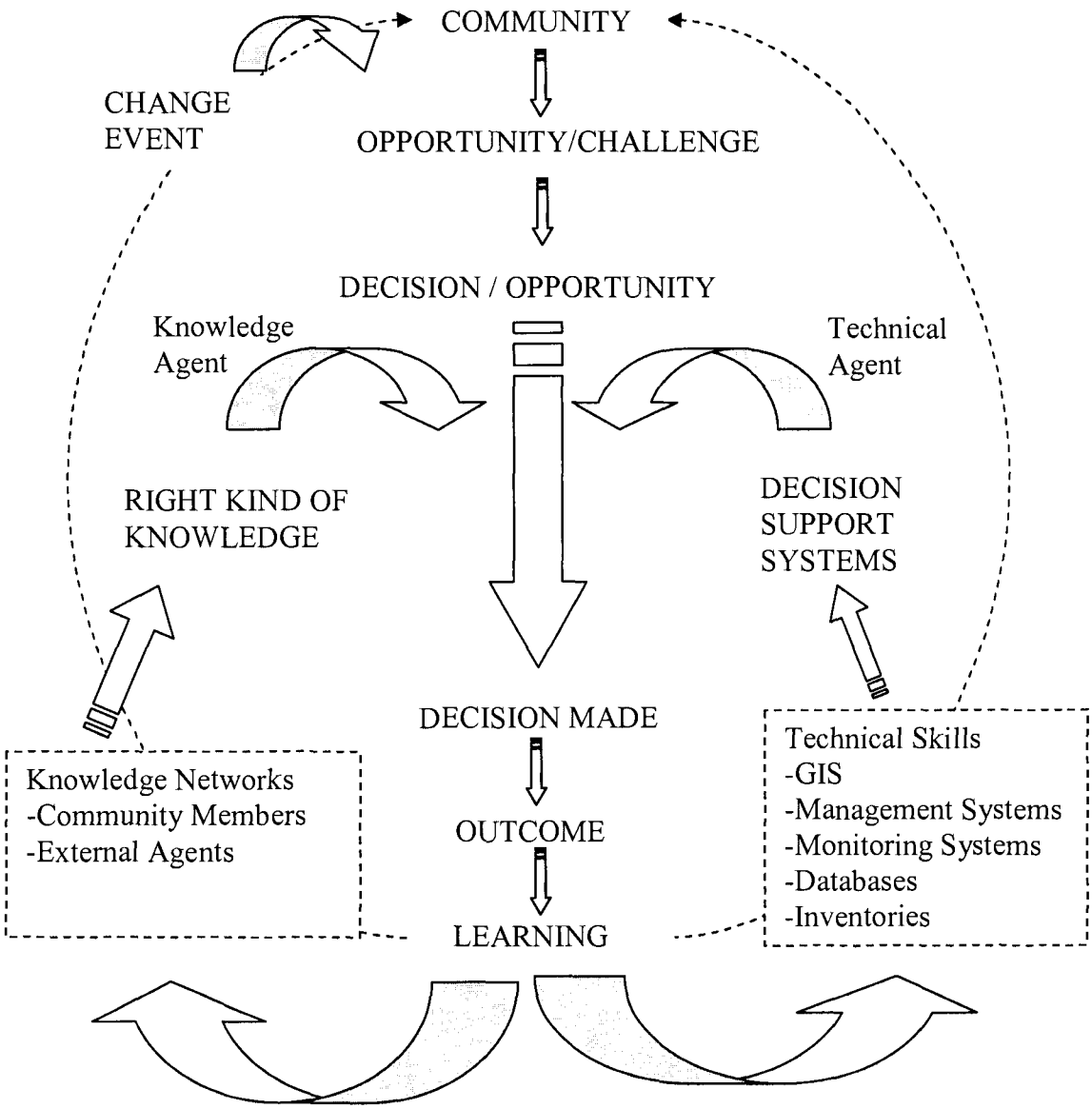
In Peru, the ecotourism lodge is compensating the indigenous communities for living under the restriction of conservation rules, in that sense the project contributes to sustainable development goals from the local to the national level. In economic terms, the ecotourism lodge is not profitable yet. In social terms, the lodge appears to not disturb the traditional livelihoods of the indigenous people but rather integrates them gradually into the regional economy.

In Mexico, San Juan may not represent the best example of improvement of management processes based on the needs of ecological systems. However, the strength and adaptability of the Community-based resource management system show how developing the capacity of rural communities can contribute to the sustainability of the resource base and also to the improvement in the adaptive management of natural system. The silvicultural method employed by the community seems to be reducing the natural diversity of the pine-oak forest (aiming at the homogenization of the ages of tree stands, etc), but at the same time, through the application of their management plan they have been able to increase the total area of forest in the last decade. So, the knowledge applied has helped the community to sustain the resource based during almost three decades since the creation of the enterprise, but not the biodiversity of the forest per se. Many academics interacting with the system have mentioned that it is too early to make a thorough evaluation of the environmental sustainability of the management system. But it is clear that the silvicultural method being applied – which the community is reluctant to make modifications to – has been used before in pine-oak forests with detrimental results for the long-term survival of these forests.

In Kenya, capacity development is necessary to both the Kakamega and Kwale Honey Care projects if they are to be sustainable. In Kwale, it has been important due to the farmer-based model of hive management, where individual farmers are responsible for their own hives. In Kakamega, project management is now highly centralized, reducing the requirement for capacity development of project participants. However, despite the fact that as it stands the project provides a high level of hive management, if the project

continue to expand, capacity development will be necessary in order to keep optimal honey production in all hives.

Capacity Development
A Knowledge Mobilization Approach



Section 6: Community Economic Development and Biodiversity

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Biological diversity is not just something to be preserved at arms length but is integral to life itself for many rural communities. Rural communities have not only depended upon local biological diversity for their sustenance but have also traded surplus production to obtain goods from other places that enhance their quality of life. This direct linkage is seen both as a threat and a possible opportunity for biodiversity conservation. Conservation biologists, as discussed in Chapter 1, see the direct use of biodiversity by rural communities as partly responsible for its immanent extinction. Common-property scholars have painted a more complex picture but allow for the possibility that this direct linkage may create incentives for local communities to conserve biodiversity for their long-term survival. This is seen as particularly important in the equator region where neo-liberal reforms have changed the role of many states in conservation initiatives. The interest in the potential linkage between conservation of biological diversity and community economic development is that it would allow the state to facilitate market access in order to achieve the twin goals of conservation and poverty reduction (Salafsky et al. 2001, pg 1586)

Our goal in this chapter is to critically examine both the literature and the Equator Initiative cases to learn about the conditions that enable enterprises to meet the twin goals of biodiversity conservation and community economic development. We begin by examining how neoliberal reforms created the opportunity for communities to gain rights to local natural resources. Gaining access to natural resources has allowed communities to develop enterprises that increase their self-reliance while also exploring trade through local, national and international markets. We then turn to consider the possibility of virtuous cycles that can emerge out of sustainable enterprise networks that link the local to the global in order to meet the goals of the Equator Initiative.

The Modified Role of the State in Biodiversity Conservation and Poverty Reduction.

Many rural communities in the equatorial region have been living through the transition of the state dominated by a neo-liberal ideology promoted by the World Bank, International Monetary Fund and the World Trade Organization. The emphasis on the market, as opposed to the state, to create goods such as biodiversity conservation and community economic development emerges out of what some have consider to be a modified form of neoliberalism.

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1. Modified Neoliberalism[3]
    a. Defined

[3] Or the post-Washington Consensus, the New Policy Agenda, or Second Generation Reforms.

Today the dominant economic policy in the South, as articulated by international economic institutions such as WB, IMF & WTO is modified neo-liberalism (Allen & Thomas, Rapley, Stiglitz, etc.). This is rooted in the neo-liberal economic ideology & neoclassical economic & political theory. Definition of modified neo-liberalism: principally relying on individual actors (consumers, businesses, & increasingly non-profits) as economic & social actors for the private & common good[4] via growing international marketplace (sometimes referred to as globalization). Recently a key proponent, WB highlighted the important, but limited role of the state to provide framework for markets via institutions like judiciary, infrastructure, etc. (WB *WDR* 2002). The rationale for business as the central actor is that competitive markets are more effective than the state. The rationale for focus on the international market is that it is so large it allows for more competition & allows businesses to reach economies of scale. The role of the state in modified neo-liberalism is constrained in comparison to the early post-colonial period (1950s through 1970s): in terms of economic policy: industrialization (un/balanced growth, import-substitution industrialization, infant industry), agriculture development (state marketing & input agencies), macroeconomic management (Keynsian counter-cyclical measures), & *ex situ* farm biodiversity (declining or stagnant funding).

b. Critique

Critiques of modified neo-liberalism include its lack of attention to non-individual structures such as community, class, gender, ethnic groups (Fine, 2005), the indivisibility of aspects of economics development, its agnosticism towards non-competitive markets (Buckland, 2004), its failure internalize all costs, including environmental (pollution, biodiversity loss) (Daly) & social (poverty).

Business & markets are the chief actors in modified neo-liberalism but the ideology is agnostic/open towards non-profit actors. The retreat of the state in terms of sectoral (industry or agriculture) growth & human capital development is problematic. In essence, the rationale for state action in the past has been based on political-economy (international dependency, national class bias) or economic rationality. On the latter point, it was argued that state actors could capture external economies that businesses could not (Higgins). For instance Rosenstein-Rodan's balanced growth thesis argued that a variety of sectors required simultaneous growth in order to support the infrastructure, create the market & input providers. In addition, the state could build human capital by investing in education and healthcare.

Why are International Conservation Organizations and Multi-lateral Agencies Interested in an Enterprise Approach?

As state and multi-lateral organizations withdrew their support from poverty reduction and biodiversity conservation it became increasingly clear that the only mechanism left to support both of these goals became the market. If communities could develop enterprises that could access income through the market it would provide the resources necessary to pay for the conservation of biodiversity and poverty reduction.

[4] Defined here as building equity, efficiency & environmental sustainability.

Two central hypotheses are relevant to understand why such groups would assume this was possible.

Incentive Strategy
People would be more inclined to conserve biodiversity if there was a clear linkage between their use of natural resources and the benefits they realized from its use. A community whose welfare was linked to the sustainable use of resources, it is assumed, would work to conserve those resources in order to maintain their own welfare over time. This has led to the emergence of a set of strategies often loosely referred to as the sustainable use of biodiversity. The approach tends to be utilized by groups working on sustainable production systems with local communities. It is assumed that local people can both derive a livelihood from the use of biological diversity, thus reducing poverty, and use can be done in such a way as to conserve biological diversity over time such as illustrated by findings of the Equator Initiative field research (e.g. Berkes and Adhikari, 2006; Adhikari, 2006; Maurice, 2004; Orozco-Quintero, 2006 and others). Such projects try to maintain the sustainable practices of local communities, or if necessary find new sustainable systems of production, while increasing the value that can be captured by the market.

Substitution Strategy
In other cases, the strategy of choice is rooted in the idea that the current manner in which local people are using biodiversity is unsustainable. Therefore, rather than creating an incentive for use this strategy attempts to change resource use behaviours by providing alternative incomes that do not depend upon the existing type of resource use. Sometimes these substitution strategies focus on new types of uses, such as substituting resource harvesting for tourism, or in developing new types of income generating activities not linked to the resource base. This strategy tends to be preferred in those cases in which a protected area of some other mechanism is established that no longer allows for previous types of resource use. It is recognized that due to poverty, people will be forced to continue to draw upon resource unless substitutes are found. However, it also finds favour in situations where a current system of production, like improper use of slash and burn, is seen to become unsustainable under conditions of population growth. Therefore, substitutes are seen as necessary so that the system of production does not lead to biodiversity reduction as population density increases.

In the EI cases we find examples of these different strategies in use by the external agents who partner with communities (e.g. Orozco-Quintero, 2006; Maurice, 2004; Adhikari, 2006; Berkes and Adhikari, 2006 and others).

Why Would Communities be Interested in an Enterprise Approach?

Why would communities be interested in an enterprise approach? Given that the dominant approach of most states is consistent with neoliberal principles most communities have been provided with new alternatives and incentives. While the changing role of the state can be seen as an off-loading of responsibilities it also did provide an opportunity for communities to gain new rights for natural resources.

2. The Conservation-based Enterprise

a. Conservation-based Enterprise Defined

For the purpose of this paper we propose the following definition of a conservation-based enterprise[5]: a for-profit or not-for-profit enterprise that is larger than a family-based enterprise but usually having no more than 100 employees , operating in a defined geographic region such as a village or a province & is owned by members of that region with the explicit goals of supporting livelihoods (through employment & revenue generation) *and* conserving the local environment. It may or may not seek relations with national and international businesses, NGOs and government agencies.

b. Limitations

Conservation-based enterprises have a powerful contribution to livelihoods and the environment at a local level. However, the scope of these enterprises is limited by a number of factors including,

- *Limited capacity to develop human resources*: Enterprises generally take as given the level of human resources in a locale so that their capacity is limited by this level. It is the state that provides the bulk of education & healthcare & its capacity to do so has declined in the last 25 years through the period of neo-liberal globalization (Buckland, 2004). If literacy levels and average educational attainment is stagnant or declining, this may create a situation where enterprise employees are less able to contribute to their business leading to enterprise decline.

- *Limited input & output markets*: Small businesses are usually focused on local markets which are limited in terms of input provision & effective demand due to infrastructure & low incomes. Supplying national and international markets is more challenging because of quality, supply-chain requirements, cost of transportation, and unavailability of infrastructure facilities at the local community level. There is limited mechanism in place for assisting the communities in promoting and accessing the larger, distant markets. So their products are usually traded in the local and regional markets but they rarely reach the national or international level due to this supply chain constraints at the community level.

- *Limited capital*: Enterprises require capital in order to invest in plant, equipment & inputs. Local sources of capital are limited: banks may not be willing to lend to these businesses due to lack of collateral &/or track-record.

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[5] A comprehensive definition of community-based enterprise is given by the UNDP Energy & Environment Group document: "Communities and local enterprises which sustainably harness biodiversity as a means of income generation...Community-based enterprises are entrepreneurial initiatives at the boundary of economic & institutional formalization. Some are internally spearheaded, others are exogenous donor-initiated projects, while even others are driven by a local entrepreneur. Some operate within the informal economy, others are incorporated as formal small-and-medium-sized enterprises and cooperatives. Community-based enterprises usually have no more than one hundred employees and annual revenues of less than $500,000 USD. Due to their value chain, many community-based enterprises have a global reach despite their limited scale. For instance, small coffee producers and their respective community-based cooperatives produce for customers worldwide, often with specifically branded and certified coffee products via dedicated sales channels" (UNDP Energy & Environment Group, 2006, p.ix).

- *Limited technology*: Small business has limited resources to invest in research & development for new technologies and the communities' skill sets are not adequate to produce goods and services in the competitive national and global markets.

- *Asymmetric relationship with large supplier or consumer*: since conservation-based enterprises are usually small, they may face an asymmetric relationship with a supplier or consumer if the latter is large. This could lead to a non-competitive market outcome.

Many of these limitations are addressed by Murdoch's argument that innovative network clusters can overcome market limitations associated with asymmetric or depressed markets. He argues that clusters in places such as central Italy, Silicon Valley & Baden Wurttemburg demonstrate that local networks can overcome exploitative commodity chains. What is unclear is if the experiences of these networks can be a model for conservation-based enterprises in the global South, particularly poor regions in sub-Saharan Africa, South Asia and Central America.

c. Scope & Tensions

Names and definitions of conservation-based enterprises vary.[6] One key tension that is found in a couple of the key features of these enterprises relate to the assumptions made about the structure of the international economy. The general case for civil society as a central in development finds support in literature that crosses ideologies, from advocates of the post-Washington Consensus through liberal political theorists (Putnam, 1993) to neo-Marxist social movement theorists (Veltmeyer). In this discussion we refer to two particular views, *localizing globalization* & *local self-reliance*. While these categories are not mutually exclusive, the localizing globalization view is most consistent with the post-Washington consensus while the local self-reliance is most consistent with neo-Marxist social movement theory. The key features & aspects of this term include five characteristics:

Small-scale operation

Definitions vary to sometimes include individual & household based livelihoods (e.g., farming, hunting, gathering) (Berkes & Adhikari, 2006; Adhikari, 2006; Orozco-Quintero, 2006) but generally refer to an enterprise beyond the family unit, referred to as a small & medium sized enterprise (SMEs). Definitions of SMEs vary by country maximum 100 to 500 employees & one recent study uses 250 employees as the cut off point (Beck *et al.*, 2005). For their study of conservation-based enterprises, the UNDP places the cut off at one hundred employees and annual revenue of $US 500,000.

Operates in the informal economy

Conservation-based enterprises operate primarily in the informal economy, i.e., that part of the economy that is largely unregulated by state policy & excluded in national economic statistics.

[6] Some of the names used in the literature include, social enterprises (Ninacs, 2002), indigenous entrepreneurs (Berkes & Adhikari, 2006), conservation-based enterprises (UNDP Energy & Environment Group, 2006; Berkes *et al.*, Book Draft), local enterprise networks (Wheeler *et al.*, 2005) & community enterprises (Davidson-Hunt EI Book Draft Chp.6).

Community Participation
Conservation-based enterprises involve members of the community in the management & major decision-making of the operation.[7] A basic assumption here is that local action is an effective way to meet the common good. There are a range of views as to why local action is at least as good as action by the state &/or the market. The local self-reliance view is likely to assume that the international & possibly the national economies are biased in favour of large business. This is the result of political-economy structures that create incentives for large business such as tax breaks, limited anti-combine enforcement, limited regulation of advertising. Large businesses, particularly TNCs are seen to be a source of local disempowerment. Conservation-based enterprises are seen as a way to promote greater local participation in the economy.

The localizing globalization view is arguably consistent with a narrower view of local action, one that might be justified within neoclassical economics because of the nature of the good or service being produced. Neoclassical economics dichotomizes goods into private & public based on the criteria of exclusion & subtraction (Todaro & Smith, 2006, p.546-552). A good is considered private, & best produced by for-profit business in a competitive market if two criteria are met: (1) that it is excludable, meaning that the producer can exclude from consumption those people who have not paid for it, & (2) that it is subtractable, meaning that consumption of the good by one person reduces the amount available for other people. Examples of public goods include food, clothes & houses. Public goods are goods that are neither excludable (e.g., common property such as a pasture) and non-subtractable (e.g., air). Public goods are best produced/protected by governments, or in the case of common pool resources or 'local' public (or club) goods, by or in conjunction with conservation-based enterprises.

Certain goods/services are neither fully private nor public goods. Some goods are either non-excludable but subtractable such as common-pool goods. For efficient & sustainable use, these goods require local action. If the pasture is not monitored by area residents then there is the likelihood that it will be overexploited because, by definition, there is no way to exclude people from using it. If community structures can be designed to monitor the use of the resource then over-exploitation can be limited (Ostrom, 1990). Other goods/services are non-subtractable but partly excludable like a rotating credit association or a landless labourers' union.[8] In these cases local action is more efficient than market or the state.

Local Need
Conservation-based enterprises seek to address local need, but in a variety of ways, one might place these on a spectrum of orientation towards the international economy. On one end of the spectrum, local self-reliance, the enterprise seeks to concentrate local resources (labour, management, capital & natural resources) on local needs (Berkes and Adhikari, 2006). The enterprise task is to create local employment &/or 'basic-needs'

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[7] For instance, community economic development is defined by Loxley & Lamb (2005) as a social decision-making process that emphasizes the collective community over the individual consumer, integrates consumer & producer & takes the longer view than short term profit & utility maximization of economic activity.

[8] Buchanan (1965) develops a theory of clubs to do with small-scale "communal or collective ownership-consumption arrangements" associated with organizations such as co-operatives & credit unions. He argues that it fills the gap created by the dichotomy first identified by Paul Samuelson between purely private and purely public goods.

goods & services to address local need. The basic premise here is that part of the gap in meeting local need is that resources are being diverted for external producers & consumers. By re-connecting local producers & consumers, local gaps can be plugged (Loxley & Lamb, 2005). Instead of farmers producing export crops for sale on international markets facing declining prices, farmers are encouraged to grow local staples for own-household consumption & for sale on the local market. In addition, it is claimed that not-for-profit enterprises can charge lower prices for their goods than for-profit producers.

On the other end of the spectrum, another view is that these enterprises can assist in "localizing globalization" (UNDP Energy & Environment Group, 2006, p.xv). The basic premise is that international markets are large & rapidly expanding. By tying small enterprises with larger organizations like NGOs or trading or retail businesses, local resources can be used to tap into export markets to increase local income and employment. Fair trade coffee & ecotourism are examples of this idea.

Ecological Emphasis

A central assumption in this literature is that in addition to meeting local need, conservation-based enterprises carefully steward the environment (Adhikari, 2006). This relates to the point raised above about the benefits of local participation, in this case in regards to preserving natural capital. The assumption is that the livelihoods of local people are most closely tied to local natural capital. It is in their interests to protect it. Whereas outside organizations, whether government or business, are assumed to be less tied to the ecosystem and are therefore more likely to exploit it. Both the local self-reliance and localizing globalization views are consistent on this point. Secondly, local people hold traditional ecological knowledge which is argued to be more consistent with a sustainable relationship with the environment.

Network

A final characteristic of conservation-based enterprises is that they are often conceptualized as operating with a larger movement or network. This parallels growing emphasis in the Small & Medium Sized Enterprise (SME) literature on macro-level analysis and strategizing.[9] The small size of the operation implies that, on its own, the enterprise is likely unable to affect significant change even in the locale.

The local self-reliance view, as mentioned above, draws on political economy analysis, sees vertical relations between small enterprises & large-scale businesses as problematic. These relations are characterized by asymmetric markets: large numbers of small producers on one side & small numbers of large input-consumers on the other. The likely outcome in this type of market is in favour of the large input-consumers & to the disadvantage of the primary producers (Buckland, 2004). From this perspective, relations with large-scale businesses are not seen in a favourable light. But, the local self-reliance approach sees the enterprise fit within a broader movement of people and organizations from the locale, seeking to foster local self-reliance. This includes other enterprises, non-

[9] Small & Medium Sized Enterprise (SME) literature has increasingly identified macro-level constraints, such as the size of effective demand, infrastructure, etc. as binding on the effectiveness of SME development. Small businesses, on their own, are unable to overcome such constraints limiting the SME intervention (Jones & Snelgrove, 2006; Biggs & Shah, 2006).

profit agencies and possibly elements within the state. It likely excludes large business as these organizations are seen as a source of the lack of community self-reliance.

From the localizing globalization view, to be successful, the enterprise must build relations with for-profit or not-for profit organizations, often quite large-scale operating in, or originating from, the global North (Europe, North America, Japan, Australia, etc.). This allows the enterprise to access resources such as new technologies or capital or tap into lucrative international markets for consumer goods & tourism. Murdoch (2000) argues that rift between the local self-reliance & the localizing globalization approaches on the network point is not so great. He argues that while certain commodity chains can lead to dependent relations for rural locales, other types of networks will lead to endogenous development. These constructive networks, manifested in central Italy, Silicon Valley & Baden Wurttemburg, involved various, "innovative network clusters, places where 'mutual knowledge, collaboration and the exchange of information' are facilitated and where 'trust and mutual respect' are fostered" (Murdoch, 2000, p.413; Siggel, Maisonneuve & Fortin, 2006).

EI Enterprise Cases as Sustainable Local Enterprise Networks that Generate Virtuous Cycles of Conservation and Development
(Kevin McKague)

The Equator Initiative cases that include community enterprises as a core component of their activity have, with a variety of different approaches, been successful at simultaneously conserving biodiversity and reducing poverty. What can we learn from them to allow their replication and growth at a scale that can make a significant impact on achieving ecological sustainability and reaching the millennium development goals? We can begin by observing some of the key characteristics that they have in common.

Enterprises Embedded in Networks of For-Profit and Not-for-profit Organizations
As has been described in detail in chapter 4, the EI cases manifest a number of cross-scale institutional linkages. These interconnections between organizations are consistent with the concept of 'Sustainable Local Enterprise Networks'[10] put forward in the management literature by Wheeler et al (2005).[11] The EI enterprise cases are typically embedded within a dense network of for-profit and not-for-profit organizations. These networks often include links across layers of organizations, as well as vertical and horizontal linkages (Berkes and Adhikari, 2006; Adhikari, 2006) which provide a rich network for exchange, support and investment in social, ecological, and financial assets.

By successfully mobilizing networks around themselves, EI enterprises are better able to deal with the challenges, limitations and barriers that they will inevitably face given the complex and unpredictable environments that they operate in. They are able to do this by

[10] In the management literature, the concept of cross-scale linkages as it relates typically to larger companies and multinational enterprises is also described as "business ecosystems" (Moore 1996), "business webs" (Tapscott, Ticoll and Lowy, 2000), "market-oriented ecosystems" (Prahalad, 2005) and "value-based networks" (Wheeler, Colbert and Freeman 2003).
[11] Wheeler, McKague ,et al. Creating Sustainable Local Enterprise Networks.

drawing on various types of resources from network partners (Adhikari, 2006; Orozco-Quintero, 2006; Maurice, 2004).

For-profit Anchor

In the EI enterprise cases, a for-profit revenue generating organization and its associated value chain partners forms is a core element of the network. This for-profit organization (which can be a community enterprise, a cooperative, or a commercial venture by a non-profit organization or community based organization) ensures the financial sustainability of the network, and generates income that reduces poverty and provides the financial incentives to encourage conservation.

In the case of Honey Care Africa for example, Honey Care is the for-profit business that anchors its network and maintains many of the cross scale institutional linkages in its network (Maurice, 2004). Honey Care maintains relationships with 17 different NGOs and donor agencies and 250 community based organizations across Kenya. At the same time, Honey Care maintains commercial relations with the thousands of farmers that produce the honey, with its investors and bankers, as well as with large supermarkets in Nairobi and European fair trade importers.

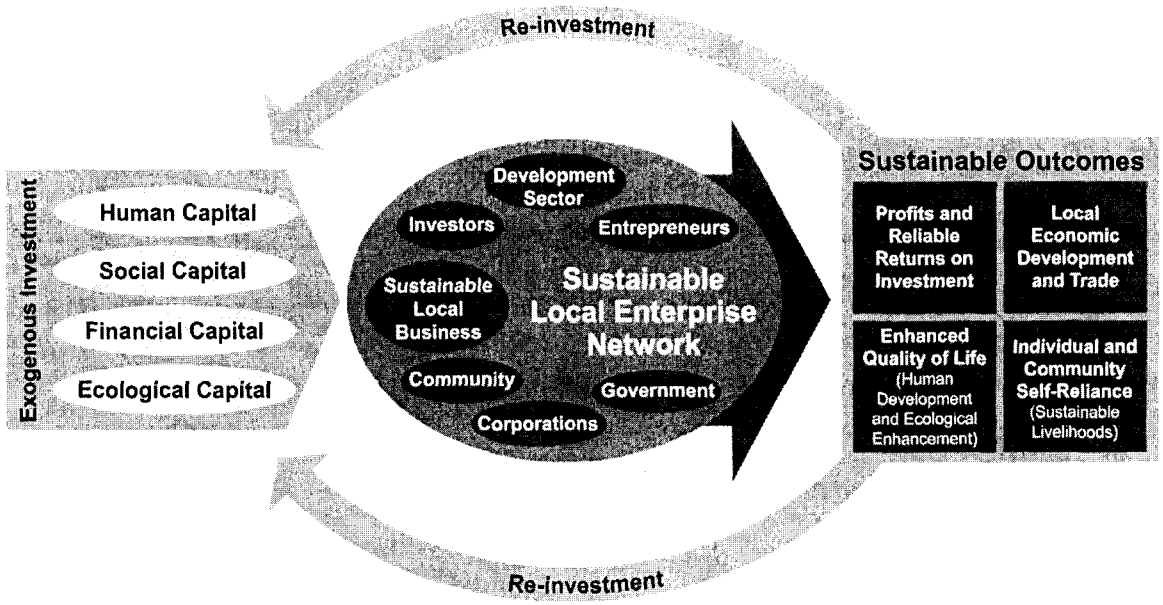
The for-profit anchor also tends to have an overt social mission, so that profits are being generated to achieve a variety of objectives including funding conservation and development goals.

Sustainable Outcomes and Multiple Objectives

The networked character of EI enterprises, allow them to collaborate with multiple partners to create a virtuous cycle of asset growth and development even if the partners have different goals for being in the network. The EI enterprises, are, in fact, creating the space for a range of partners in the network to build on a shared base of existing assets (natural resources, as well as human, social and financial capital) and create a virtuous cycle of asset growth and human development.

In these examples of successful EI enterprises, the outcomes from the EI enterprise networks include 1) profits and return on investment, 2) human capital development and empowerment, 3) poverty reduction and improved local livelihoods and 4) conservation and environmental restoration. These outcomes are then reinvested in the network, which enhances the local asset stock and creates a virtuous cycle of human, social and ecological development.

A diagram of this virtuous cycle of asset growth and reinvestment is given below:



The EI enterprise and other local partners begin with the existing assets available (human, financial, ecological, social). Each partner in the Sustainable Local Enterprise Network (enterprise, CBO, donor agency, larger business, financial investor, NGO, government, etc.) draws on the local asset base, and in many instances, is able to mobilize additional investments (training, seed capital, relationships, etc.) to further augment the local asset base (Adhikari, 2006).

Multiplicity of Objectives

As mentioned in the introductory chapter, one of the major issues with Integrated Conservation and Development Projects is the tension that can arise between the objectives of conservation and the objectives of human development. This can especially be true for donor funded projects that require agreement on the overarching goals and aims from all relevant partners before funding is approved. Equator Initiative enterprises that are part of a network of for-profit and not-for-profit actors, have, on the other hand, shown the effectiveness of collaboration among multiple partners that do not necessarily have to share the same objectives to participate in the network.

For example, in the case of Honey Care Africa, Honey Care's investors as well as the large supermarkets that sold its products could realize profits and return on investment from being part of Honey Care's network. The CBOs and NGOs partnered with Honey Care to provide training in bee keeping and other basic business skills and were able to achieve their objective of human capital development leading to increased income generation (Maurice, 2004). Microfinance organizations that provided loans to the farmers were able to make low risk loans that had a high rate of repayment. Environmental organizations were able to partner with Honey Care in a "Bees for Trees" program where farmers could receive a Honey Care hive in exchange for reforesting marginal land, thus providing an incentive for ecological protection and enhancement. The small scale farmers were an essential part of Honey Care's network for the supplemental income that beekeeping provided, allowing them to increase their income and improve their livelihoods (Maurice, 2004).

EI enterprises were successful in creating multiple "linked incentives", not only for conservation and development, but also for profitability and financial return on investment.

EI enterprises thus seemed to be successful in resolving some of the ideological problems of having all parties agree on the objectives of the collaboration before commencing operations. Each partner gets what they need from the network and multiple objectives are achieved (Adhikari, 2006).

Complexity

EI enterprises and the dense networks they created seemed to highly adapted to the complex and unpredictable environments that they were operating in. It was not uncommon for participant organization to come and go from the network without significant disruption, as the networks were robust enough to compensate and adapt. EI enterprises seemed able to develop the capacity to navigate complex systems successfully (Orozco-Quintero, 2006).

Learning and Adaptation

EI enterprises also demonstrated that they were highly adept at learning from experience in real time and making necessary changes. Risk taking and learning from making mistakes were valued as a necessary strategy to working effectively in a complex environment and navigating global markets.

Many of the EI enterprise cases have been successful precisely because communities and other rural groups have been able to navigate the complexities of new local and global networks. They have bee able to effectively enable community-based conservation, strengthen existing institutions, build new network linkages as well as build social capital (trust) and human capacity while facilitating ecological conservation (Adhikari, 2006).

APPENDICES

A. Case Study and Synthesis Reports Completed and in Progress

Completed reports are located at:

http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html

Completed case reports:

1. Medicinal Plants Conservation Centre, Pune, India (Shailesh Shukla)
2. Community-based Arapaima conservation in the North Rupuni, Guyana (Damian Fernandes)
3. Honey Care Africa Ltd., Kenya (Stephane Maurice)
4. Cananeia Oyster Producers Cooperative, Brazil (Dean Medeiros)
5. TIDE Port Honduras marine reserve, Belize (Damian Fernandes)
6. Pred Nai community forestry group and mangrove rehabilitation, Thailand (Jason Senyk)
7. Casa Matsinguenka indigenous ecotourism project, Peru (Jessica Herrera)
8. Nuevo San Juan holistic forest ecosystem management project, Mexico (Alejandra Orozco)

Cases in progress:

9. Torra Conservancy, Namibia (Arthur Hoole)
10. Pastoralist Integrated Support Programme, Kenya (Lance Robinson)

Synthesis reports:

11. Development and conservation: Indigenous businesses and the UNDP Equator Initiative (F. Berkes and Tikaram Adhikari)
12. Lessons from community self-organization and cross-scale linkages in four Equator Initiative projects (F. Berkes and C. Seixas)
13. Lessons learnt on community-based conservation and development from the 2004 Equator Prize finalists. (C.S. Seixas, B. Davy, W. Leppan) Equator Initiative Working Paper
14. Cross-scale institutional linkages in a selection of Equator Initiative cases (Tikaram Adhikari)

B. Authors, Researchers and Other Project Contributors and Participants

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Project Secretary

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C. Background: The International Development Research Centre

The International Development Research Centre (http://www.idrc.ca) is a Canadian crown corporation that works in close collaboration with researchers from the developing world in their search for the means to build healthier, more equitable, and more prosperous societies. IDRC's Rural Poverty and Environment (RPE) program supports research focusing on the needs of the rural poor who live in fragile or degraded ecosystems. The program initiative uses an approach that combines participatory action research to generate knowledge; capacity development for researchers and decision makers to participate in multi-stakeholder processes; and policy engagement to build action and learning oriented partnerships.

The IDRC established a Biodiversity Theme in 1992 initially in response to the Earth Summit in Rio, and has had at least one program with a biodiversity focus since then. Between 1998 and 2005 this role was filled by IDRC's Sustainable Use of Biodiversity (SUB) Program, which focused on Plant genetic resources that are vital to food security, nutrition and primary health care for poor and marginalized communities. The objectives of the SUB Program included promoting knowledge, innovations and practices of indigenous and local communities that conserve and use biodiversity; supporting the creation of models for policy and legislation that recognize the rights of indigenous and local communities; developing incentives, methods, livelihood options and policies that facilitate community participation in biodiversity conservation and management.

D. Background: The Centre for Community-Based Resource Management

The University of Manitoba's Centre for Community-Based Resource Management (http://umanitoba.ca/institutes/natural_resources/nri_cbrm.html) is part of the Natural Resources Institute (NRI), Clayton H. Riddell Faculty of Environment, Earth and Resources, in Winnipeg, Canada. The Natural Resources Institute has a 30-year record of carrying out applied interdisciplinary research. It is a graduate school offering Masters in Natural Resources Management and PhD in Natural Resources and Environmental Management. The Centre was established in 2002 under the Canada Research Chair in Community-Based Resource Management, with the support of the Canadian Federal Government, the Manitoba Provincial Government and the IDRC.

The research program of the Centre provides a unique approach to study of social and ecological aspects of sustainability. It investigates the ways in which societies use environmental knowledge and develop institutions, with emphasis on change, complexity and uncertainty. The research approach involves analysis in three related areas: co-management, resilience (ability to absorb change), and use of local or indigenous knowledge. The Centre aims to advance the knowledge on common property (common-pool) resources, participatory approaches, and community-based management, using theoretical frameworks from the related areas of resilience, adaptive management and complex adaptive systems. The Centre's web site provides additional information on Centre's projects, networks, personnel, collaborators, NRI graduate students associated with the Centre, and publications.

Lessons from the Equator Initiative: Community-based Management of the Port Honduras Marine Reserve, Belize.

Damian Fernandes and TIDE

May 2005

Joint Project with the

International Development Research Centre (IDRC)

and the

United Nations Development Programme (UNDP)

Equator Initiative

(www.equatorinitiative.org)

Centre for Community-Based Resource Management
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Summary

This technical report examines lessons learned in the development and management of the Port Honduras Marine Reserve in the Toledo District of Southern Belize. The management of the Reserve is the responsibility of the Toledo Institute for Development and Environment (TIDE), which was awarded the 2002 UNDP Equator Prize as a successful example of integrated conservation and poverty reduction. The results presented here are based on field research conducted between June and September, 2004.

The report begins by introducing the research objectives, methodology and the study's theoretical background. This is followed by a short description of the study site and the initiative. The third component of the report then involves a presentation of major findings and discussion.

The report's findings and discussion are divided into five sections. The first examines community organisation and associated factors leading to the initiative's creation. Specific focus is given to knowledge sources, learning, and the key persons and organisations involved. The discussion then turns to cross-scale institutional linkages by identifying the major stakeholders involved, their organisational levels, and the project's key institutional relationships. The next two sections continue with a description of the initiative's impact on environmental health, and livelihood activities in the area. The report then concludes with a general examination of the study's findings, culminating in a discussion of the lessons learned.

The examination of lessons from the initiative is divided into transferable and non-transferable sections. Transferable lessons included: tailored capacity building; using complementary livelihoods as an entry point; managing community expectations; the creation of collaborative institutions and mechanisms; marketing enterprise development; appropriate distribution of resource jurisdiction; community-based monitoring and enforcement; and working across scales. The non-transferable lessons discussed were: outside threats stimulating community support; supportive social conditions; involvement of charismatic and commitment individuals; and consistent support from partner organisations. The report closes with the last lesson, which argues that "success" may come down to the right ingredients, in the right context, at the right time.

List of frequently used acronyms

CREP	Caribbean Regional Environmental Programme
FI	Freshwater Initiative
MMMC	Maya Mountain Marine Corridor
PACT	Protected Area Conservation Trust
PCNP	Paynes Creek National Park
PHMR	Port Honduras Marine Reserve
PLI	Private Lands Initiative
TIDE	Toledo Institute for Development and Environment
TNC Local	TNC Toledo Office
TNC	The Nature Conservancy
TRIGOH	Tri-national Alliance of Non-governmental Organisations of the Gulf of Honduras
UNDP	United Nations Development Programme
UNEP	United National Environmental Programme
USAID	United States Agency for International Development

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1. Introduction

1.1 Brief description of research

Community-based management has emerged as the dominant approach to integrated conservation and development. This approach often strives to reduce poverty through the conservation and sustainable use of biodiversity. Community-based management has had mixed results, and has failed to live up to expectations in many cases. Some argue that this failure is due to the impracticality of integrating the goals of conservation and development (Redford and Sanderson 2002).

How can community-based conservation reduce poverty through the sustainable use of biodiversity? We propose to address this question by identifying and understanding the conditions under which community-based conservation is successful. For this research we focused on a number of conservation and development projects short listed by the UNDP's Equator Initiative. Two cases were subsequently chosen for research and comparison, including the North Rupununi District Development Board (NRDDB) in Guyana, and the Toledo Institute for Development and Environment (TIDE), in Belize. While facing similar challenges, these initiatives seem to have developed unique and innovative approaches to conservation and poverty reduction.

This research is one of several EI case studies in a coordinated team project at the Natural Resources Institute, University of Manitoba, in partnership with the New York office of the United Nations Development Programme (UNDP), supported by the International Development and Research Centre (IDRC). By documenting how biodiversity conservation and economic development can be simultaneously achieved, the research findings will be used to further the theory and practice of community-based conservation.

1.2 Purpose

The purpose of this study is to research the lessons learnt from the NRDDB and TIDE initiatives in how biodiversity conservation and economic development can be simultaneously achieved. This technical report, however presents the research findings related to TIDE's community-based work in Belize[1]. Rather than examining all of the projects under the TIDE umbrella, the study focused specifically on the TIDE's involvement the Port Honduras Marine Reserve (PHMR) and the associated implementation of a gillnet ban. The research findings will also include some general discussions of TIDE as an organisation, including a summary of TIDE's broader institutional relationships.

1.3 Research Objectives

The objectives of this study are:

1. To document the role of self-organisation in the development of the initiatives.
2. To identify the cross-scale institutional linkages that facilitated project development and functioning.

[1] For NRDDB report see http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html

1.4 Methods

Fieldwork was conducted in the communities of Monkey River and Punta Gorda from June to September 2004. Research methods involved a combination of Rapid Rural Appraisal techniques, including an archival review, informal and semi-structured interviews, and participant observation. These approaches were used to examine: TIDE's history and the process leading to the establishment of the PHMR; changes in fishers' livelihoods following the Reserve's creation; community organisation in response to the Reserve; and institutional relationships key to the initiative's development and current efforts.

Informal discussions with key informants and an archival review were initially used to understand the local context, project histories and changes in local livelihood activities. This was followed by an interview phase, where twenty-six (26) fishers and tour-guides from the three (3) communities adjacent to the Reserve participated in semi-structured interviews. Additional interviews were conducted with the local representative from the Department of Fisheries and three (3) key TIDE personnel. Informal interviews and participant observation were also employed during community meetings, monitoring patrols, community meetings and other TIDE activities.

1.5 Theoretical Background

Complex social and ecological systems cannot be understood by examining any one organisational level in isolation. Effective management must take place at multiple scales, and involve institutions linked across space (horizontally) and across different levels of organisations (vertically) (Barrett et al. 2001; Berkes 2002). Horizontal linkages may include community networks involved in resource management initiatives, and the learning that results from this interchange. Vertical linkages refer to the relationships between different organisations at multiple levels, as in co-management. These horizontal and vertical institutional interactions are known as cross-scale linkages (Berkes 2002).

Cross-scale conservation must therefore start at the lowest level of the organisational hierarchy, with planning being "bottom-up" (Berkes 2004). Effective conservation in countries with legacies of centralised resource management will require the strengthening of local-level institutions in order to facilitate increased cross-scale interaction (Berkes 2002). Since governments often retain the majority of power in developing countries, state support and interventions are vital in achieving effective community-based management. These interventions may include state recognition of local institutions; development of enabling legislation; cultural revitalisation; capacity building; and local institution building (Berkes 2002; Ostrom 1990). However, empowerment of local communities is often difficult, since there is little incentive for governments to relinquish their power (Lele 2000). That said, some Governments also recognise that power-sharing with communities can lead to cost savings, better enforcement and more effective compliance (Berkes, in prep.). The challenge is therefore convincing Governments' to support local-level institutions, and to transfer resource use rights to the community.

Self-organisation, learning and adaptation are also central to the concept of complex systems, and hence efforts to achieve sustainability. Holling et al. (1998) suggest that

self-organisation is a primary evolutionary characteristic of both the social and environmental components of resource management problems. They go on to argue that the diversity, widespread occurrence and long track records of local management institutions suggest that many traditional social systems evolve and respond to ecological change. This leads to feedback learning and the generation of locally devised and adaptive management practices (Folke et al. 2002; Holling et al. 1998). Self-organisation in these traditional social systems thus allows them to cope with environmental changes before they accumulate and pose a threat to the community's social well being. This adaptive characteristic demonstrates that social and ecological systems "...can change qualitatively to generate and implement innovations that are truly creative..." (Holling et al. 1998:361). Self-organisation can therefore provide social systems with opportunities for innovative co-operation, built on feedback, learning and adaptation.

This multiplicity of scales is often ignored by state level, "one size fits all" conservation (Barrett et al. 2001). Such a centralised approach is incapable of incorporating feedback from management outcomes and ecosystem change into future management. This mismatch of scales results in the loss of ecosystem resilience and the movement of natural systems towards thresholds of collapse (Berkes 1996). Centralised management is thus often identified as a primary obstacle in attempts to achieve sustainable resource management and conservation (Holling et al. 1998).

2. Situational Background

2.1 Port Honduras basin and the surrounding communities

Belize is a small, English speaking country covering approximately 22,960 square kilometres of Central America's Caribbean coast. It is known for its relatively small population (approximately 266,440), Mayan Temples, 93% forest cover, and the second largest barrier reef in the world. Over 42% of Belize has been designated as protected areas and reserves.

The Port Honduras coastal basin lies at Belize's southern tip (Figure 1). The basin stretches along the coast from Punta Ycacos River to the Rio Grande, and includes 3 rows of approximately 138 mangrove cayes or islands. The area functions as a lagoon and is made up of three ecological components, including the main marine lagoon, coastal and estuarine mangroves, and the cayes with their associated sand banks. These ecological components provide habitat and serve as a nursery for both fish and marine invertebrates. The area's shoreline is also used as a corridor by a number of migratory fish species.

Sullivan (et al. 1996) identified 70 species of fish in the coastal zone of Port Honduras, 40 of which had some commercial value. Most of the species belonged to the snapper (*Lutjanidae*), grunt (*Haemulidae*), parrotfish (*Scaridae*), and mojarra (*Gerreidae*) families. The area is also known for its lobster and conch beds, and is frequented by the endangered Hawksbill sea turtle (*Eretmochelys imbricata*). The sea grass communities found throughout the basin also supports a population of West Indian manatees (*Trichechus senegalensis*).

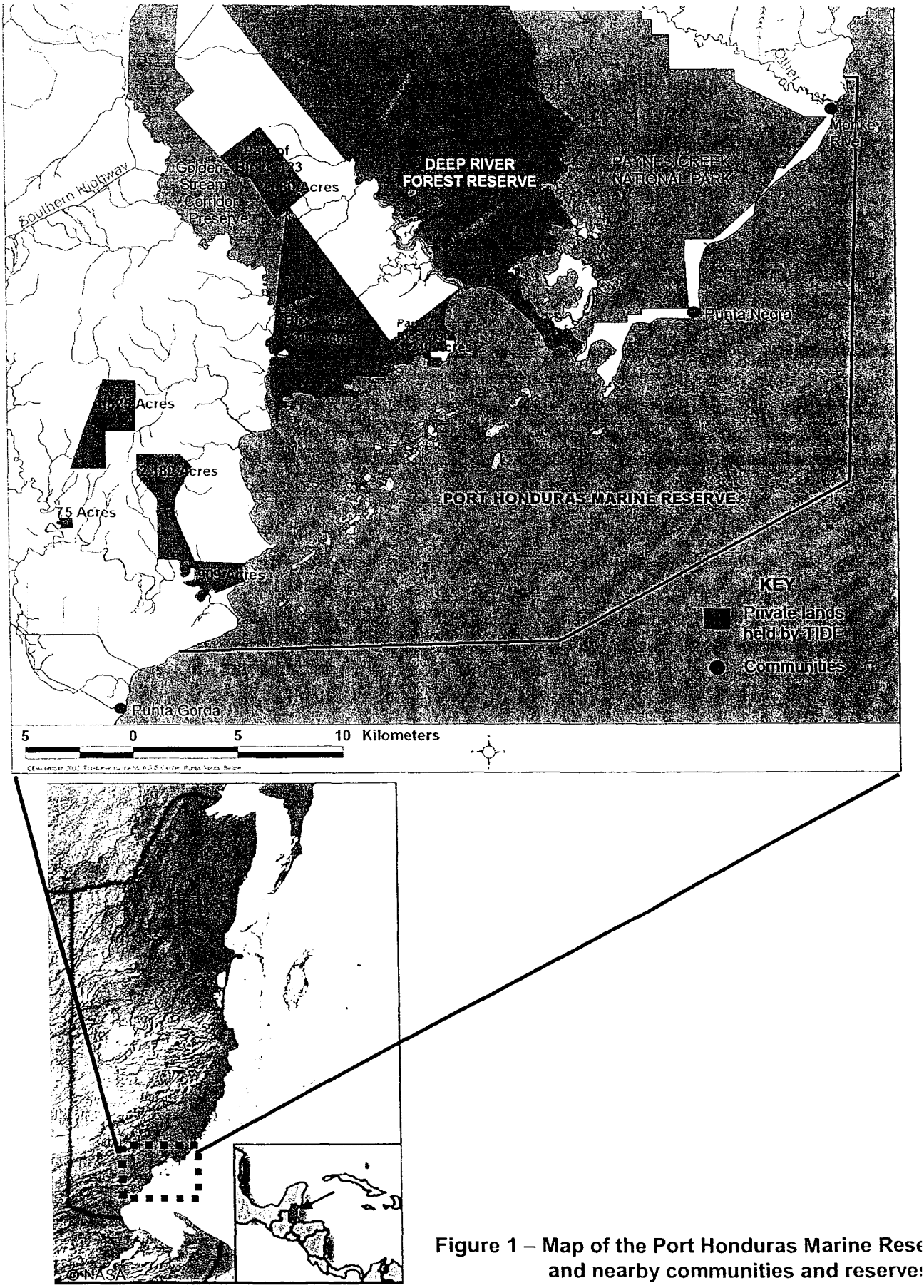

Figure 1 – Map of the Port Honduras Marine Rese
and nearby communities and reserve

There are 3 primary settlements in the Port Honduras area, including Monkey River, Punta Negra and Punta Gorda. Both Monkey River and Punta Negra are relatively small, with approximately 300 residents in total. These residents belong to the Kriol[2] and Garifuna[3] ethnic groups and are mostly involved in local tourism and the commercial harvest of lobster, conch and some fish species. Bordering the PHMR to the south is Punta Gorda, the Toledo District's capital, with a mixed population of over 5,000 people.

As mentioned above, fishing is both a commercial and subsistence livelihood activity in the communities surrounding the Port Honduras area. However, only an estimated 156 fishers are residents of the 3 aforementioned settlements (Heyman & Graham, 2000). Many groups of fish are in the area, including species of Snapper, Mackerel, Jack, Snook and Grunt. Many fishers are also involved in the lucrative lobster and conch fisheries, which are subject to National size limits, and an annual harvest season. Local fishers use a collection of fishing gears (Figure 2) in order to target a variety of species and maximise their effort (Heyman and Graham 2000). Although similar amounts of fishers used gillnets and long lines, the use of gillnets tended to be familial or "crew" based, and were often the primary gear used, whereas long lines were usually used in tandem with other gear.

Commercial fishers from neighbouring Guatemala and Honduras also frequent the area, in many cases illegally, and account for more than half of the fishers active in Port Honduras (Heyman and Graham 2000). These foreigners, referred to locally as "Aliens", specialise in the use of gillnets near river mouths, and the off-season or under-size harvest of lobster and conch, since their home countries lack these restrictions. They have also been blamed for the harvest of manatees and sea turtles for sale in neighbouring countries.

2.2 Toledo Institute for Development and the Environment

It was partly in response to this illegal fishing that the Toledo Institute for Development and the Environment (TIDE) was created in 1997. TIDE's mission is "*to research and monitor Toledo's natural resources, to assist in protected areas planning and management, and to lead the development of responsible tourism and other environmentally sustainable economic alternatives by providing training and support to local residents.*" TIDE's organisational structure (Figure 3) reflects the multifaceted aspects of its subprojects, which include the Caribbean Regional Environmental Program, the Private Lands Initiative, the Freshwater Initiative, and TIDE Tours. It also co-manages the Port Honduras Marine Reserve and the Paynes Creek National Park with the Government of Belize. The PHMR has been one of TIDE most ambitious efforts, and has a long history of conservation and development interventions.

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[2] Generally refers to descendents of Africans brought to Belize as slaves.

[3] Distinct cultural group resulting from fusion of Carib and African cultures on the Caribbean island of St. Vincent in the 16th century.

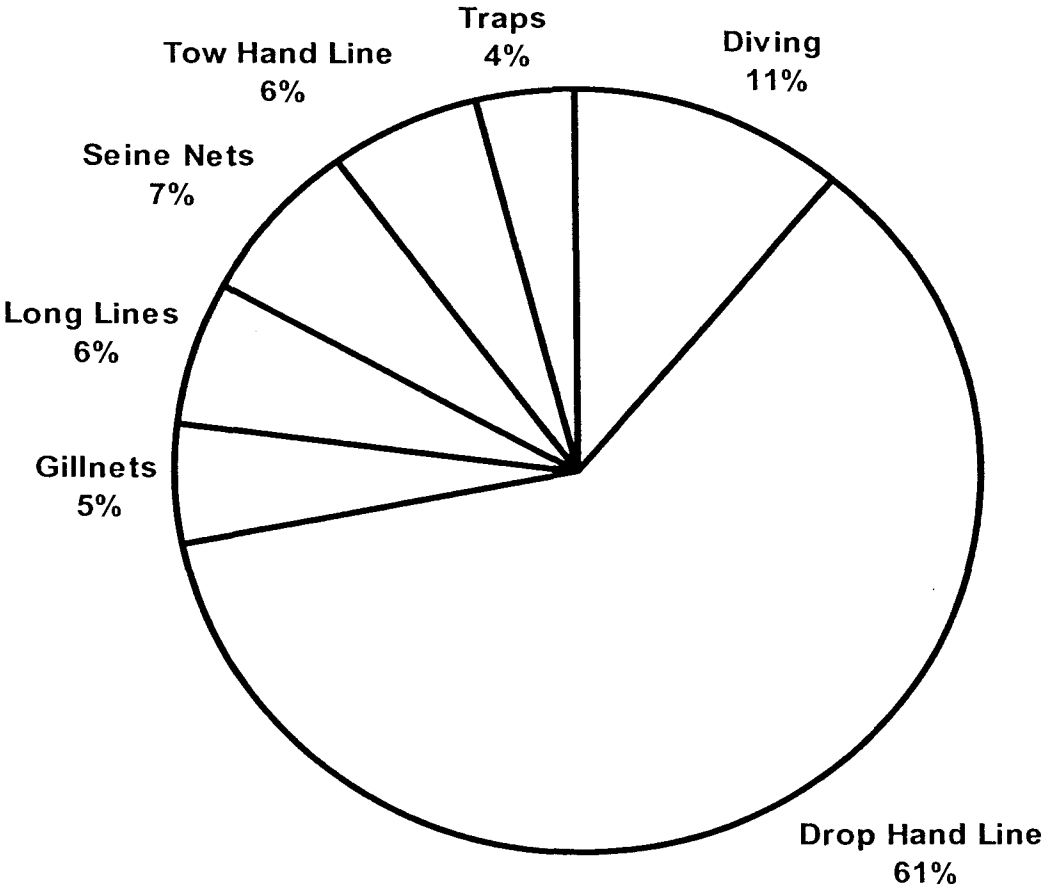


Figure 2 – Percentage of fishing gear used by Southern Belizean fishers (Source: Heyman & Graham 2000)

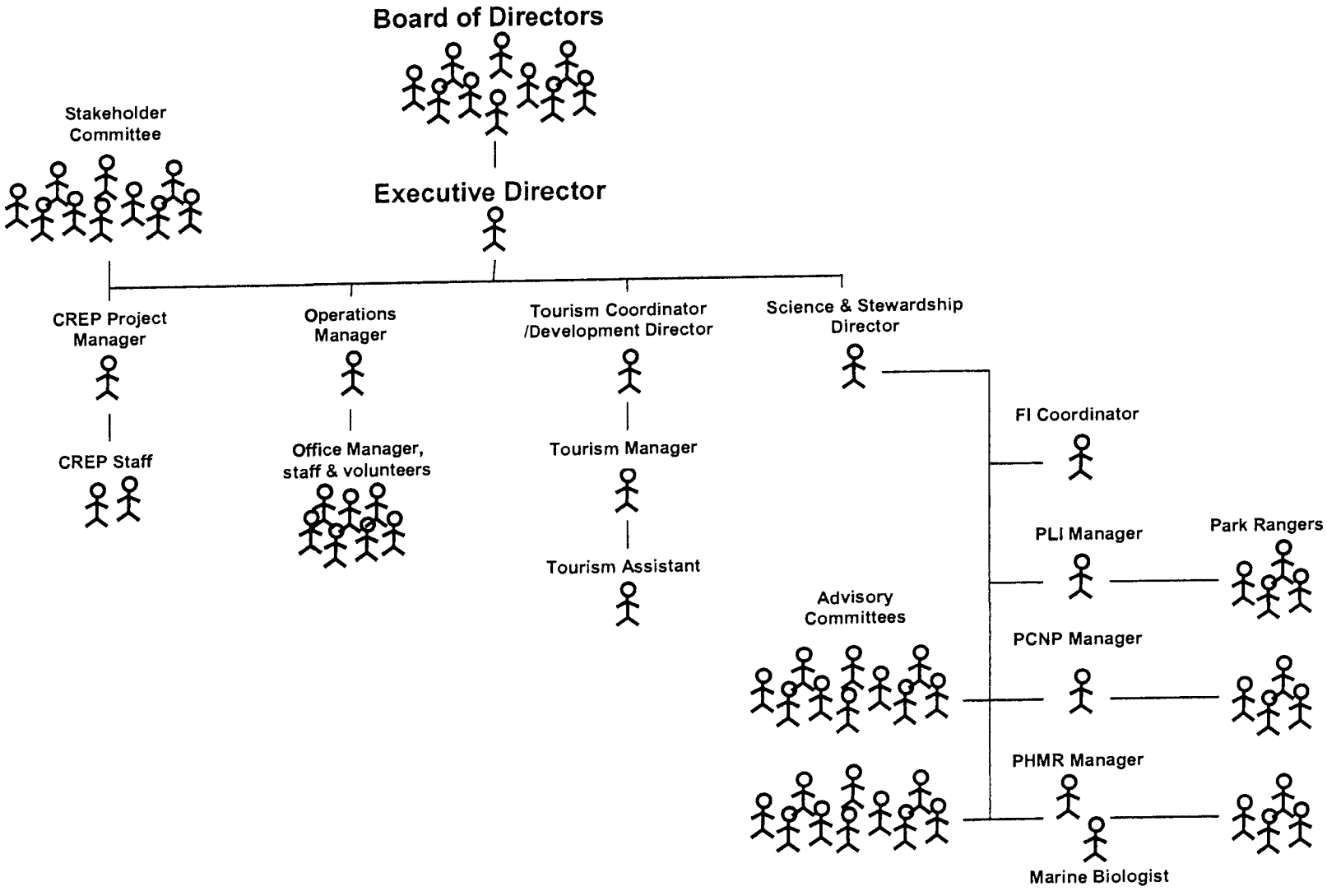


Figure 3 – People behind the TIDE: Organisational structure of the Toledo Institute for Development and Environment

Figure 3 (continued) – Description of positions and structures

Individual or group	Description
Board of Directors	Highest decision making body of the organisation. Made up of 11 individuals from communities in Toledo district. Includes businessmen, guides, fishers, farmers, University faculty, TIDE personnel and public servants. Oversees TIDE's management, current activities, plans and policy.
Executive Director	TIDE's founder. Has directed the organisation since its inception in 1997.
CREP Project Manager	Manages the Belizean sub-project of the Caribbean Regional Environmental Programme (Box 2).
Operations Manager	Coordinates staff, logistics and office activity.
Tourism Coordinator /Development Director	Manages Tide Tours (Box 1) and community development projects, including training and capacity building activities.
Science & Stewardship Director	Oversees all of TIDE's research activities and oversee all of TIDE's protected areas.
FI Coordinator	Coordinates TIDE's Freshwater Initiative (Box 6).
PLI Manager	Manages the Private Lands Initiative (Box 5).
PCNP Manager	Manages the Paynes Creek National Park (Box 5).
PHMR Manager	Manages the Port Honduras Marine Reserve (Section 2.3).
Stakeholder and Advisory Committees	Composed of community members, Government officials, civil sector representatives and TIDE personnel. Reviews current management activities, management plans and makes policy recommendations.
Rangers	Involved in the monitoring of both fishers' activities and ecological parameters and are the primary enforcers of the Parks' regulations.

2.3 The Initiative: The Port Honduras Marine Reserve

The Port Honduras Marine Reserve was declared in 2000 and incorporates an area of approximately 1300 km^2 within the larger Port Honduras Basin. Its boundaries extend from the coast to the Snake Cayes in the east, and from the northern bar of the Monkey River, southward to the Rio Grande (Figure 1). It was created under a co-management agreement between TIDE and the Belizean Government, and its management is overseen by a stakeholder committee made up of community members, TIDE personnel and government representatives.

The Reserve is zoned into three categories, including: the General Use Zone, where commercial fishing is allowed; the Conservation Zone (no take); and the Preservation zone (no entry). Although most of the Reserve is classified as "general use", the use of gillnets and long lines are prohibited in all zones. TIDE has also implemented a number of projects linked to the Reserve's development and management, including tour-guide training and certification programmes, the buy-back of used gillnets, and the creation of a secondary school scholarship fund for local children. Because gillnet fishers often relied solely on their nets for fishing, TIDE, and this study, focused primarily on initiatives involving this group.

3. Major Findings and Discussion

3.1 Community organisation

*3.1.a Origins of the project (*see Appendix 1 for Project timeline*)*

i. *Date of community initiation*: Local concerns were raised in the 1990s over the overharvesting of certain fish stocks, linked particularly to the increased use of gillnets in the area. These concerns were documented during research in the area conducted by the Belize Centre for Environmental Studies (BCES)[4]. The work of the BCES eventually precipitated TIDE's establishment in 1997. Upon its creation, TIDE developed and implemented a number of projects in the Port Honduras Basin, and was the lead agency in lobbying the Government to establish the PHMR.

ii. *Date of formally established (EI date)*: TIDE was founded in 1997; while the PHMR was declared in 2000.

iii. *What inspired or precipitated the project? What were the sources of inspiration for the project?*

Whose idea was it?

Fishers noticed a decrease in fish stocks during the 1990s, and had begun to discuss among themselves the need for some form of management in the area. In 1990 a Critical Habitat Study was conducted by the BCES, which showed that Port Honduras was biologically unique and warranted protection. In 1996 the BCES also reported the identification of 36 manatee slaughter sites in the Port Honduras area. With support from The Nature Conservancy's (TNC) local office ("TNC local" from here on), the BCES had begun to prepare a management plan for the area when they went defunct in 1997. Wil Maheia, a

[4] A defunct conservation NGO that was based in Belize City and focused on environmental research, policy and planning. It received major support from TNC and worked with local and international consultants.

former BCES consultant and local resident, then took up the cause for the Reserve by establishing TIDE, again with key support from TNC Local.

Trigger event

TIDE, and later the PHMR, was created primarily in response to an escalation in the slaughter of manatees in Port Honduras. This had been linked to reports of increased illegal foreign fishers, and gillnets, in the area during the 1990s.

Catalytic element

The commitment of TNC Local and TIDE's founder to the management of the Port Honduras area was crucial in TIDE's development. With sufficient resources at its disposal, a young TIDE was able to generate enough local support, through letter writing campaigns and signature drives, for the creation of the PHMR. With local fishers and community representatives on board, and with TNC Local's support, TIDE was able to effectively lobby the Government to establish the Reserve.

Other

Many fishers saw the creation of the Reserve as a means of addressing the influx of foreign fishers into their fishing areas. Although local fishers had misgivings about the Reserve's creation, they felt that the "Aliens" posed the bigger threat to their livelihood. This coincided with the beginnings of tourism in the area, hinting at the possibility of new livelihoods. According to one fisher and guide from Punta Negra, "*We started to catch a little picture of tourism, and we start easing on the nets. Spanish people had a lot of nets, we realize that they would out-fish us, and the Reserve was to stop 'Alien' fishing.*"

3.1.b Knowledge

i. Sources of knowledge

Early projects conducted by the BCES and TNC Local generated significant data on PHMR's ecology and the current condition of its resources. This data provided the hard proof that was crucial in convincing Government, and fishers to a lesser extent, of the need to protect the area.

Involvement with the BCES also afforded TIDE's founder the experience of working for a non-profit research and conservation organisation. He states that the knowledge he gained was crucial in setting up TIDE, and that he "*...learnt a lot of what not to do in running an organisation*".

Local and international scientists and collaborators also contributed knowledge and expertise during TIDE development, and later in the formation of PHMR. These early contributors were primarily from Programme for Belize and TNC.

Knowledge used in TIDE's alternative livelihood training came primarily from foreign specialists. For instance, Fly-fishing experts from the US were brought in to train local fishers as sports fishing guides. Fishers trained in this initial workshop have acted as instructors for subsequent training programmes.

Some of the participants in this training, particularly those from Monkey River, did have some existing knowledge and experience in sports fishing. These individuals had worked outside of the area, and had benefited from informal apprenticeships with established sports fishing guides, particularly in the nearby city of Placentia.

ii. *If there is local knowledge and if relevant, who holds this knowledge?*
The PHMR's manager, and most its rangers, either belong to a family of former gillnet fishers or are former gillnet fishers themselves. They thus have a significant understanding of gillnet sites and the movements of gillnet fishers. Decisions concerning where and when to conduct patrols in the Reserve are therefore based heavily on their knowledge and experience. As a result, the rangers are better at preventing illegal fishing in the Reserve, therefore facilitating the effective management of the PHMR.
Many of the local sports fishing guides are practicing or former commercial fishers. They thus came into training with a significant existing knowledge base of the habitats and seasonal movement patterns of particular sports fish species.

iii. *If there is outside knowledge used in the project, was there capacity building? Who was involved in providing capacity?*
TIDE, the PHMR, and associated programmes have benefited significantly from outside knowledge and expertise. In particular, research by personnel from TNC's local office has contributed to a better understanding of socio-economic and ecological issues in the area. Along with TNC Local, the BCES conducted two Rapid Ecological Assessments (REA) in the area, and subsequently funded research to document fishers' livelihoods and perceptions in surrounding communities. TNC Local scientists also played a key supportive role in the development of the PHMR's management plan, and TIDE in general.
TIDE's training programmes involved significant capacity building and knowledge transfer from outside sources. Because of the gillnet ban in the PHMR, TIDE has focused primarily on training of local fishers in alternative livelihoods. These training programmes have relied on knowledge from partners like The Orvis Company (sports fishing guides), and the Belize Tour-guide Association (general tour guiding).
In establishing the PHMR, TIDE drew on the experiences of other established Protected Areas in Belize. TIDE even facilitated visits by local fishers to communities surrounding the Hol Chan Marine Reserve to the North of the country. The visits were meant to expose local fishers to the management of a protected area and its associated benefits. There have been additional fisher exchange programmes since, including a 2003-2004 exchange between local fishers and Maine lobster fishers, which was funded by the Quebec-Labrador Foundation.

3.1.c Leadership and key people

i. *Individuals: What role did they play? How did their role change during the course of the project?*
Wil Maheia: Most interviewees felt that Mr. Maheia was the dominant force behind TIDE and the PHMR, and was commonly referred to as "*TIDE's biggest cheerleader.*" He is from the Toledo District and has worked in the area since 1984, most notably as a consultant with the BCES. After establishing TIDE, Maheia pushed for the creation of PHMR by lobbying Government officials and promoting the Reserve in the surrounding communities. He currently serves as TIDE's Executive Director, and is heavily involved in fund raising activities,

and increasing TIDE's visibility both nationally and internationally. As Director he seems very cognisant of the multiple actors and institutional levels involved in local conservation and development initiatives. This is demonstrated in his ability to link international concerns with local needs, and in doing so, gain Government's support and transfer of management jurisdiction.

Will Heyman: This former TNC Local scientist has played a key supportive role in the development the PHMR. He has conducted a number of social and biological research projects in the area since the early 1990s. He was also involved in developing the PHMR's Management Plan and the associated alternative livelihood training programmes.

Reserves' Managers: The managers of both the PHMR and PCNP are from Punta Negra and Monkey River respectively. These individuals are important members of their communities, and were involved in early community outreach activities. They were also involved in the development of TIDE and the creation of the Reserves. Their involvement with the organisation increased community awareness, and ownership to a certain extent, of TIDE projects and the Reserves.

Philip Gabriel: Mr. Gabriel was initially chairman of the Rio Grande Fishing Cooperative in Punta Gorda. He helped to organise the early community petitions in support of TIDE and the PHMR. These petitions were used to assuage Government fears of major community resistance to the initiative. It seems likely that this demonstration of local support was the last step in securing the Government's stamp of approval for TIDE's co-management of the PHMR. Mr. Gabriel now acts as a community liaison officer in one of TIDE's subprojects.

ii. *Key organisations: What role did they play? How did their role change during the course of the project?*

The Nature Conservancy's local office was a major partner in TIDE's creation, and has played a key role in the organisation's growth. TNC acted as both a donor as well as a funding link for TIDE's and many of its early projects, primarily those related to the PHMR. TNC Local assisted a young TIDE with personnel, technical advice, and organisational support. As TIDE gained greater international visibility, and established alternative funding sources, the relationship between the two organisations has become less interlinked, with TNC Local occupying more of a supportive role.

Other groups that were central to the development of TIDE and the PHMR include: USAID; the AVINA Foundation; the Wallace Foundation; and the Oak Foundation. Support from these organisations has been primarily in the form of funding. In addition, funding from the Protected Areas Conservation Trust[5] currently covers a portion of TIDE's operations budget.

[5] Established in 1995 as Belize's National Conservation Trust Fund. Under the 1996 PACT Act, a conservation fee of BZ $7.50 (USD $3.75) is charged per visitor, along with a 20% commission from cruise ship passengers. This funding is used to finance "activities on the protected areas that foster conservation, sustainable development and management of the area."

3.1.d Learning

i. What learning processes did the project go through?

Once the PHMR had been created, the biggest challenge was finding ways to implement the gillnet ban without impoverishing fishers in the process. Nets were used by a number of families living on the PHMR's cayes, and in the three communities adjacent to the Reserve. There was thus significant opposition to the Reserve's exclusion of this fishing gear. As a result, TIDE's policy on enforcement in the early stages of the Reserve was one of "informing and educating" the offending fisher, rather than confiscating nets or charging the fisher. TIDE also used four distinct interventions in an attempt to address this issue (Figure 4). They first focused on co-opting gillnet fishers by offering some individuals fulltime or seasonal employment as rangers. Understandably, only a limited amount of fishers could access direct employment, due to financial and organisational constraints.

Prior to, and following, the Reserve's creation TIDE also offered training programmes focused on building the capacity of fishers to access alternative livelihoods. These courses focussed particularly on training the fishers as guide in catch-and-release sports fishing. The training involved many of the fishers and has since become a major aspect of TIDE's community development projects.

However, some fishers were intimidated by training courses and the legally required certification process for tour-guides in Belize. Some therefore chose not to participate in the programmes. They also argued that the income generated from their nets was primarily used to pay their children's secondary school fees. TIDE's answer to this was offering to purchase nets from fishers, and creating a scholarship fund for local children that qualify to attend secondary school. The net buy-back programme, as it is called, was aimed at providing the fishers with capital for investment in new fishing gear or alternative activities. This also was met with a mixed response, with some fishers suggesting that the price offered for their nets could not compensate for their lost income without the nets. Therefore, some fishers are still opposed to the PHMR and, according to some reports, occasionally set nets in the Reserve.

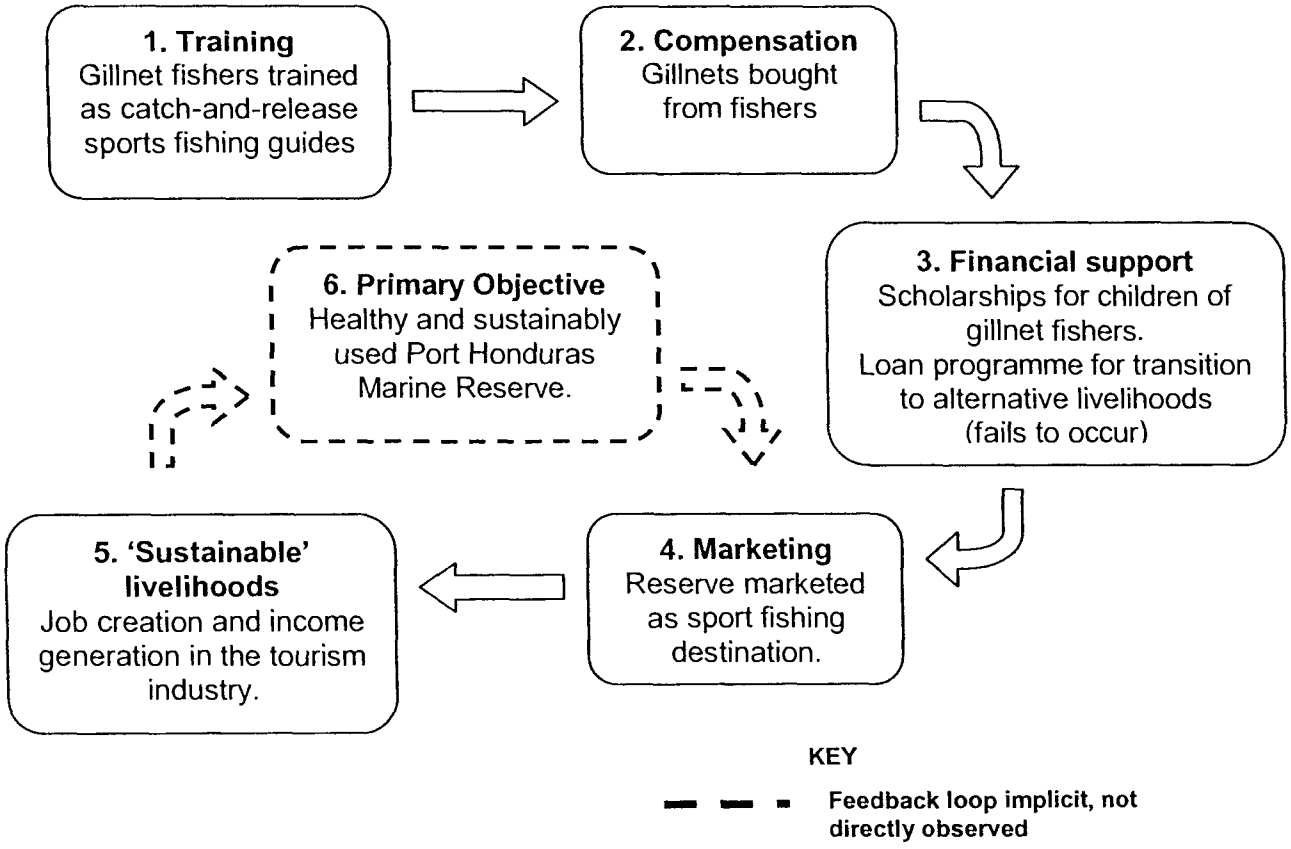


Figure 4 – Interventions used by TIDE to reduce impact of Reserve on local gillnet fishers.

However, the number of these individuals seems to have decreased significantly over the years, possibly because as more fishers become trained tour-guides, there is more community resistance to the setting of gillnets. Many of the tour-guides interviewed see gillnets as a threat to their livelihood. TIDE's most recent effort at addressing fishers' concerns is a new and diversified round of alternative livelihood training. The training includes small business management, general tour guiding, kayak guiding, and bird identification.

Recognising the need for development of the local area tourism sector, TIDE initiated the creation of the for-profit TIDE Tours (Box 1) subsidiary in 1999. The primary objective of TIDE Tours was to provide alternative means of livelihood for the area's residents and thus facilitate sustainable community development and poverty reduction. It was also seen as a potential source of financial support for the larger parent TIDE. Adding to TIDE Tour's efforts is the new established Caribbean Regional Environmental Program (CREP) project (Box 2). This project is still in its early stages, but aims to support TIDE's community development programmes. Planned activities under the project include fish stock assessments, ecotourism and small business training, and the development of a honey project for local communities.

The creation and development of TIDE itself also involved significant learning. For instance, the involvement of TIDE's founder with BCES allowed him to work with a non-for-profit research organisation. According to him, it was a "learning-by-doing" experience where he learned firsthand what worked and what did not. In working with BCES, TIDE's founder was also able to establish

Box 1 – TIDE Tours

The primary objectives of **TIDE Tours** are to "provide an alternative and sustainable means of livelihood for area residents, to help reduce poverty in the Toledo District by introducing more profitable economic opportunities, and to generate funding for TIDE's conservation work." This subsidiary functions as an in-bound tour operator service, marketing and coordinating package tours of the Toledo District. It hires individual tour-guides and small-scale tourism businesses to provide guest and hospitality services, attempting to rotate employment and distribute community benefits equitably. It owns kayaks, snorkeling gear, and other sports equipment that it provides to local tour-guides to assist in operating their tours.

Box 2 – The Caribbean Regional Environmental Programme (CREP)

CREP is a €9.1 million regional sustainable development initiative funded by the European Union and authorised by the Caribbean Forum of African, Caribbean & Pacific States (CARIFORUM). It was developed in 1999 with the primary objective of enhancing "the contribution of natural areas of biodiversity and economic significance (Amenity Areas) to the sustainable development of the CARIFORUM Member States." CREP is currently implementing projects in 13 CARIFORUM States.

The Port Honduras Marine Reserve and Paynes Creek National Park (Box 3) were identified as the Demonstration Sites in Belize. The Ministry of Natural Resources, Environment, Commerce and Industry along with TIDE were selected as the project's implementing organisations, and a stakeholder advisory board has been established. So far TIDE's CREP team has conducted consultations in developing the project workplan, facilitated professional development training courses for TIDE staff, and has purchased a boat for monitoring activities. Other proposed activities include the installation of mooring buoys, demarcation of boundaries, training in ecotourism and business development for local communities, a honey development project and fish stock assessments.

relationships with government officials, donor organisations and other local NGOs, which became a personal "network of friends". This network of pre-existing relationships proved crucial in assisting with early organisational support and funding for TIDE and the PHMR.

This multi-stakeholder structure of TIDE's Board of Directors has been partly attributed with the organisation's success, and was used as a model in the development of the initiative's subprojects. The Board oversees the management of TIDE and its initiatives, and is made up of local businessmen, scientists, senior local guides, community members and TIDE personnel. Four such advisory committees are currently involved in the management of the PHMR, PCNP (Box 3), PLI, and the CREP project.

ii. Was there adaptive management (learning-by-doing)?

Although the PHMR management plan does not explicitly incorporate "adaptive management", the plan does include an extensive "Monitoring and Research" section. It includes a categorized discussion of monitoring and research needs and priorities, as well as a comprehensive implementation strategy. However, the Monitoring Protocol is still in the early stages of implementation, with management of the Reserve still focused primarily on the enforcement of Park regulations.

The different management interventions, discussed under item 3.1.d.i above, also demonstrates the use of adaptive management in working with fishers to implement the gillnet ban.

Box 3 – Paynes Creek National Park

This Park was declared a nature reserve in May 1994 and a national park in 1999. The Park covers 31,000 acres of forest, mangroves and pine savannah in the Maya Mountain Marine Area Corridor (MMMAC). It also includes the submerged remains of four Mayan archaeological sites. The park is co-managed by TIDE and the Government, with the input of a stakeholder Advisory Committee.

Sections of the Park were important resource areas for the community of Monkey River. However, the threat of development in the early 1990s led the community to join forces with BCES and TIDE to lobby the government for protected status. Its main rivers are frequently used by local guides for sports fishing, kayaking tours, and birding.

iii. Were there learning networks?

An informal "network of friends" was utilized by TIDE's founder in the early stages of the organisation. These individuals supported a young TIDE with technical advice, problem solving, funding and links to other groups. Most of the "network" however involved bilateral relationships between TIDE and the network's members, rather than a working group.

The PHMR's Advisory Committee can also be seen as a learning network, with its multi-stakeholder composition. The Committee reviews current management activities, management plans and makes recommendations for management policy. The creation of the committee, and the selection of its members, was outlined in the Memorandum of Understanding between TIDE and Government for the co-management of PHMR.

TIDE also recently entered into a partnership with Belize Lodge and Excursions (BLE), a private tourist business, and Ya'axche Conservation Trust[6] to coordinate management activities along the border of the three reserves. This partnership has thus far translated into rangers conducting joint patrols and sharing information. BLE has also agreed to contribute a guest fee toward TIDE, once the lodge begins operating.

TIDE is also a founding member of the Tri-national Alliance of Non-governmental Organisations of the Gulf of Honduras (TRIGOH) (Box 4).

Box 4 - TRIGOH

TRIGOH is a federation of eleven non-governmental organizations from Belize, Guatemala, and Honduras, established in 1995, that implements conservation initiatives in the Gulf of Honduras shared by the three countries. TRIGOH promotes "the sustainable management of fisheries, the protection of threatened species, the development of ecotourism projects, and the design of contingency plans for the prevention of disasters which could damage the natural resources in the Gulf of Honduras and in the Central American region in the region"

3.1.e Funding

i. *If there was funding for initial community organisation, who provided the funding?*

Funding for the development of both TIDE and the PHMR were sourced primarily from the Programme for Belize, The Nature Conservancy Belize, the United States Agency for International Development, the AVINA Foundation and the Oak Foundation. Additional funding for the net buyback and scholarship programmes was provided by The Long Island Chapter of the TNC. Private donors, including visiting tourists, expatriates and some local residents, have also contributed significantly to a number of TIDE's initiatives. For instance, the start-up funds used to establish TIDE Tours came primarily from private sources.

ii. *If there was capacity building, including training workshops, who funded it?*

In 2000, The Orvis Company Inc., through links with TNC Local, funded a fly-fishing training program for local fishers. US fly-fishing experts were brought to Belize, and fly rods were provided for the training exercise. A follow-up fly-fishing training course was funded by El Pescador, a local resort that caters to mostly foreign fly fishers. The fly-fishing guides trained earlier by TIDE acted as the instructors for the training exercise.

Additional training, including hospitality and small business development, general tour guiding, SCUBA diving and kayaking were also conducted by TIDE, and funded by the Meso American Ecotourism Alliance, the Conservation Tourism Initiative, and TRIGOH. A similar series of training courses will be organised and funded under the CREP project. UNEP-CAR/RCU[7] also recently funded a training programme for PHMR's Coral Reef Monitoring Project. The programme resulted in the training and certification of

6 An indigenous conservation and development NGO. It manages the Golden Stream Corridor Preserve (GSCP) and works with surrounding Mayan communities, with primary support from Flora ad Fauna International

7 Regional Coordinating Unit of the Caribbean Environment Programme of the United Nations Environment Programme

10 individuals, including TIDE rangers, fishers and students, in SCUBA diving, reef fish identification, reef coral identification and reef monitoring techniques.

iii. *If there was funding for office, office personnel, or vehicle; who funded them?*
Start up funds from Programme for Belize, TNC, USAID, and private donors covered the salaries, office space and operational costs of a young TIDE.
The building currently housing TIDE's Head Office was built with funding from a private donor, and is owned outright by the organisation. Funding received through the UNDP's Equator Prize in 2002 was also used to extend the Office building, with the addition of a library and a conference room. Salaries and operational costs are currently covered by project funding from a number of sources.

3.1.f Human resources for initial organisation (in-kind work as opposed to money)

i. *Volunteer support from pre-existing groups*
TIDE's relationship with the UK conservation charity, Trekforce Expeditions, resulted in the building of the PHMR's ranger station on Abalone Caye. This project received co-funding from Seacology and the British Department for International Development (DFID). TIDE has benefited from technical advice and expertise from a number of sources, most notably the "network of friends", including individuals from BCES, Programme for Belize and TNC Local. They also seem to have gained significantly from a regular flow of volunteers, interns and visiting researchers.

ii. *NGO and Government personnel providing their time or services for free*
TNC Local has been one of TIDE's most committed partners. They have contributed to the organisation in terms of technical advice, proposal writing, information sharing, linking with outside contacts, communicating with funding groups.

iii. *Were there pre-existing relationships between these groups and the community?*
The informal "network" used by TIDE's founder was made up of pre-existing links established during his earlier professional activities. TNC Local and their personnel had also worked extensively with the BCES and local fishers in the area prior to the Reserve's declaration. However, relationships between TIDE and most of the international donors were established through linkage organisations like TNC.

3.1.g Use of free facilities?
TIDE hosts a one hour radio program called "The Rising TIDE" every week on the local Wamalali 106.3FM station. It is the longest running program on the station, having begun in March 1997. The show's aim is to increase awareness of local environmental issues and provide updates on TIDE' activities. The programme is currently sponsored by the Protected Areas Conservation Trust of Belize.

3.2 Cross-scale linkages

There are a number key stakeholders involved in the PHMR and its management (see Table 1). These actors operate at different levels of organisation and interact across different scales. Examining this cross-scale interaction is therefore essential in understanding the development and functioning of the project.

3.2.a Institutional linkages related to the project

i. What were the key linkages facilitating/enabling the project?

The development and growth of TIDE as an organisation has benefited substantially from relationships with other institutions (Figure 5). As with TIDE, the key institutional linkage in the development of the PHMR was the TNC Local partnership. Although USAID and the Programme for Belize contributed funds to a young TIDE, TNC Local provided both financial and organisational support. TNC Local personnel assisted in developing management plans, funding proposals, project planning and conducting research. TNC Local also served as a major fund raiser and important link between TIDE and other supportive organisations and donor agencies. For instances, it was active in establishing contacts and accessing funds from The Orvis Company and the TNC Long Island Chapter (Figure 6). TNC Local also helped to increase TIDE's international profile and thus increased its ability to source funding. However, as TIDE established independent links to more donors and supportive organisations, TNC Local's involvement in TIDE's projects has declined, and it has taken on more of a supportive role. TIDE has also benefited substantially from private sources. Operational expenses, infrastructure and building costs, and many TIDE initiatives have all benefited in some form from private donations.

Government approval of the plan was the last, and most critical, step in the PHMR's creation. TIDE's relationship with the Government is based primarily on its co-management agreements with the Fisheries Department. According to these co-management agreements, the Fisheries Department is the overall management authority, with ultimate decision-making power. However, this power has never been used by the State. Government's contribution to the Reserve's management has thus far included participation in the Advisory Committee and sporadic joint patrols with TIDE rangers. In effect, TIDE has taken almost sole responsibility for the Reserve's management.

TIDE's relationship with the communities is formalized through the various advisory committees associated with the Reserves it co-manages. The members of these groups are all residents of the district, with most living in one of the three communities adjacent to the Reserve. This relationship is also maintained through employment and ongoing training initiatives. For instance, of the twenty-six (26) fulltime employees falling under TIDE's umbrella, only one (1) is not from the area. Trained fishers, on the other hands, receive seasonal employment as guides with TIDE Tours. In return these tour-guides, along with TIDE employees, seem to act as informal advocates in their constituent communities for TIDE, tourism and Protected Area management. They are also very active in monitoring and reporting illegal activities in the Reserves.

Table 1 – Primary stakeholders involved in the management of the Port Honduras Marine Reserve

Main Stakeholders	Community	District	National	International
Fishers	X			
Tour Guides	X			
Community Tour Guide Assocs.	X			
Rio Grande Fishing Cooperative		X		
TIDE		X		
Hotels and tour operators	X	X	X	
Fisheries Department			X	X
PACT			X	
The Nature Conservancy (Local)		X		
TRIGOH				X
Private donors	X	X	X	X
International donors				X

X	**Level at which institute is based**
	Level at which the stakeholder is currently active in relation to the PHMR

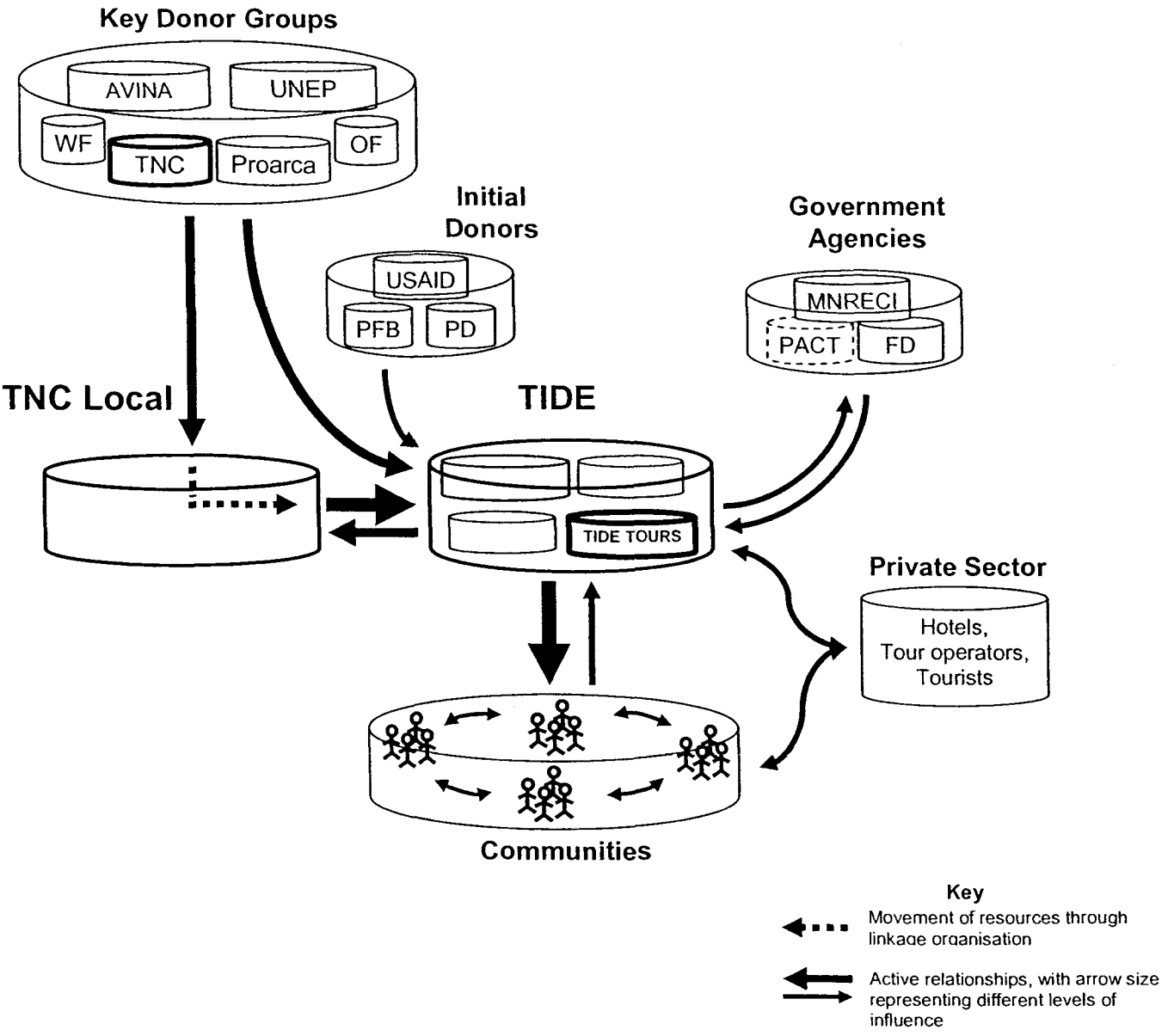


Figure 5 - Key institutional linkages in the creation and development of the Toledo Institute for Development and Environment

Figure 5 (continued) – Key to acronyms

Group	Full name
Initial Donors	
USAID	United States Agency for International Development
PFB	Programme for Belize
PD	Private Donors
Key Donor Groups*	
AVINA	The AVINA Foundation
UNEP	United National Environmental Programme
Proarca	The Environmental Program for Central America
TNC	The Nature Conservancy (International)
WF	Wallace Foundation
OF	Oak Foundation
TNC	The Nature Conservancy
Government Groups	
MNRECI	Ministry of Natural Resources, the Environment, Commerce and Industry
FD	Fisheries Department
PACT**	Protected Area Conservation Trust
TIDE	Toledo Institute for Development and Environment (See figure 3)

* includes only a selection of the total number of donors involved
** PACT's ultimate governing body is its board of directors, not a Government agency.

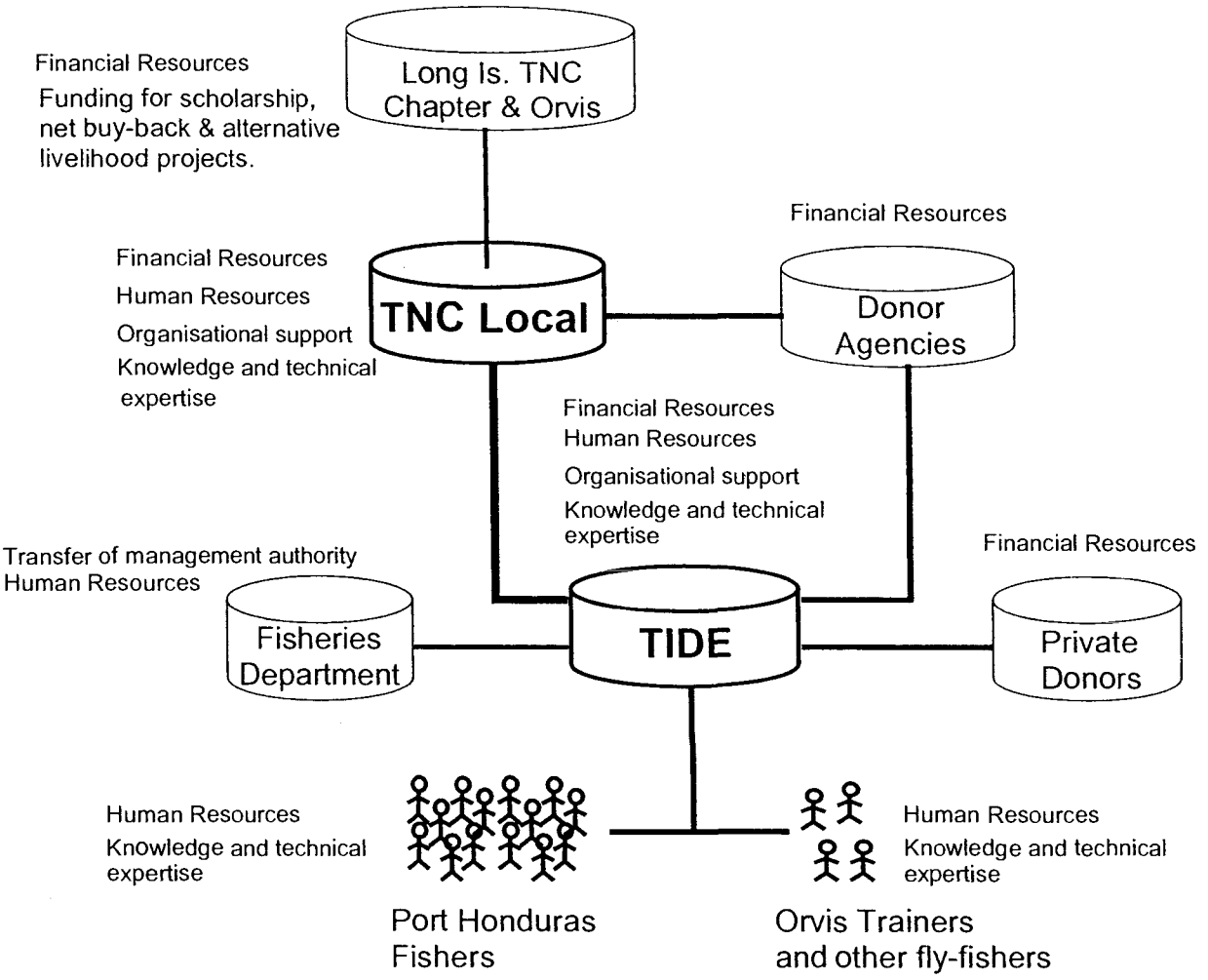


Figure 5 – Key institutional linkages that facilitated PHMR's creation and associated livelihood projects.

ii. *Whose initiative established these linkages?*

TIDE's founder, through his prior work with BCES and other initiatives, had links with TNC Local and some other early donors. He was then quite effective at utilizing these links to facilitate TIDE's creation and development. The organisation's relationship with TNC Local was also critical in establishing key links with new organisations and funding agencies. Although TNC Local took the initiative to create these links in some cases, TIDE's success may be partly due to the significant and consistent efforts of its employees at networking and fund raising. The sourcing of funds and building links with partner organisations continues to be a high priority for TIDE, claiming a significant amount of staff hours and effort.

iii. *Key horizontal institutional linkages (i.e., linkages across space and sectors, such as networking with other community groups, NGOs, development agencies)*

Horizontal institutional linkages, in the form of an informal network of individuals and partner organisations, played an important role in TIDE's early funding and development. The Tri-national Alliance for the Conservation of the Gulf of Honduras (TRIGOH) (Box 4) also represents a substantial attempt at networking among the NGOs of the Gulf of Honduras countries. However, TRIGOH has yet to have a significant effect on PHMR initiatives, TIDE or regional environmental policy.

iv. *Key vertical institutional linkages (i.e., linkages across levels of organisation, such as linking with key Government agencies)*

TIDE's relied on a number of donors and patrons during its creation and development. However its relationship with TNC Local has arguably had the most significant impact on TIDE as an organisation. Aside from direct support, TNC Local was also a key link to other funding sources, including The Orvis Company and the Long Island TNC Chapter.

v. *How does the policy environment impact the project? (e.g., policies, legislation, political space for experimentation)*

Tourism is a major contributor to Belize's economy, second only to Agriculture, and as a result the Government has a number of conservation and environmental policies aimed at protecting the country's tourism "assets". The country's pro-environment policy has manifested in the prevalence of protected areas, which currently account for 40% of Belize's territory.

There is also a strong NGO presence in the country, with scores of both national and international groups jostling for positions in the county's conservation, development and environmental advocacy arenas (Chang 2003). The Government, suffering from the usual human and financial resource shortages of a developing country, has drawn significantly from this pool of NGOs to manage the country's National Parks. The government has entered into a number of co-management agreements with these NGOs, including TIDE. Once TIDE had secured enough local support (through letters and signature drives), the country's co-management friendly policy environment facilitated the establishment of PHMR.

vi. *What change did the project trigger in Government legislation or policy?*
No direct policy change can be attributed to TIDE. However, it did play a key role in initiatives like the Government's "Debt for Nature Swap" with the U.S. Government (Box 5). It is also a founding member of TRIGOH, which attempts to coordinate and streamline policies in Belize, Guatemala and Honduras, which impact activities in the Gulf of Honduras.

Box 5 - Private Lands Initiative
This initiative involves the acquisition of private lands in the Maya Mountain Marine corridor for conservation and management. This project emerged from a TNC facilitated "debt-for-nature swap" between United States and Belizean Governments in 2001. Under the Programme the U.S. Government and TNC will collectively provide approximately $5.5 million towards forest conservation in Belize. In return, the Belizean Government will issue $7.2 million in local currency obligations to TIDE and other conservation groups for the protection of 23,000 acres of forest. This exchange will facilitate the writing off of approximately $1.4 million of Belize's U.S. debt.

TIDE's obligation under the agreement was to purchase 8,000 acres of vulnerable forestlands and to manage the approximately 11,000 acre Golden Stream Corridor Preserve currently under Government control. It has already acquired a number of properties and has begun building nature trails and other tourism infrastructure in some locations. TIDE has also commenced a series of meetings with small communities that currently practice cultivation in some of these private holdings. The meetings were used to address the land issues and management issues, with the ultimate goal of phasing out the use of the land and developing alternative activities for the farmers.

3.2.b *Unusual interactions among Government agencies, NGOs, development agencies that impact the project positively or negatively.*
There is no shortage of NGOs in Belize. For instance, in the Toledo District alone it is estimated that there more than 60 active NGOs (Collins 2004). Many of these NGOs claim grass roots status, and share similar mandates of poverty reduction and environmental preservation. There is thus significant competition for development and conservation funding coming into the Toledo District, where TIDE's operates. TIDE was fairly effective in avoiding this fray of NGOs by establishing a strong early partnership with TNC Local, and then using this partnership to source additional partnerships and funding. TIDE's diverse range of initiatives also gives it access to a number of different donor groups, and can be tailored to meet the requirements of many funding grants. That said, the competition for funds, at both district and national levels, is still a significant challenge for TIDE.
A legacy of "fly-by-night" development and conservation NGOs in Toledo District has also left many community members disillusioned. It was apparent that many fishers harbour suspicion and distrust of organisations claiming to be grassroots and interested in community development. The residents of the communities associated with the PHMR spoke negatively of many projects leading up to and including TIDE. From its inception, TIDE has been confronted with community resistance and has focused on outreach and education in an effort to change these perceptions. It appears that local involvement (employment and Advisory Committees) and alternative livelihood training have been key in gaining community support and buy-in for TIDE and PHMR initiatives.

3.3 Biodiversity conservation and environmental improvements

3.3.a Conservation/improvement of what target resources?

No conclusive biological data is available to determine the impact of the Reserve on fish, lobster, turtle and manatee populations. However, since the PHMR's creation, five years ago, there has been no documented slaughter of manatees.

3.3.b Changes in resource state

According to Collins' (2004) survey of residents in the 3 PHMR communities, a large number of respondents (98% of non-fishing households, and 96% of guides and fishers) felt that the Reserve's marine environment was either "ok" or healthy (Table 2). This perception is somewhat more positive compared to a similar study in 2000 (Heyman and Graham 2000), which found that 70% of local fishers felt that the fisheries resource had decreased over the preceding five years.

Most of the fishers interviewed during the study (on which this technical report is based) felt that many of the commercial fish species affected by gillnet fishing are recovering, particularly Snook, Tarpon and Mackerel. However, many are still concerned about the state of the lobster and conch fisheries, which are felt to be in steady decline due to overfishing by foreign nationals.

3.3.c Indicators of biodiversity conservation or improvement

Many of the fishers interviewed claim that most large shoal and migratory fish species are coming back due to reduction in net fishing.

3.4 Poverty alleviation

3.4.a *Indicators of poverty alleviation.*

Local residents that have benefited from TIDE's activities and the PHMR have done so in four primary ways:

- Firstly, TIDE and its projects currently provide full-time employment for 25 residents of either Punta Gorda, Monkey River and Punta Negra. In addition, many additional residents are seasonally employed (including five temporary rangers), have been employed by TIDE in the past, or serve regularly as guides for TIDE Tours.
- TIDE has also provided training for a number of residents. Documentation is inconsistent, but it was estimated that approximately 150 fishers have received training as sport fishing guides. Additionally, TIDE has offered training in kayaking, bird and fish identification, tour guiding, SCUBA, and hospitality and small business development.
- TIDE also conducted a net buy-back programme in an effort to reduce the impact of the gillnet ban on net fishers. However, funding for the buy-back was limited, and was granted on a "first come, first serve" basis. As a result, only 15 fishers benefited from the programme, with a number of persons not receiving compensation for their loss. Others were not willing to turn in their nets because they felt the prices paid were insufficient, or were still unsupportive of the gillnet ban.
- A scholarship fund was also created for children of fishers and other resource users. Records are unclear, but it appears that approximately 10

children from 5 major gillnet families have benefited directly from the programme. It should be noted that the scholarship is only available to children with a certain level of academic standing.

Collins (2004) recently conducted study on fishers perceptions of the PHMR (Table 3). A total of 68 non-fisher households and 27 commercial and sport fisher households were questioned about the impacts of PHMR on their income and livelihoods. When asked about the impact of the PHMR, 93% of the fishers interviewed stated that it had either no effect, or a positive effective on both their income and livelihoods.

3.4.b *Improvements in community well-being (e.g., access to clean water, new village school, waste management etc.)*

Most interventions associated with TIDE and the PHMR seem to have benefited local communities primarily at the individual level. Monkey River has seen some improvements at the community level, with the creation of a computer equipped tour-guide office funded by membership fees, donations and grants from Friends of Nature and UNDP. Although links with TIDE and the PHMR seem to have helped the community to access outside funding, village projects were directly related to local leadership and initiative.

Table 2 – Community perceptions of PHMR marine environment (Collins 2004)

Responses	Households, n=68 (non-fisher)	Fisher. n=27 (guide and commercial)
Condition of PHMR Marine environment	**percentage (number)**	**percentage (number)**
Healthy	45% (26)	52% (14)
Fairly healthy	18% (10)	22% (6)
OK	35% (20)	22% (6)
Fairly poor	2% (1)	4% (1)
Poor	0% (0)	0% (0)

Table 3 – Community perceptions of PHMR's impact (Collins 2004)

Responses	Households, n=68 (non-fisher)	Fisher. n=27 (guide and commercial)
Effect of PHMR on income	**percentage (number)**	**percentage (number)**
Very positively	0% (0)	0% (0)
Positively	8% (5)	30% (8)
No effect	89% (58)	63% (17)
Negatively	3% (2)	7% (2)
Very negatively	0% (0)	0% (0)
Effect of PHMR on livelihood		
Very positively	2% (1)	7% (2)
Positively	11% (7)	33% (9)
No effect	84% (55)	53% (14)
Negatively	3% (2)	7% (2)
Very negatively	0% (0)	0% (0)

3.5 *Analysis of the initiative*

3.5.a Mechanisms, dynamics, drivers

i. Analysis of catalytic element that made the initiative work

The PHMR's achievements can be attributed to significant personal investment by individuals involved, and consistent commitment from supportive organisations. TIDE's founder, Wil Maheai is a very charismatic personality, and seems genuinely dedicated to community involvement in local conservation and development. His links to funding groups, such as TNC Local, prior to TIDE's creation were also critical to the project. TNC Local's ongoing commitment to the PHMR and TIDE provided the supportive foundation used to source other key partnerships, and in the end increased TIDE's financial security.

ii. Decision-making process

Most of TIDE's subprojects are overseen by stakeholder groups, which are supposed to represent the interests of primary stakeholders in TIDE's decision-making processes. TIDE itself is administered by a Board of Directors, consisting entirely of individuals from the Toledo District. The Board receives regular reports of TIDE's activities, and meets through the year to review new subprojects and TIDE's management performance. Both the PCNP and the PHMR have advisory committees that meet three to four times a year to discuss issues related to their respective reserves. The purpose of the committee is to review current management activities, current management plans and make recommendations for management policy.

However, like most NGOs, TIDE depends heavily on international donors, which makes them susceptible to outside agendas and objectives. Although the stakeholder committees are in place to counteract this, it is not clear how effective these institutions are in fully and equitably representing the interests of their constituencies. Some community members complain about a lack of two-way communication with TIDE, and argue that they do not have a genuine voice in the PHMR's management. Some of TIDE's personnel argued that, with more inclusion of fishers' representatives on TIDE's various advisory boards, this communication will improve

iii. Conflict-management mechanisms

The Board of Directors and the Advisory Committees are also meant to serve as conflict management mechanisms, by including primary stakeholder groups in decision-making. From all appearances, these groups include all of the major stakeholders involved in the management of the parks, and thus create a forum where the different perspectives are allowed to vet major initiatives and decisions that would affect their various constituencies.

That said, conflict is still common over issues like the net ban and TIDE's unfulfilled commitments (small loans). There is also growing tension between fishers and sports fishing guides. Some tour-guides have expressed concern over the commercial harvest of sports fish species, which commercial fishers see as an attempt to undermine their livelihood.

iv. What were the roles of horizontal and vertical institutional linkages in the development and success of the project?

Vertical linkages were critical in TIDE's development. Again, the link between TIDE and TNC Local was key. TNC Local acted as a technical and financial partner, a link to other funding sources, and TIDE's advocate, both nationally and internationally. TIDE's relationship with the Government was formalized through the Memorandums of Understanding for the co-management of the PHMR and PCNP. This legal endorsement gave TIDE the authority to monitor the Reserve and enforce regulations that the Government was otherwise unable to implement.

Horizontal institutional linkages, also not very visible during TIDE's early growth, are beginning to play an increasing role in TIDE's initiatives. TIDE Tours is beginning to network more with local tour operators, in the hope of increasing access to jobs for trained guides. TRIGOH is also a critical step towards an integrated regional conservation and development policy for the Gulf of Honduras. This is particularly relevant, since approximately 50% of the fishers in the PHMR come from other Gulf of Honduras countries (Heyman and Hyatt 1996).

v. *Conflict resolution and enforcement*

Most major decisions made by TIDE are vetted by the Board of Directors and the Advisory Committees. If a consensus cannot be reached by the group, majority voting is used to resolve the impasse. From most accounts, decisions are usually made by consensus or with unanimous support.

The enforcement of the PHMR regulations falls on the rangers, which are certified supernumerary constables. Illegal fishing by foreign nationals, along with some net and long line fishing, seems to be the most pressing issues for the rangers. Early in the Reserve's history, locals caught setting nets were usually given a warning and information regarding the rules of Reserve. This continued for two years following the Reserve's creation, prompting calls from some funders for more severe action to be taken against the fishers. There have been a number of nets confiscated in the Reserve since 2002, with most being attributed to Guatemalan and Honduran fishers. From all available reports, the number of nets seen and confiscated in the area has fallen significantly since the Reserve's creation.

There have been a few cases of net fishers being brought before the courts, including the arrest of four Guatemalans in 2003. They were charged for four different offences including: having conchs out of season; vessel not licensed for commercial fishing; fishing in the conservation zone; and not having a fisherfolk license. Their boat and engine were confiscated and they were charged $500 each for fishing in the conservation zone, and $200 per person for each of the other offences bringing the total charges to $4400.

3.5.b *Learning and Adaptive Management*

i. *How did previous observations lead to project formation and development?*

TIDE's founder had worked with communities in Southern Belize since 1984. The experience gained from this work, particularly his stint with the BCES in the 1990s, had a significant impact on how TIDE was structured. As Mr. Maheia put it, "*Most of their (BCES) money came from donors like USAID and*

TNC and so. So one of the things I was saying that if I was to get involved with a NGO or a Non-profit organisation, one thing that I said must happen is that we must strive for sustainability because there are hundreds of NGOs, and fly-by-night organisations that start one year and by the next year they're dead and this district is known for that."

TIDE's decision to focus on guide training and ecotourism in developing alternative livelihood initiatives was based on the success of similar programmes in other parts of Belize, and the growth of the tourism industry in the country. Visits to the Hol Chan Marine Reserve and the linked tourism industry in nearby San Pedro town, contributed to TIDE's efforts in developing the PHMR.

ii. *How was experience incorporated into subsequent steps of the project?*

Since the creation of the PHMR, TIDE has placed increasing emphasis on addressing the impacts of activities in the surrounding mountains and freshwater systems. With the development of the Freshwater Initiative (Box 6) and the Maya Mountain Marine Corridor (Box 7) TIDE has broadened its original focus on the PHMR to include more of a landscape level approach to management. TIDE early initiatives focused specifically on the PHMR and its management. In recognising the link between the use of gillnets, damage to the habitat and fish stocks, and local people's livelihoods, TIDE took steps to lessen the impact of the ban on local people's livelihoods. Four distinct interventions were used to avoid improvising net fishers, including formal employment as rangers and managers, a gillnet buyback programme, a scholarship fund for the high school children of some net fishers, and a series of alternative livelihood training and capacity building programmes. Aside from providing direct employment, TIDE saw the aforementioned programmes as a series of interlinked interventions that, supposedly, would be part of a sequential effort to redirect net fishers into more sustainable livelihoods.

Box 6 – Fresh Water Initiative

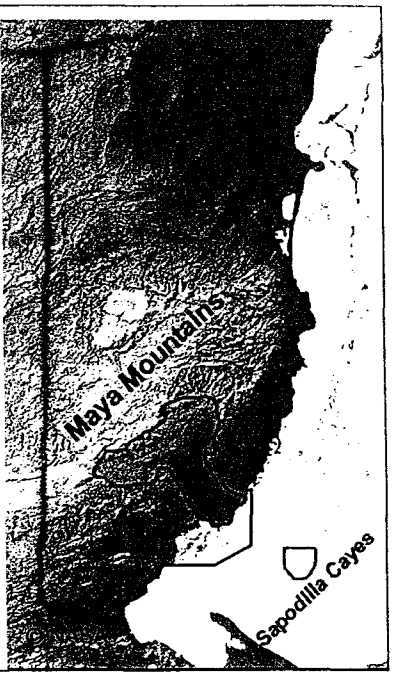
TIDE is currently implementing a freshwater program aimed at preserving the watersheds in the MMMC (Box 7). This project was developed under TNC's Fresh Water Initiative and involves a monitoring, assessments and mitigation of threats to the area's watersheds. So far, the project has involved annual kayak trips along the area's 5 main rivers, where TIDE's freshwater coordinator, community members and University of Belize interns record water quality and map (using GPSs) associated human impacts. In addition, investigations of the banana and shrimp farming practices in the Monkey River watershed were also carried out. Data on pesticides, herbicides and fertilizers, and water quality samples were collected. TIDE's future plans include implementing a riparian management strategy that focuses on education and outreach, riparian zone restoration, and improved livestock management.

In addition, it appears that TIDE rangers were intentionally slow in enforcing the Reserve's gillnet regulations on local fishers, instead spending almost two years trying to educate fishers found violating the ban. They however, confiscated most of the unattended nets found in the PHMR, or those belonging to illegal foreign fishers.

Box 7 – The Maya Mountain Marine Corridor

The MMMC includes nearly a million acres of land and a thousand square miles of sea in Southern Belize; stretching from the Maya Mountains massif to the Belize Barrier Reef. The corridor includes a collection of protected areas, including the Bladen Nature Reserve, Maya Mountain Forest Reserve, Payne's Creek National Park, Port Honduras Marine Reserve and Sapodilla Cayes Marine Reserve. The area is also characterised by a low population density.

The concept of an integrated, watershed approach to conservation in the MMMC was proposed by TIDE and the TNC. Working in partnership, these organisations developed a draft Site Conservation Plan for the MMMAT in 2002. A number of supportive institutions are also working in the area, including the Toledo Watershed Association. While the corridor is not entirely protected, TIDE has focused on developing forest, marine and coastal conservation initiatives (see Box 5).



iii. *What was the role of experimentation?*

TIDE has experimented with a number of interventions (training, net buy-back, scholarship fund) aimed at implementing the gillnet ban, and reducing its socio-economic impact on local fishers. This, along with the use of media outlets (meetings, radio, newsletters and pamphlets) to get the message to the communities were also the result of learning and innovation. TIDE is now diversifying its training programme to include small business development and a variety of tour guiding disciplines.

iv. *Role of memory, novelty, innovation*

Recognising the lack of employment for an increasing population of trained guides, TIDE took steps to develop and market the Reserve as a tourist destination. This took the form of TIDE Tours, which was conceived as an innovative means of providing alternative income to local fishers, and potential funding for TIDE in the long run.

v. *How monitoring informs the project*

Fishers' perceptions of fish stocks and anecdotal reports of manatee slaughter were initially used as justifications for the PHMR's creation. The PHMR's West Indian manatee population has always been used as a measuring stick for TIDE's efforts at managing the Reserve. A small survey was conducted in early 2005, with 8 manatees sighted in the two day period. However, other than the lack of reported harvest, there is no available data on the condition of PHMR's manatee populations.

TIDE also conducted a general baseline study of Port Honduras Marine Reserve in 2003, which was supported by The Oak Foundation and The Nature Conservancy. Following this study, TIDE rangers and scientists implemented a regular monitoring regime that included water testing and the surveys of sea grass meadows, mangroves, benthic reefs, some fish species, lobster and conch.

vi. *Barriers to Community-based Conservation, and how they were overcome*

Community suspicion of TIDE and the proposed PHMR was significant during the early stages of the initiative. Aside from the negative experiences of the communities with previous, mismanaged projects and NGOs, the community felt that their livelihoods were being directly threatened by the PHMR's gillnet ban. TIDE attempted to appease these suspicions through a series of community meetings and outreach initiatives. The organisation argued that the Reserve's creation would lead to significant community benefits, including training and capacity building, increased jobs and income, and small loans to assist fishers in the transition from fishing to guiding. TIDE also arranged for local fishers to visit Marine Reserves and associated tourist areas in other parts of the country to see the potential benefits first hand. With the stage set, TIDE used alternative livelihood training as an entry point in engaging community involvement and support. With the increasing threat of foreign fishers, local fishers were particular receptive to TIDE offer of alternative livelihoods and effective management of the area.

However, fishers still harbour some resentment towards TIDE and the process leading to the PHMR's creation. A lot was said of unfulfilled promises, particularly the lack of the small loan programme promised by TIDE during the Reserve's early stages. This pledge was based on anticipated funding from the Inter-American Development Bank, which eventually fell through. According to TIDE's director, this was due to disagreements over the size of the loans, as well as IDB wanting *"the [local] Bank to manage the funds, and charge the same high interest rates"*. Although TIDE has tried to move away from this issue, the lack of loans is still a sensitive topic for some fishers.

Gaining Government support and buy-in were also major challenges for TIDE. This was overcome through a combination of community advocacy and the affiliation of a large international NGO (TNC) with the project. TIDE lobbied the Government for the declaration of the Reserve through a series of meetings and signature drives (which produced over 500 signatures). In addition, the international recognition given to the initiative by TNC also indirectly put pressure on the Government to create the Reserve and present a positive international picture of Belize's environmental policy. The Government was not pressed much by the Park's creation, since TIDE was taking on most of the management policy and leading local development initiatives. In essence the initiative did a lot for the Government's local and international image, without much actual investment by the State. However, by bringing the Government onboard, TIDE risked the appearance of being co-opted by these larger forces. TIDE has managed this risk well, by keeping their distance from the political process, while at the same time courting Government officials and gaining the State's stamp of approval for most of their initiatives.

Funding has also been a challenge. However, TIDE works hard at maintaining a network of donors, with significant time and effort invested in proposal writing and fund raising.

vii. *Combining knowledge systems to solve problems*

In developing alternative livelihood options, TIDE focused initially on fly-fishing guide training. This initiative facilitated the integration of fishers' existing knowledge and experience on the sea with the specialized knowledge of expert fly-fishers, including casting, fly tying, and catering to customers. By combining these knowledge and skill sets, the training was able to produce community members able to participate in a high income livelihood with very little environmental impact. As such, fly-fishing was not just an alternative income source for the fishers, but it also complemented their existing livelihood.

3.5.c Community benefits from biodiversity conservation and environment improvements

i. *What direct benefits were observed (e.g., improvement in resource base to be further exploited; alternative income sources (e.g., tourism))*

Although quantitative data is currently not available, the reported reduction in the gillnetting would lead to an implicit increase in certain fish species, sea turtles and manatees. Other benefits include direct employment, alternative livelihood training, local organisation and the establishment of direct links between communities, funders, and Government (e.g., Monkey River Tour-guide Association sourcing funding from UNDP to conduct free tour-guide training in the community).

ii. *What indirect benefits were observed (e.g., awards and recognition; publicity; increased funding opportunities for conservation)*

The PHMR and its associated projects have brought TIDE significant national and international recognition.

TIDE's was first recognised in 1999 as the Belize Tourism Board's Environmental Organisation of the Year. They also received The Nature Conservancy Clifford Messinger Award for Achievement in Conservation a year later. In 2002, they were nominated by TNC to the UNDP's Equator Initiative Prize. They were eventually awarded the US $30,000 prize along with 6 other finalists. This money was used in the expansion of the TIDE office building to include a library and a board room, which are both available to most local individuals and organisations upon request. In 2003, TIDE was also selected from several Belizean applicants as a partner in the implementation of a Caribbean Regional Environmental Programme (CREP) Demonstration Site, "*...to serve as a model for how equity between the needs of environmental management and economic development can be gained.*" It was also apparent during the research that TIDE's director and staff actively pursue this recognition, investing significant effort in promoting TIDE and the PHMR both nationally and internationally. Outside recognition and increased visibility seem to be actively pursued by TIDE's Director and staff members. This was apparent from the investment of significant personnel time in public awareness activities targeting both local and international audiences.

3.5.d Livelihood strategies, coping and adapting

i. *How did involvement in the project affect other livelihood pursuits, negatively (e.g., time, resources) or positively (e.g., synergies, increased capital)?*

It was quite apparent that TIDE's training programmes have allowed fishers access to complementary livelihoods and increased income. That said, the ban no doubt had a negative affect on the livelihoods of some long-line and gillnet fishers, particularly those unable to access key TIDE interventions (Figure 4). However, finding these marginalized fishers proved difficult; since most of the former gillnet fishers identified during the study had participated in at least one of TIDE's programmes. A few interviewees also actively resisted participating in training because of unresolved animosity towards the organisation, stemming from the creation of the Reserve. These individuals finally participated in a TIDE fly-fishing workshop towards the end of the research period. Most commercial fishers seem to have readjusted to the net ban, spending more time using their existing collection of fishing techniques.

Others, while trained, argue that they have not been able to access jobs as guides. The reasons given for this were either an inability to afford boats and equipment, or their intimidation by the process of tour-guide certification. Local concerns point to an increasingly important question that needs to be addressed by TIDE; can the local tourism industry accommodate the number of guides being trained?

3.5.e Resilience of communities, livelihoods and management systems

i. Did the project add options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?

Creating alternative livelihood options was the major developmental focus of the initiative. For some fishers, the initiative serves as full or part time employment. However, the initiative's most significant impact has been the furnishing of local fishers with the training necessary to participate in the tourism industry. Training gave local fishers access to a new livelihood, which led to increased income and livelihood security. Tour-guiding taps into global markets and are thus vulnerable to external influences beyond the community level. Also, guiding is a seasonal activity, and is only lucrative during the tourist seasons, which runs from November to May. As a result, many of the fishers continue to fish in the off season, but at a reduced intensity. Therefore, the initiative has added livelihood opportunities for many fishers, while leaving most of their original livelihood activities intact. Also, the gillnet ban implicitly led to a healthier resource base, which increased the potential for the development of more livelihood options in the long run.

On the other hand, the PHMR's creation meant less livelihood options for the commercial fishers not involved in guiding. Without nets they had to rely heavily on less efficient fishing methods, like hand lines and fish traps. The ban has also changed the type of fish harvested, with significant quantities of certain species inaccessible using other gear. It should be noted however, that many local commercial fishers had already shifted their focus to the lucrative, high value lobster fishery, which did not require gillnets. This was in response to both market pressures and the transfer of technology. In the case of Monkey River, this technology "transfer" was precipitated by community mobilization

and serious conflict with illegal fishers (Box 8). All things considered, the project seems to have reduced the vulnerability of many resource users to environmental and socio-economic forces.

ii. *Did the project create learning opportunities (see under learning)?*
Aside for direct training and capacity building, the project also exposed community members to the processes of fund raising and proposal writing. For instance, the interaction between TIDE and individuals from the Monkey River Tour-guide Association led to a successful funding proposal to the UNDP for guide training and tourism infrastructure development in the Monkey River Village.

iii. *Did the project create self-organisation opportunities?*
Since the Reserve's creation there have been a few instances of community-organisation around a shared cause. For instance, when the resort El Pescador opened in 2003, they hired TIDE trained fishers as tour-guides for visiting fly-fishers. These trained local fly-fishing guides got together and agreed on certain terms of their contract with El Pescador, including using locally owner and controlled boats, standard trip prices and a fixed number of guides. TIDE also assisted in a Monkey River community initiative to gain control over nearby forests used by outside tour-guides. With help from TIDE, the Monkey River Tour-guide Association was able to access funds to purchase an area along the Monkey River known to have a high population of Black Howler Monkeys. The area had become a regular stop for trips by tour operators from the town of Placentia, to the north of Monkey River. As a result, tour operators from Placentia will have to pay a user fee and employ a local guide from the community when visiting the area. The Monkey River Tour-guide Association also arranged free tour-guide training in the community, and rents equipment to local guides. The Association is also in the process of developing and marketing a Monkey River tour package. All of these initiatives have been developed with organisational support and technical advice from TIDE.

Box 8 – Conflict and learning: A Monkey River narrative

"I think it was around 1990. The government give permission for a big foreign group to do some lobster fishing with traps, and it was supposed to be outside the reef, but they start fishing inside the reef and start catching a lot. It was taking away lobster from Monkey River fishermen, taking them from the deep before they reach the shallow by our nets. My cousin was a police them times and he come in, and then went to Belize [City] *and find out what de going on. When we contact him, he say that they not supposed to be fishing inside the reef and he say that we could do whatever we want to deal with them. So the fishermen get together and start raiding they traps and clean out* [take] *all the lobsters. Then we start to cut the cables and take away the whole trap. After about 3 or 4 weeks they move. But we done had most of the traps so what they could do? We even fire couple shots at the boat to scare them.*

That is how we first end up with traps. We look at how they work and start building we own. We change it a little bit, make them a little bigger, a little heavier, flat on the bottom so they sit at the bottom [of the sea] *good....We used to set nets for a few years. We see how much damage it was causing. When we set net for lobster we used to catch a lot for about 2 years, then it drop. We realize it was nets destroying all the lobster. With the traps now you didn't need nets anymore, so most of the fishermen in Monkey River start to use the traps."*

Excerpt from interview with Monkey River fisher

3.5.f Lessons from this EI case

i. Which lessons were likely transferable?

Training and capacity building

"That's when [declaration of Reserve] I decide to really get into tour guiding, because it really hard to make a living...you just got to work yourself around it and try to survive. I took kayak training from TIDE, and tour-guide training from Belize Tourism Board"

- Punta Gorda guide, former gillnet fisher

The primary thrust of TIDE's community development programmes is training and capacity building, and has played a major role in the PHMR's achievements to date. For instance, former gillnet fishers are now earning significantly more as tour-guides, and have actually become advocates for conservation and the PHMR in their respective community. In addition, TIDE's Rangers (all former fishers) continue to benefit from training exercises like law enforcement, SCUBA and coral identification, to name a few. This knowledge and skills were very practical from the Ranger's perspective, and complemented their existing "knowledge of the land".

It would seem that the training has contributed to more effective monitoring and enforcement by both the Rangers, and tour-guides at the community level. As a result, the Reserve is in very capable hands and benefits in the long run. Involvement with the project has also increased some community members' understanding of the management and funding process, increasing their capacity to self-organise and, in the Monkey River case, undertake their own initiatives.

Complementary livelihoods as an entry point

"I used to shoot gibnot (local bird) and get a $20. Now you can leave that same gibnot and take people to see it and you get $200. No sense shooting them now when you can make your little money."

- Punta Gorda guide, former gillnet fisher

In pursuing livelihood alternatives, TIDE initially focused exclusively on training gillnet fishers to be sports-fishing guides. This turned out to be a very important entry point in gaining the fishers support for the Reserve. This was because sports-fishing did not represent a major departure from their primary livelihood, thereby allowing them to stay on the water and use their pre-existing knowledge and expertise. Only now they had an additional fishing technique that gave them access to a totally new industry. This demonstrates the importance of focusing on complementary livelihoods, rather than just alternative ones when developing training programmes. These complementary livelihoods can serve as a fairly effective entry point in generating community support for Protected Area's, particularly in cases where traditional livelihoods are restricted.

Managing community expectations

"At first we agree because of what they paint in front of you, but after it was something completely different..."

- Caye fisher

"The training is not the solution, the solution is if you can find a job"

- Monkey River fisher

Early in TIDE's drive to get the PHMR declared, it made a number of commitments to local communities. Most of these commitments related to loan provisions, job creation and income generation. Although job creation and income generation have occurred, some fishers have been left out. The promised loan program also never materialised, with some trained fishers unable to finance their transition to guiding. Understandably, these individuals are still very vocal critics of PHMR and TIDE.

It is important that TIDE recognises the market limits in its training approach to community development. TIDE has begin to diversify its training program, but issues of trainees needing initial capital to get certified and equip themselves as guides still persist. This lesson is critical when engaging communities in discussions of potential benefits to conservation and development. Project personnel should be careful to paint a realistic picture of what benefits communities can expect, because they will be held to their promises. Unfulfilled promises can isolate communities and quickly turn local support into animosity.

Collaborative institutions and mechanisms

It's good that they have the [Advisory] Committee to include the people, but they still could do more

- Punta Gorda guide, former gillnet fisher

A number of stakeholder groups have been incorporated into TIDE's institutional and management structures. These structures are intended to oversee the organisation's initiatives and represent the interests of local stakeholders. These Advisory committees are made up of everyone from TIDE personnel, to government representatives, to community fisher and tour-guide groups.

It is not clear how much decision-making power is vested in these groups. Many interviewees complained of poor communication between TIDE and communities. They argue that TIDE personnel should facilitate more in-community meetings to facilitate direct feedback. However those involved in the committee are pleased that there is a formal forum where local representatives can voice their concerns about the management of the Reserves. Although TIDE has some ways to go in achieving true collaborative decision-making, they have begun to actively engage local stakeholders through these Committees, and thus generate critical community support for the Reserve and TIDE in general. This support is critical to any genuine attempt at community-based conservation or protected areas management.

Marketing and enterprise development

"We work on contract with TIDE Tours...it brings in work, although they could do more"

- Punta Gorda guide, former gillnet fisher

Developing alternative and sustainable livelihoods depends largely on the presence of supportive markets, and the ability of resource users to access those markets. In this case, the tourism market was well established in Belize, but was concentrated in other high profile and well marketed regions of the country. During the early stages of the PHMR, guiding was therefore not a feasible option for most local fishers.

TIDE's approach to linking its alternative livelihood program with accessible tourist markets was the establishment of the for-profit TIDE Tours. Along with other groups, TIDE Tours played a key role in establishing tour-guiding as viable livelihood for local fishers, and contributed significantly to tourism development in the region. The organisation was able to bridge vastly different scales by packaging and marketing local tours at the national and international level. Following TIDE's lead, other local tour operators and resorts have also begun contracting the services of trained, local guides. TIDE Tours has even gone so far as to compile a database of local restaurants, transportation and certified guides for the use of tourists, and tour operators. Once it has achieved financial self-sustainability, Tide Tours can also potentially contribute funding to TIDE and its sub-projects. TIDE Tours can thus be used as a model institution for similar efforts in developing countries with poor tourism infrastructure and market links.

It is important to note that market dynamics can also be the undoing of many enterprise-based conservation projects. Firstly, access to global tourism markets can be impacted by forces outside the control of local-level organisations (for example, travel warnings, a bad historical reputation or low demand for product). Even established tourism markets can be notoriously unpredictable, as TIDE Tours experienced firsthand following the World Trade Center attacks. Although tourism presents significant development potential in many cases, relying too heavily on this industry can put community-based initiatives and local communities at the mercy of unpredictable global market forces, and thus significantly increase their vulnerability.

Government and the transfer of management jurisdiction

"I think [it is important] meeting [and] establishing, not only foreign donors, but like people in Government, because at the end of the day is Government run things. They are the bosses of the natural resources. So you have to make sure that you maintain that balance, meeting with the relevant government agencies that will support you."

- TIDE's Director

In managing natural resources, jurisdictional boundaries should to be aligned as close to the geographical distribution of the resource as possible. In Belize's case, the Government seems aware of its financial constraints and has accommodated many co-management arrangements in its Protected Area system. Tourism is big business in Belize, and the Government is supportive, at least vocally, of community-based ecotourism initiatives. They however, lack the resources required to truly co-manage their protected areas. TIDE took advantage of these conditions to effectively lobby the Government for the Reserve's creation. They completed a management plan for the PHMR and were able to source funding to fulfil most of the plan's requirements under the management plan. They also met with local and national representatives and ministers to push their cause. This was reinforced by community meetings that led to letter writing campaigns and signature drives supporting the Reserve's creation. It is fair to say that the link between TIDE and the TNC, a powerful international group, contributed to the lobbing effort. In the end, this multifaceted approach to acquiring Government support was extremely effective. TIDE has also approached its relationship with Government cautiously, ensuring that they maintain State approval, while at the distancing themselves enough to preserve their independence in the eyes of the community.

Community-based monitoring and enforcement

"The rangers themselves used to do it [net fishing], so they know the operation.
- PHMR Ranger, former gillnet fisher.

"If I stop commercial fishing, they will have more product to show the tourists, and that will be a benefit to me, and to the area, and the country. Several guides have picked up net when they out there"
- Caye guide and former gillnet fisher.

Community members have been brought into the management process primarily through the Advisory Committees, as rangers and as tour-guides. Outreach and awareness campaigns also generated support among fishers and community members in general. Of particular note was the initial focus of TIDE rangers on educating fishers found using gillnets rather than confiscation and prosecution.

As potential beneficiaries in the PHMR and the linked tourism industry, many community members have become more involved, both formally and informally, in the monitoring of the Reserve. For instance, on two occasions I observed community members (always tour-guides) calling into the TIDE offices to report gillnets in the Reserve. From other accounts it appears that this local level monitoring and social enforcement has increased since community fishers began working as guides. With their livelihoods increasingly dependent on the health of the PHMR, the broader community also seems to have developed a sense of ownership towards the Reserve, even if they do not always agree with management interventions.

There is also growing tension between fishers and sports fishing guides. Both sides see each other's activities as potential threatening to their respective livelihoods. There has thus been some animosity expressed between fishers and tour-guides in particular communities. However, as the ranks of local tour-guides increase, this animosity is giving way to cooption, with former anti-TIDE/anti-PHMR fishers coming on board and pursuing guide training opportunities.

Tackling cross-scale tensions

"... there was a big delay [in enforcing the gillnet ban], in fact we were getting hassled by the international NGOs. But at the end of the day I'm always telling people, I am from this stock of people... so I can't go against them, we have to make the change together."

- TIDE's Director

In order to achieve its objectives, TIDE has had to act as a linkage institution, bringing together different actors at multiple scales of organisation. This is particularly challenging, with actors at each scale having different objectives and constituencies. To compound the challenge, many PHMR initiatives attempt to integrate conservation and development, which is often seen as a dichotomy by actors on both sides of the fence. In TIDE's case, most of its funding comes from environmental groups at the international scale, with conservation as their primary objective. At the other end of the spectrum lies the community, with job creation and livelihood security higher on their agenda.

TIDE has been fairly effective at manoeuvring in this menagerie of scales. On one hand, they have been able to satisfy the conservation needs of their international funders by implementing the gillnet ban and reducing the intensity of commercial fishing in the area. At the same time, they have begun to address the community's local development needs by providing training and high-income livelihood alternatives for some fishers and local residents. All projects attempting integrated conservation and development have to make compromises between the two at some point, particularly when most of your funding comes from outside donors. For instance, TIDE may have to emphasise specific sub-projects, particularly those focused on conservation, when marketing themselves to foreign donors. Although TIDE does appear to be more conservation focused, they still seem to fairly effective in presenting local needs to an international audience, and balancing their conservation and development objectives.

ii. Which lessons were not transferable?

Outside threats encouraging community support

"The reserve and what TIDE is doing is a good thing. Before, you used to get a lot of 'alien' fishing in them areas, and they traveling long distance, so they got to make back they money. So when they come they catch out everything; small conch, lobster, fish, even out of season. Everything was getting scarce. Now qith TIDE and the patrols, things start to come back. Even if people still netting little bit, it not enough like before to done out everything."

- Punta Gorda guide, former gillnet fisher

Being able to gain and maintain community support for protected areas is challenging to say the least, particularly if it involves livelihood restrictions like PHMR's gillnet ban. TIDE has employed a number of previously mentioned approaches in its efforts to gain community support for PHMR. However, the threat of illegal fishing by foreign nationals (most using nets) meant that fishers were more receptive to the Reserve than would have otherwise been. Although not pleased with the PHMR's restrictions, many community members have accepted it as a means of keeping foreign fishers out and increasing their livelihood security.

Social conditions

"Like, now, if we see somebody taking 10 conch, we would take out our 10, otherwise he would take out 20. If we had these alternatives, we would say 'Hi, you can't take out these conch!'"

- Punta Negra guide, former gillnet fisher.

Most of the communities surrounding the Reserve are small, with kinship and informal relationships affecting behaviours and local activities. The size and close-knit nature of these communities makes it easy for rangers and tour-guides to participate in informal and in-situ education and awareness campaigns. This has led to the aforementioned increase in community-level monitoring and social pressure to adhere to the ban.

Charismatic and committed individuals

"Wil [TIDE's Director]used to take us out on trips...use the time to talk to us. It's just the way he talk to you, you feel like you could do it. I thank Wil for that attitude, it rubs off."

- Punta Gorda fly-fishing guide, former net fisher

TIDE's institutions and management structures seem to consist largely of very committed leaders and community members. This commitment was apparent in the time spent writing grant proposals, taking donors and Government officials on tours of the Reserve, speaking with community members, and trying to increase TIDE's both nationally and internationally. Aside from TIDE's core

personnel, many influential community members believe in tourism as a mechanism for local development, and see the link between tourism and conservation. They have thus become integral in generating community support for both the PHMR and TIDE as a whole. Above all, most of the main local actors seemed to genuinely believe in community-based conservation and appear committed to local involvement. Unfortunately, commitment and charisma are usually non-transferable resources.

Strong primary partnerships

"People that really came through with money were people like the Program for Belize, then TNC and USAID, those are the big three and then through the TNC we tapped into other foundations and donor agencies. We went to them and said 'What are we going to provide for these community people? We want to tell them to stop using nets but what are we going to give them?' So then TNC and USAID said 'Well, we got to look for ways and means of (doing that).'"

- TIDE's Director

Strong and committed partners played a key role in both the creation of TIDE and the development of the PHMR. The Nature Conservancy in particular has served as TIDE's primary partner since its establishment. The commitment of TNC Local to TIDE's initiatives over the years has given TIDE the space and time to grow into its own, without the constant risk of financial collapse. The partnership has also meant extensive technical and organisational support, along with the creation of links with other support organisations and funding sources. TNC Local's presence no doubt also lent some weight in building the relationship between TIDE's and the Government.

Although TNC Local's role has declined over the years, its contribution to the early development of TIDE and the Reserve has been instrumental in TIDE's achievements to date. This kind of partnership and support seems critical in developing successful community-based conservation initiatives.

The right ingredients at the right time

"Is a whole set of things really"

- TIDE's Director

The conditions that have facilitated the growth and development of TIDE and the PHMR can not be seen as a series of separate lessons. They represent a series of events, interventions, learning cycles and innovations all framed by the context of local conditions. Many of the successful aspects of the initiative depended largely on the people involved, the policy environment, and the sequence in which projects were developed and implemented. In other instances it depended largely on the intervention of an outside group at an opportune time, as was the case with funding from the Long Island TNC Chapter. It is within these complex, and highly contextual, series of events that many of the initiative's successes lie.

As with natural systems, these projects have properties that only emerge as time goes on, and in these emergent properties may rest the answers to the question "What makes community-based conservation work?" Although this report outlines very relevant lessons learned from the project, determining what exactly "made the project work" takes on the ground experience with years of mistakes and learning. What TIDE and the PHMR does demonstrate, however, is that the potential benefits of community-based conservation are worth both the time, and the mistakes. As a guide and former gillnet fisher from Punta Negra put it "*We can't forget about the community, because this is what it is about. They need to get real alternatives, they need to own it.*"

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Appendix – Timeline of events leading up to creation of TIDE and declaration of the PHMR

Date	Event
1990	Critical Habitat Study of Port Honduras Basin conducted by Belize Center for Environmental Studies (BCES).
May 1993	Rapid Ecological Assessment (REA) conducted by BCES, funded by Environmental Project for Central America (PACA).
1994	Second REA conducted.
1994	Designation of the Proposed Port Honduras Marine Reserve by the Fisheries Department (1st formal step towards establishment of a marine reserve). Fisheries Department mandates BCES to prepare draft management plan.
1996	BCES conducts a series of community meetings in Punta Gorda, Punta Negra, and Monkey River. Columbia University Branch of Center for Environmental Research and Conservation (CERC) offers to fund the proposed Port Honduras Marine Reserve. Plans never materialize due to BCES' collapse.
Jan. 1997	BCES defunct (first draft of management plan completed).
Sep. 1997	TIDE formed by former BCES consultant. Work resumes on formalizing draft of management plan. TIDE offers local fishers courses in fly-fishing, sea kayaking, birding, and natural history. More than 40 locals participated and received certification.
Feb. 1998	TIDE invited 24 fishers to visit several existing national marine protected areas.
May 1998	TIDE carries out community meetings in Punta Gorda, Punta Negra, and Monkey River.
Jun. 1998	Management submitted to Fisheries Department.
Oct. 13, 1998	24 fishers from of Punta Negra send letter to Minster of Natural Agriculture and Fisheries with intention of speeding Reserve declaration process.
Nov. 4, 1998	Letter from Mayor of Punta Gorda to Minister of Agriculture and Fisheries announcing support for the Port Honduras Marine Reserve and TIDE. Calls for facilitation of the process of officially declaring the Marine Reserve.
Nov. 20, 1998	Letter from President of Golden Stream Corridor Preserve to Minster of Agriculture and Fisheries, announcing support for TIDE's achievements concerning the Port Honduras Marine Protected Area.
Mar. 1, 1999	Chairman of TIDE's Board of Director sends letter to the Minister of Agriculture and Fisheries requesting emergency meeting on the Port Honduras Marine Reserve. Concerns raised regarding "a *small, but vocal group of opponents to this Reserve in Toledo. They are using Government inaction on the legislation as a 'proof' that there are broader national concerns regarding it that have not been fully share with Toledo residents."*

Mid 1999	Deputy Prime Minister and Minister of Natural Resources and the Environment, Minister of Tourism, and Minister of Rural Development and Culture all advocate the establishment of the Reserve. Chairman of the Toledo coastal communities and Mayor of Punta Gorda and the Coastal Management Authority reaffirm support for Reserve.
Nov. 1999	Evidence allegedly surfaces that the Area Representative paid people in Forest Home, Elridge, and Punta Gorda communities to spread false rumours about the Reserve; and increase local opposition.
Jan. 25, 2000	Official declaration of Port Honduras Marine Reserve.
Jan. 2000	PHMR Advisory Committee formed. Memorandum of understanding with Government drafted (not signed).
Mar. 2000	Chairman of Southern Fisherman's Cooperative and other fishers collected over 500 signatures from community members in support of Reserve declaration and TIDE's management.
Jun. 2000	Three Rangers hired for PHMR.

Lessons from the Equator Initiative: Community-based management by Pred Nai Community Forestry Group in the mangroves of Southeastern Thailand

Jason Senyk

December 2005

Joint Project with the
International Development Research Centre (IDRC)
And the
United Nations Development Programme (UNDP)
Equator Initiative
(www.equatorinitiative.org)

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List of Acronyms and Abbreviations

APEC:	Asia-Pacific Economic Cooperation
CODI:	Community Organization Development Institute
DMCR:	Department of Marine and Coastal Resources
CCRMN:	Community Coastal Resource Management Network
GEF:	Global Environment Facility
PAR:	Participatory Action Research
PNCFG:	Pred Nai Community Forestry Group
RECOFTC:	Regional Community Forestry Training Center for Asia and the Pacific
RFD:	Royal Forest Department
SGP-PTF:	Small Grants Programme for Operations to Promote Tropical Forests
SIF:	Social Investment Fund
TEK:	Traditional Ecological Knowledge
TRF:	Thailand Research Fund
UNDP:	United Nations Development Programme

Chapter 1: Introduction

1.1 Background

The problems of ecological degradation and poor economic development have generally been dealt with separately as two unrelated issues. Conventional thinking from within both the conservation and development perspectives view the two goals as antagonistic. Conservationists have seen development as a threat to conservation while the development perspective viewed conservation as an obstacle to development (Brown, 2002). As a result of this thinking, ecological degradation was commonly dealt with by conservation organizations and governments through the creation of protected areas which excluded local resource users. These top-down, government implemented initiatives have enjoyed limited success (Agrawal & Gibson, 1999; Dietz et al., 2003). On the other hand, common approaches towards economic development also involved large-scale, top-down approaches by national governments and international development organizations. In general, these initiative have met with minimal success as they have failed to take into account economic, ecological and social realities within communities and/or failed to meet the needs and desires of the people that they purported to assist.

Conventional approaches to economic development and ecological conservation hold numerous characteristics in common. First, they are top-down. This means that the projects are designed and initiated by higher levels of government or international organizations and then implemented within local communities, usually without consultation and with little consideration of local circumstances. This contributes to the second characteristic, the exclusionary nature of these projects. They are exclusionary because they are prescriptive and fail to recognize the needs and priorities of community members who are supposed to benefit from development.

The limited success of these "top down" initiatives has led to the implementation, in recent decades, of completely new approaches to development. Chief among these is the strategy known as community-based resource management (Brown, 2003a; Brosius et al., 1998). Rather than taking a top-down, mechanistic approach to addressing the problems in the developing world, community-based resource management is participatory in nature and takes a more holistic, integrative approach to the problems facing communities (Berkes, 2004). Community-based management can be considered holistic and integrative because it is generally designed with multiple objectives, dealing with the numerous problems which the community in question may be facing and often adapting and changing over time. This is opposed to top-down approaches which tend to be designed with very specific objectives, which sometimes conflicts with the interests of the community. The holistic, integrative nature of these projects comes about largely because they are participatory, and the goals and objectives are, therefore, defined by the very people who are faced with the consequences of poverty and ecological degradation (Brosius et al., 1998). Community-based management can be seen as a form of management which is flexible, adaptive and

responsive to the needs of the community. In other words, community-based resource management projects have the capacity to simultaneously deal with the multiple objectives of community economic development, and the conservation/ sustainable use of natural resources.

In 2002, the United Nations Development Programme (UNDP) held the first round of Equator Initiative Awards. The Equator Initiative recognizes the fact that the tropical region of the earth holds the Earth's greatest resources of biodiversity and also many of the world's poorest nations (UNDP, 2004). As a result the biennial Equator Initiative award was designed to reward community level development programs which are successful in conserving biodiversity and at the same time alleviating poverty and generating sustainable livelihoods. Thus the two cycles of the award, 2002 and 2004, have each provided numerous examples of community-based management and conservation programs which were successful in both conserving biodiversity and providing sustainable livelihoods for their community (Koziell & McNeill, 2002).

1.2 Purpose

The overall purpose of this research was to study a successful example of community-based resource management and learn about the institutional and organizational characteristics, and the cross-scale linkages that contributed to the success of the project.

As one of the 27 finalists in the United Nations Development Programme 2004 Equator Initiative awards (UNDP, 2004), the Pred Nai Community Forestry Group in Thailand may be considered an example of a successful community-based resource management initiative. Since successful cases are uncommon (Songorwa, 1999; Barret, 2000; Kellert et al., 2000), the Pred Nai Community Forestry Group is of great interest, in order to learn what makes it possible to fulfill the dual objectives of generating sustainable livelihoods while conserving biodiversity.

1.3 Objectives

In order to learn lessons from this successful community-based management program the research efforts focused on analysis of three key elements of the institutional and organizational framework of this project. The three research objectives which fulfill the overall purpose of this research are:

1. To examine the role of self-organization within the Pred Nai Community Forestry Group.
2. To examine the cross-scale institutional linkages of the Pred Nai Community Forestry Group
3. To examine how local ecological knowledge is utilized within the project.

First, research focused on understanding the self-organizational aspects of the Pred Nai Community Forestry Group. Self-organization is a measure of the degree to which a complex system (ecological or social) is able to organize and

influence its own structure and characteristics (Holling et al., 2002). Leadership within the community was also examined as it is often an important factor in self-organization (Olsson et al., 2004).

Second, this research examined the cross-scale institutional linkages present in the Pred Nai Community Forestry Group. Cross-scale linkages consist of both vertical (across levels of organization) and horizontal (across space) linkages. Vertical linkages are present in community-based management because the community does not exist in an institutional vacuum; local institutions and authorities will interact with those that exist at other levels of authority including district, state and national levels. Linkages across institutional levels are important because effective resource management cannot be conducted at only one scale (Ostrom et al., 2002). The involvement of multiple levels of authority, therefore, allows for utilization of the competencies of specific institutional levels while mitigating their weaknesses through the inter-connectivity of different agencies (Pomeroy & Berkes, 1997). Horizontal linkages are concerned primarily with the linkages and connections across space, largely between communities.

Third, the role of local ecological knowledge, its use, and integration with conventional scientific knowledge was examined in this project. There is growing recognition in the academic literature that local and traditional ecological knowledge holds the potential to contribute to natural resource management and conservation (Smith & Berkes, 1993; Berkes et al., 2000; Striplen & DeWeerdt, 2002; Berkes & Folke, 2002). This research documents the manner and mechanisms by which local ecological knowledge was utilized in this project and how it was reconciled with conventional scientific knowledge.

1.4 Methods

This research was conducted within the qualitative paradigm as a single-case, case study. The research questions were explored principally through collection of primary data sources. In order to collect the necessary primary data, the researcher spent approximately four months in Thailand; about half in the village of Pred Nai itself, collecting and verifying the necessary data. A translator from a nearby university was employed in order to enable the researcher to communicate with local people effectively. Interviews were the primary means of data collection and they were conducted with villagers and local leaders involved in the Pred Nai Forestry Group, government personnel and other key people involved at various organizational levels. Participant observation in the daily life and livelihood activities of villagers was employed by the researcher in order to gain a better understanding of issues from villagers' perspectives. A number of workshops and one-on-one sessions were also conducted with key informants in order to probe questions further, confirm data and diagram the involvement of outside agencies.

1.5 Study Area: Pred Nai Community Forestry Group

The Pred Nai Community Forestry Group is a community-based natural resource management program begun by villagers in the mangrove forests of eastern Thailand near the Cambodian border (UNDP, 2004). Villagers initiated the project in 1986 in response to resource extraction activities of logging and intensive shrimp aquaculture the wake of the logging activities. These extractive industries run by outside business interests offered little in the way of economic benefit for local people. More importantly, these activities destroyed and degraded the mangrove forest environment, and prevented the villagers from gaining access to the mangrove forests which they had long used. The villagers responded by forming a group in order to put a stop to the logging and intensive shrimp aquaculture and thereby re-established their use of the mangrove forest. The villagers' informal efforts have since developed into a successful community-based resource management organization and have expanded their program through networking with other local villages.

The Pred Nai Community Forestry Group has been working towards the sustainable use and restoration of the local mangrove forest. The principal means that they have used include the development of a forest management plan and restoration of formerly logged and degraded areas. The restoration of mangrove forest areas is vitally important as studies have shown that Thailand has lost nearly half of its mangrove forests in the preceding three decades (Barbier, 2000; Huitric et al., 2002). In addition to stopping the loss of existing biodiversity, their efforts have also resulted in the return of many formerly displaced native fauna, including species of wetland birds and monkeys.

Their conservation efforts have also had a direct impact on alleviating poverty and facilitating local economic development. This has come about through the restoration and improvement of yields in the local crab harvest, the development of mud crab farming in former shrimp farms, the utilization of non-timber forest products from the mangroves, and the establishment of a village savings fund to assist with social and economic development initiatives. The restoration and conservation of mangrove forests also improves the long-term sustainability of the villagers' economic activities.

1.6 Study Limitations

As previously stated, the purpose of this study was to learn about the organizational and institutional framework in place and how it contributed to the success of the project. This research will, therefore, proceed under the assumption that this project is successful, and as such, no attempt will be made to evaluate or assess the success of the Pred Nai Community Forestry Group in any manner.

Organizational and institutional structures in community-based management tend to be flexible and dynamic. This research, however, was conducted over a relatively short period of time. As a consequence, the results from this research must be recognized as a "snapshot" in time resulting from the context and conditions occurring within the study area during the duration of the research.

Due to the nature of the information sought, this research has been designed to utilize a participatory approach to data collection. Since community participation is crucial to the nature of this study any real or perceived cultural barriers may hinder data collection. In addition, language barriers necessitated the use of a translator which limited, to some degree, the depth and breadth of questioning possible and increased the chance of miscommunication of meaning.

Chapter 2: Situational Context and Background

2.1 Theoretical Background

2.1.1 Community-based Management

An increasingly common approach to socio-economic development and conservation in many parts of the world is community-based resource management and conservation. Community-based natural resource management, however, is somewhat difficult to define precisely. By its very nature, community-based resource management is dynamic and its form and function will often differ greatly in each community depending on the site and situation of the community in question. There are, however, challenges inherent to a community-based approach. Brown (2003a) identified three challenges to people-centred conservation efforts: (1) to incorporate the different understandings, meanings and values that stakeholders have in regards to biodiversity, the environment and nature; (2) to incorporate the plural knowledge, values and interests of the stakeholders into the decision making process and; (3) to develop new institutions for conservation and development which are more flexible and adaptive than existing institutions.

There is some debate currently underway in academic circles about whether or not community-based conservation/management actually works to meet conservation and development goals (Barrett, 2001; Kellert et al., 2000). Berkes (2004; p. 624) submits the following to the debate:

> *Asking whether community-based conservation works is the wrong question. Sometimes it does, sometimes it does not. Rather, it is more important to learn about the conditions under which it does or does not work.*

Berkes (2004) also points out that there are a number of interdisciplinary research subfields; such as: common property, traditional ecological knowledge (TEK), environmental ethics, political ecology, environmental history and ecological economics; which have made contributions towards understanding the conditions under which community-based conservation/management works. These research subfields have yielded lessons for community-based conservation, including: the importance of cross-scale conservation, adaptive co-management, the question of incentives and multiple stakeholders, use of traditional ecological knowledge, and developing a cross-cultural conservation ethic.

There is growing recognition that community-based management holds the potential to function as a form of adaptive management (Olsson et al, 2004; Berkes, 2002; Berkes et al, 2000). Within a community-based management setting, management authority is nested within the community and there is less organizational distance, or barriers, between those who are directly connected to the resource and those with decision-making power. Thus, within a community-based management program monitoring, learning, and adaptation can more easily

be integrated into the management system. Adaptive management is an iterative approach to management, based upon learning from both successful and unsuccessful policy approaches (Berkes et al., 2000; Berkes, 2002). Whereas many conventional forms of resource management have focused upon making natural systems more predictable and reliable; adaptive management is flexible, accepts uncertainty, and focuses on learning about the system, as opposed to controlling it (Berkes, 2002). An adaptive approach to management focuses not only on understanding natural systems but also on the social systems which relate to resource management (Olsson et al, 2004). This leads to a more dynamic and responsive institutional and organizational framework.

2.1.2 Self-Organization

Self-organization is a measure of the degree to which a complex system (ecological or social) is able to organize and influence its own structure and characteristics (Holling et al., 2002). Thus self-organization in this sense refers to the ability of the community in question to organize and implement institutions regarding access and utilization of the local common-property resources. Leadership within the community is also an important factor within self-organization (Olsson et al., 2004), as leaders are usually required to mobilize the grassroots support and provide coherence and direction in community-based management or conservation efforts.

2.1.3 Cross-scale Institutional Linkages

The concept of cross-scale institutional linkages refers to the connections present between institutions both horizontally and vertically (Berkes, 2004). Horizontal linkages refer to connections between institutions across space, for example, the networking and cooperation of fishing villages along a section of coastline. Vertical linkages refer to the connections which occur between institutions across levels of organization, for example multiple connections may exist between different organizations at the village, state, national and international level.

Cross-scale institutional linkages are important because there is, in most cases, a misfit between institutions and the ecosystems which they attempt to manage (Brown, 2003b). Government run top-down, command and control approaches to manage natural resources in developing nations have failed (Agrawal & Gibson, 1999; Dietz et al., 2003). Conversely, complete devolution of power and authority to communities has also proven inadequate for management. When management becomes too decentralized connections between adjacent communities may be lost (Berkes, 2002), and local resource institutions may not have the capacity to deal with all facets of resource management effectively; such as formal rules and legislation, or research. The fact that community-based natural resource management initiatives have met with mixed results bears this out (Berkes, 2004; Barrett et al., 2001; Smith & Berkes, 1993). The failure of both top-down and strict community level management indicates that effective management of natural resources cannot be accomplished by management operating only at one scale (Berkes, 2002; Folke et al., 1998).

The reason for this apparently confounding situation is that environmental and resource management issues are not large-scale or small-scale, but rather act across multiple scales, in terms of both space and time (Folke et al., 1998; Berkes, 2002). As a result, management of these resources needs to be undertaken, simultaneously at different levels (Folke et al., 1998; Berkes, 2002). When management is undertaken at multiple scales it allows for the utilization of the strengths of various levels, while minimizing the weaknesses present at other levels (Pomeroy & Berkes, 1997). For example, the local level is more in touch with the resource base in question, allowing for closer monitoring of feedbacks; while the state or federal levels have the technical capacity and funding needed for advanced scientific research.

There is potential that the tighter connections resulting from cross-scale linkages may result in a gradual shift of power away from the original institutions. Within the context of community-based management, the community itself acts as both the operative level in which most management activities are conducted; and as the foundation for management authority. Although community-based resource management holds great promise to achieve both conservation and socioeconomic development, it is also true that "community-based resource management systems cannot be revitalized in isolation... it will require the development of legal, administrative and institutional arrangements for defining legal status, rights and authorities" (Pomeroy, 1995, p. 149). Cross-scale institutional linkages are thus an important enabling conditions for community-based resource management.

2.1.4 Sustainable Livelihoods & Biodiversity

As poverty alleviation is one of the two objectives of the equator initiative awards it is important to place both poverty and livelihoods within the context of the relevant literature. Poverty is defined as a lack of physical necessities, income, and assets; and is often related to other facets of deprivation including isolation, vulnerability, powerlessness and physical weakness, making it more than just income deficiency (Chambers, 1995). Chambers (1995) also points out that it is important to recognize that the subjects of poverty and those who are studying their situation may have very different conceptions of poverty. As a result, during fieldwork and analysis it is important to consider poverty in terms of the local reality and locally perceived deprivations, not only those perceived from an outsider's reductionist and often narrow vantage point (Chambers, 1997; Chambers, 1995).

Scoones (1998, p. 5) defines a livelihood as follows: "*A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living.*" Scoones (1998, p. 5) continues on to define sustainable livelihoods: "*A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base.*" Sustainable livelihoods are

often an important socioeconomic goal of community-based resource management.

It is important to recognize that a livelihood, especially in developing nations, means much more than just financial income (Chambers, 1995; Scoones, 1998). Livelihoods in the developing world very often consist of the use of products, services, and land from locally available natural areas (Salafsky & Wollenberg, 2000; Scoones, 1998). This understanding of livelihoods allows for the recognition of the fundamental linkages between the social and ecological systems. The linkages present between livelihoods and the ecological system which supports them requires, in order for a livelihood to be sustainable, that the natural resource base which forms a key part of the livelihood must be utilized and harvested in a manner which is sustainable.

In order to link sustainable livelihoods with conservation objectives, Salafsky & Wollenberg (2000, p. 1423) developed a conceptual model which includes three categories: *(1) No linkage between livelihoods and conservation: protected areas; (2) Indirectly linking livelihoods and conservation: economic substitution; (3) Directly linking livelihoods and conservation: linked incentives for conservation.* The research, which this proposal is concerned with, falls within the third classification, directly linked livelihoods and conservation, since the local villagers livelihoods depend largely on the products and services which they obtain from the local mangrove forest.

The United Nations Convention on Biological Diversity defines biological diversity as a measure of "the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; including diversity within species, between species and of ecosystems." (UNEP, 1992). Biodiversity is important in its own right, as it is indicative of the integrity and natural functioning of ecosystems.

From an urbanized, wealthy or western perspective it may be quite difficult to conceive of any direct or consequential linkages between biodiversity and sustainable livelihoods. The fact is that many people, especially the poor in developing nations, depend directly upon the ecosystem and the diversity of life and services that it offers in order to meet their basic needs (Salafsky & Wollenberg, 2000).

Biodiversity is fundamental to the maintenance and promotion of human livelihoods, either directly or indirectly. For the rural poor in developing countries the linkage between biodiversity and livelihoods is direct as all or a significant portion of their livelihoods are derived from the harvest or utilization of ecosystem products and services. The loss of biodiversity, therefore, has a direct negative impact upon livelihoods.

Loss of biodiversity also directly lowers the resilience of ecosystems, endangering the stability of the ecosystem as a whole and resulting in the loss of security of livelihood activities. The loss of biodiversity also reduces the number of potential livelihood options available to local people, making them more dependent upon their remaining livelihood activities. By increasing their dependence upon a smaller pool of resources the social system is also less resilient and stable.

People must, necessarily, look after the survival needs of themselves and their families. It is, therefore, important that the livelihoods of local people are given importance in planning resource management programs. Natural resource management programs which explicitly recognize the needs of local people and work towards livelihood based goals can improve both the participation and compliance of local people within a resource management plan. In other words, livelihood issues may act as a primary motivator for local people to participate in community-based management and thereby move towards sustainability and conservation (Marschke & Berkes, 2005).

2.2 Pred Nai Community Forestry Group

The village of Ban Pred Nai is located in section 2, Hung Nam Khao sub-district, Muang district, Trat Province, near the Cambodian border in Southeast Thailand (see **Figure 1**). As of 2004, the village was home to approximately 560 people from approximately 130 households (Kaewmahanin, 2004). Nearly all of the residents are ethnic Thai and follow the buddhist faith.

The village of Ban Pred Nai is located at the base of a peninsula which extends south from the mainland into the Gulf of Thailand. **Figure 2** clearly illustrates the 1920 hectares of mangrove forest, one of the largest contiguous blocks on Thailand's Eastern Seaboard, visible to the west of the village of Ban Pred Nai. The mangrove forest near Pred Nai, moving from lowest to highest elevation, follows a general profile of areas dominated by *Avicennia* sp., *Rhizophora* sp., and in the highest elevations *Bruguiera* sp. Land-use in the region also follows a profile based on elevation and distance from the sea. Moving up from the mangrove forest in the inter-tidal zone, one encounters fish farms, followed by houses mixed in amongst fruit gardens. The highest elevations are occupied by a mix of fruit gardens and rubber plantations. Similar to the rest of the country the region has a tropical climate; hot and humid with a monsoon season typically lasting from May to October.

The village was founded over one hundred years ago by approximately 10 families and has grown largely from natural, internal growth. The mangrove forest near the community has been managed by the government, through the Royal Forest Department (RFD), as a reserve forest with some small-scale commercial logging carried out. In the mid 1980s corporations intensified their harvest of trees from the mangroves and began constructing shrimp aquaculture ponds in the wake of the destruction.

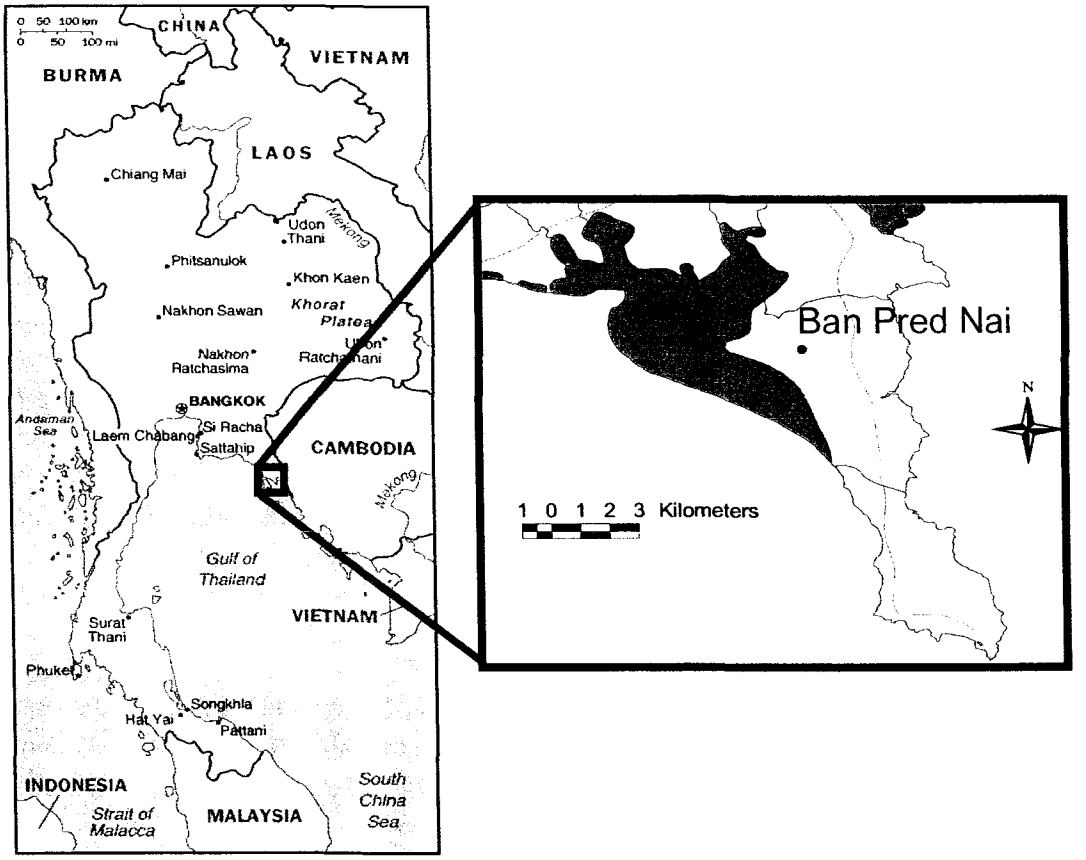

Figure 1: Map showing the location of Ban Pred Nai (Source: http://www.cia.gov/cia/publications/factbook/geos/th.html & GIS data)

Before the start of the large-scale logging and intensive shrimp aquaculture, Ban Pred Nai relied on rice agriculture in the lowlands and fruit and rubber plantations upland for its principal economic activities, with livelihoods supplemented by harvest of resources from the mangroves. After the partial destruction of their local mangrove forest and the establishment of large industrial shrimp aquaculture operations most villagers converted their former rice fields to intensive shrimp aquaculture operations. In time, the productivity, and profitability, of the intensive shrimp aquaculture operations began falling due to disease and the increased inputs required to maintain productivity. The village finally banned intensive shrimp aquaculture within their community and the shrimp farms were converted to fish aquaculture operations. Currently fish aquaculture, fruit and rubber plantations, are the principal economic activities in the village. Another important activity in the village is the harvest of crabs for commercial sale. The two most important crab species are: Grapsid Crab (*Grapsidae* sp.), a principally terrestrial species; and Giant Mud Crab (*Scylla serrata*), a marine crab. The harvest of these commercially important crabs is significant in Pred Nai as there are

Figure 2: Satellite Image of Ban Pred Nai (Source: Google Earth)

approximately 20 part-time crab collectors, 25-30 part-time or seasonal collectors, as well as numerous crab buyers/processors in the village. A small but increasing number of villagers also work wage jobs in nearby towns. Livelihoods are also supplemented by harvest of resources from the mangroves for household use. Most households own land and are engaged in a mix of aquaculture or agriculture, however, there are approximately five-ten households in the village which are landless and rely solely on the commercial harvest of Grapsid mangrove crabs for their household income.

Chapter 3: Results and Discussion

3.1 Community Organization

a. *Origins of the project*

i. *Date of community initiation*

Initial community organization began in 1986 and centered around a small group of five to ten villagers who banded together in order to fight off the corporate logging and shrimp aquaculture operations operating within Pred Nai's mangrove forest. These extractive and destructive operations were run by outside corporations that operated in violation of government regulations requiring replanting of logged areas. Resistance to the corporations was widespread through the community and came mostly in the form of protests to government authorities who largely ignored the villagers' complaints. The small group of five to ten which formed the core of the resistance armed themselves and actually fought against the workers in the mangroves, and it was their actions that were key to forcing the corporations to cease operations.

ii. *Date of formal establishment*

The Pred Nai Community Forestry Group was formally established in 1998.

iii. *What inspired or precipitated the project? What were the sources of inspiration for the project?*

1. *Whose idea was it?*

The villagers of Pred Nai began the initial resistance to the corporate destruction of their local mangrove forest. It was recognized by the local people that the logging operations coupled with the construction of intensive shrimp aquaculture ponds in the wake of the cutting would eventually eliminate all of the remaining mangroves, thus eliminating an important primary and supplemental source of income for the villagers. Thus, the initial resistance was formulated by a small group of five to ten local people, without outside support, in response to a direct threat on local livelihoods.

After the expulsion of the corporations, logging and charcoal production continued to be conducted illegally by other local people from the area, including former employees of the logging companies. Thus informal patrolling of the mangroves was initiated by the villagers of Pred Nai in order to protect and conserve the natural resources of the local area.

The creation of the formal management organization, Pred Nai Community Forestry Group, occurred as a result of a number of different factors. In 1993 a local Buddhist monk came to Pred Nai and assisted the villagers in setting up a village savings group. The group was established with the dual purpose of providing a safe mechanism for villagers to save their money and earn some interest while at the same time, keeping the savings within the village so that it could be loaned out to other villagers in order to improve social welfare. This is

accomplished through low-interest rate loans to villagers who are in need of money for things such as education, or health care. In this way, the village savings group acts to improve the social welfare of the village. Additionally, the savings group helped to increase the unity within the village, and also helped to develop village leadership in terms of organizational ability and the management of money. The monk also utilized the savings group as a platform to further educate villagers about conservation.

The villagers of Ban Pred Nai initiated the creation of Pred Nai Community Forestry Group as a formal entity in order to conserve and protect their local mangrove forest. The decision by the villagers to create a formal management group was influenced largely by three separate factors. First, there was a wide-spread appreciation within the village for the importance of conservation after losing their mangroves at the hands of the corporate interests. The second factor was the creation of an informal patrol group by the villagers, in order to protect the local mangroves against the indiscriminate harvesting practices of people who were logging in order to produce charcoal. The third factor was the influence of the Village Savings Group. The Village Savings Group helped to improve the organizational capacity of the villagers and also increased their skills managing and accounting for relatively large sums of money.

2. *Trigger event, if any.*

The key trigger event for the villagers' initial resistance to the corporation's activities was the construction of intensive shrimp aquaculture farms in the wake of large-scale logging activities. Logging had occurred regularly in this area for a number of years; however, in 1986 one corporation partnered with the logging company and began constructing ponds for intensive shrimp aquaculture. This activity ensured that natural reforestation or manual replanting would not be able to take place in the mangroves and, thus, that the livelihoods and lifestyles of the villagers were endangered.

In the case of the creation of the formal management group there does not appear to be a single trigger event. Instead, Pred Nai Community Forestry Group came about largely as the culmination of a number of seemingly unrelated activities that occurred over time, including the informal patrolling of the mangroves, the creation of the village savings group, and the development of strong leaders within the community.

3. *Catalytic element, if any*

One of the key element which contributed to the success of Pred Nai was the early involvement of the RFD and the NGO RECOFTC (Regional Community Forestry Training Center for Asia and the Pacific). The RFD was important in assisting the villagers in transitioning from an informal patrol group to a formal management group. The RFD's early assistance was in the form of technical support, assistance with the development of a first draft management plan, and providing saplings and training for reforestation. RECOFTC's involvement with Pred Nai began in

1999, only a year after the formal establishment of the conservation group. RECOFTC's early involvement came in the form of: capacity building, assisting with surveys of the mangroves, technical support, and assisting with the development and refinement of a management plan for the conservation group.

It is also important to note the important role of the strong leaders present within the village. One in particular was critical in the initiation of the conservation group, and strong leadership within the village has ensured that progress has been made towards stated conservation objectives and unity has been maintained throughout the village.

b. Leadership and key people

i. Individuals: locals and/or outsiders. What role did they play? How did their role change during the course of the project?

Male leader: This individual became a leader within the community during the beginning of the initial resistance to the destruction of the mangroves. After the expulsion of the corporations he became the leader of the informal patrol group and, in time, was elected as the village headman. As village head he was instrumental in expanding conservation efforts, creating the formal conservation group, and adopting the mantle of leadership after its creation. About three years ago he was forced to resign all of his leadership positions due to illness, but he has since resumed his position as head of Pred Nai Community Forestry Group. Currently, within the village, in order to avoid conflict or potential overlap with the current village head, his focus is more external. This individual is also very active in networking and serves as head of the Trat Provincial Conservation Network and the Four Province Conservation Network.

Female leader: She is the current village head, and is actively involved in many aspects of both village administration and local conservation. In her capacity as village head she is involved in many community forestry networks and often liaises with government departments. Currently within the village, in order to avoid conflict or potential overlap with the current leader of Pred Nai Community Forestry Group, she has shifted her focus to be more internal but still maintains many of the existing external linkages which she helped to establish.

Local Buddhist monk: This man played an important role in introducing Pred Nai to the concept of a village savings group and helping them to implement it. He was also actively engaged in educating the villagers about the importance of conservation and was instrumental in changing local people's attitudes towards the environment. After the creation of the formal conservation group the monk also helped the village to obtain funds from SIF (Social Investment Fund of the World Bank) in order to buy boats for patrolling, to build a cabin in the mangroves, and to build a walkway through the mangroves.

ii. Key organizations: locals and/or outsiders. What role did they play? How did their role change during the course of the project?

The Thailand Royal Forest Department (RFD): This department was an important organization in the early days of the Pred Nai Community Forestry Group. Until 2002 this was the government department with the legal responsibility for the management of the mangrove forest. Local officials from the RFD encouraged Pred Nai to create a formal conservation organization and assisted them in the development of their initial management plan. In 2002, the Department of Marine and Coastal Resources (DMCR) was created and the mandate for mangrove forest management was transferred from the RFD to the newly formed DMCR. Since this time RFD has played no official role in the mangroves of Pred Nai, but individuals from the RFD still maintain contact with the community. and have helped to organize study trips to Pred Nai so that people from other communities can come to Pred Nai and learn from a successful example of community forestry.

RECOFTC: This NGO was a key organization, not in the initiation of Pred Nai Community Forestry Group, but in the early development of the formal conservation group. RECOFTC first became involved with Pred Nai Community Forestry Group in 1999 and one of their first actions was to organize study tours for community leadership to other community forests in Thailand in order for Pred Nai's leadership to learn first-hand from their peers. Soon after RECOFTC developed a three-year Participatory Action Research (PAR) program with Pred Nai, in which they assisted the community: to conduct surveys and inventories in the mangrove forest; to begin capacity building programs; to establish of community forestry networks; and to enter into collaborative research projects between the community and RECOFTC.

c. Funding and other resources

i. If there was funding for initial community organization, who provided the funding?

The initial, informal, organization received no outside funding at all. During the resistance to the corporations and during the period of informal patrolling the community received no outside funding at all. All activities were grassroots in nature, organized and carried out by local people and any costs, such as fuel costs for boats during patrols, were absorbed and shared by those in the village participating in the activities.

The first outside funding provided to the community came in 1999, shortly after the creation of the formal conservation group. In 1998, in the wake of the Asian financial crisis, the World Bank provided money to the government of Thailand to assist with both business and social development. The money designated for social development was used to create the Social Investment Fund (SIF) to assist social development in Thailand. The 1.8 million baht (approximately $45,000 USD) in SIF funding received by Pred Nai was used to buy three boats for patrolling the mangroves, to build a cabin in the mangroves as a station for patrol

groups, and to build a 2.8 km walkway through the mangrove forest that could be used for education and tourism.

Shortly after Pred Nai received this money from SIF, RECOFTC became involved with Pred Nai (the former director of RECOFTC discovered Pred Nai through its SIF funding) and began assisting with a forest inventory as well as social inventories and assessments. In 2000, Pred Nai was selected as the site for a large scale, three year, three million baht (approximately $80,000 USD), participatory-action research project. The three objectives for this project were: 1) evaluate and monitor resource use; 2) develop a forest management plan; 3) establish networking between stakeholders involved. Although the funding from this project did not go directly to the conservation group, as participatory research the community members were actively involved and the results, as well as the process (i.e. capacity building, establishing networks) served to benefit the community greatly.

ii. If there was capacity building, including training workshops, who funded it?

Within the PAR project begun by RECOFTC with Pred Nai Community Forestry Group, capacity building, in both a formal and informal sense, was an important part of the project. Informal capacity building took place through the participation of villagers in the RECOFTC projects. This included actual research as well as the social and forest inventories, where villagers learned skills in using GPS receivers and mapping, as well as skills relating to the conduct and documentation of research. Formal capacity building consisted of RECOFTC bringing village leaders on study trips to other community forests in Thailand (this also contributed to networking), as well as covering the transport and other expenses to bring village leaders to formal training conferences run by RECOFTC or attended by members of RECOFTC.

Other forms of capacity building that have been important in Pred Nai include training provided by various government departments in order to fulfill needs within the village. For example, when villagers began informally patrolling the mangroves, training was provided by the Fisheries Department in conjunction with local army units. Training, as well as manpower and seedlings, in reforestation efforts have also been provided by both the RFD (in the past) and currently the DMCR.

In addition, one local network, which consists of two sub-districts, Hung Nam Khao (which Pred Nai is part of) and Ao Yai has received funding from the UNDP GEF/SGP-PTF small grants fund, principally for reforestation. Pred Nai's participation in this project is largely advisory, as there is little need for reforestation in the area around Pred Nai. Part of the aim of this project, however, is also capacity building and the researcher was able to attend a weekend long training course held for villagers and children from communities involved in this

network in which they were taught map reading skills and then participated in construction of a 3D topographic model of their local communities.

1. *NGO and Gov't personnel providing their time or services for free*

Many government agencies have provided assistance to Pred Nai in the form of manpower or training, instead of, or in addition to, material assistance. Locally stationed army units provided training to Pred Nai for patrolling. In the past they would also assist village members with their patrols and in some cases individual soldiers would also volunteer their own time to assist the Pred Nai villagers. The RFD and DMCR have also helped to train villagers in reforestation and in basic mangrove ecology.

2. *Enlisting free help from outside groups*

Pred Nai has received a significant amount of support from outside organizations. During the phase of armed resistance to the outside organizations the national media began covering the events in Pred Nai. This national media exposure eventually led the Thai national government to look into the events in Pred Nai and soon after the corporations were forced to withdraw from the mangrove forest around Pred Nai. The RFD supported and assisted Pred Nai to conceive and draft their first formal management plan. Once RECOFTC became involved with Pred Nai in 1999, the NGO was able to provide a wide array of technical support to the community as part of their collaborative research program with Pred Nai. The assistance provided included: further development and revision of the management plan; assistance in networking with other communities; the establishment of linkages with university academics with research interests relevant to Pred Nai; as well as a wider dissemination of Pred Nai's success, including nomination for the 2004 Equator Initiative award.

3. *Were there pre-existing relationships between these groups and the community?*

The RFD had developed a relationship with Pred Nai dating back to the time of the village's conflict with the logging companies. Unfortunately, due to a lack of clear direction from provincial government officials (and some allegations of corruption) the RFD was unable to assist Pred Nai in stopping the illegal logging activities.

d. *Knowledge*

i. *Sources of knowledge: local/TEK and/or outside knowledge*

The knowledge used by the villagers of Pred Nai in the management of their mangrove forest is an interesting combination of both conventional scientific knowledge and local ecological knowledge. Local knowledge which is held by members of the community is commonly centered around the use or harvest of local resources but in many cases has been useful for conservation and management. Outside knowledge was brought to the community largely by NGOs

and government agencies involved with the community. Outside knowledge has largely been knowledge which is useful to the community, relating to reforestation, mangrove ecology, or other areas where the community asks for assistance. It is also important to note that knowledge is shared amongst communities involved in the various community forestry networks.

ii. If there is local knowledge and if relevant, who holds this knowledge?

Within the village, local knowledge is possessed primarily by the resource users. The local mangrove forests are an important economic resource for the village and they are utilized by a large number of the people for a wide variety of different resources, including: fish and aquatic wildlife, terrestrial animals, trees, plants and herbs. As a good deal of the local ecological knowledge present is utilitarian in nature it is possessed in varying degrees by the resource-users. Two groups of people in particular stood out in terms of the quantity and quality of ecological knowledge that they possessed; these were the village elders, and the crab collectors. The village elders, largely due to their years of accumulated experience, displayed a wealth of ecological knowledge and were often called on to help educate children and other villagers. Some elders within the village also possessed more specialized knowledge relating to medicinal uses of various local flora and fauna. The crab collectors' knowledge tended to be more utilitarian in nature, relating more to the harvest and utilization of mangrove resources.

iii. If there is outside knowledge used in the project, was there capacity building? Who was involved in providing capacity?

Outside knowledge was also an important component of the conservation and management program within Pred Nai. Capacity building has played an important role in transmitting outside, often scientific knowledge to the leaders of the conservation group and the members of the village. Capacity building has come in the form of both formal and informal training by government, NGOs and universities; as well as knowledge exchange between communities within the framework of formal community forestry networks.

Formal and informal capacity building has been provided by government departments, including the RFD, DMCR, Fisheries Department, the army; as well as NGOs such as RECOFTC. Community members have learned and developed skills in community forestry management, map reading, the use of GPS, reforestation and replanting, networking, report writing, patrolling, forest inventory and mapping, networking, as well as how to help educate and train other communities.

iv. Were there other ways of integrating knowledge systems?

The integration of conventional, scientific knowledge and local ecological knowledge has been important within Pred Nai Community Forestry Group. A

key component of this integration of knowledge systems is that the villagers have remained in control of their management plan, allowing them to utilize outside knowledge which is of use to them and which also agrees with their own knowledge and understanding of the mangrove forests.

Much of the local ecological knowledge within the community centers on locating, harvesting and utilizing local mangrove resources; however, some of this knowledge is also valuable for management. For example, the crab collectors knowledge of the breeding and life cycles of the economically important Grapsid crab led them to suggest a ban on crab collecting during the breeding/egg laying period of their life cycle in October/November. This highly successful rule was a direct result of the ecological knowledge and experience of the crab collectors. Local ecological knowledge also serves as a valuable source of hypotheses for research projects. For example, there are currently a number of collaborative research programs underway with NGOs such as RECOFTC, researching the effect of thinning mature areas of mangrove forest in order to increase Grapsid crab populations, and TRF (Thailand Research Fund), researching the effects of sea-fences and artificial rubber fish houses on reducing the rates of coastline erosion. In both of the examples given here the idea for the research as well as the hypothesis was brought forward by the community.

In the case of disagreement between scientific knowledge and local ecological knowledge it would seem that local knowledge is often given priority. An example of this is evident in a current disagreement between Pred Nai Community Forestry Group and the local office of the Department of Marine and Coastal Resources. The DMCR had begun a program of cutting and burning certain fern species in the mangrove forest in order to open up land for the replanting of species that they find more favourable. The conservation group disagreed with this approach and reached an agreement with the DMCR to ban burning in Pred Nai's mangroves and allow replanting only of non-forested or degraded areas. This example shows that although the villagers are open to scientific knowledge and new techniques/technologies, they do maintain control of their community forest and also use local ecological knowledge as a check against potentially harmful activities/research.

v. Were there learning networks?

The complex web of cross-scale linkages that exist around Pred Nai Community Forestry Group has led to some interesting formal and informal learning networks. Pred Nai Community Forestry Group is a member of a number of formal networks that exist at scales varying from sub-district, province, regional and national level. An important component of these networks is the sharing of knowledge and experience between communities, NGOs, and involved government departments. Within these formal networks it appears that it is often the relationships between the individuals, outside of the scheduled network meetings, which make significant contributions towards sharing of ideas and problem solving.

Informal learning networks also exist between Pred Nai and other communities with established or developing community forests. The success of Pred Nai has led them to host leaders from many other communities in order to teach them and to share experiences from their successful community-based conservation program. These informal relationships also tend to lead to greater participation in the formal networks.

3.2 Cross-scale linkages

e. *Identification of main stakeholders by levels of organization.*
   i. *local/community/village level*
   ii. *regional administrative level: municipality, district, etc. as appropriate*
   iii. *state/provincial level*
   iv. *national, including national NGOs*
   v. *international, including international development agencies*

See **Table 1** for a breakdown of the main stakeholders present in the project by levels of organization.

f. *Institutional linkages related to the project*
   i. *Produce a diagram indicating key linkages*

See **Figures 3-6** for network diagrams showing the development of the cross-scale institutional linkages in Pred Nai during different periods in the development of the village's conservation efforts.

   ii. *Key horizontal institutional linkages*
      1. *facilitating/enabling the project*

During the first period of Pred Nai's establishment, from 1982 to 1987, horizontal linkages were few but still of some importance. Many of the residents from other villages within the sub-district supported Pred Nai in their struggle to halt the exploitive activities of the outside corporations. To this end the villagers helped to apply pressure to force the corporations out through complaints to local government officials and participation in rallies at the provincial capital in support of Pred Nai.

During the period of informal management and patrolling in Pred Nai, there were no significant horizontal linkages present.

Since the formation of Pred Nai Community Forestry Group in 1998 onwards, horizontal linkages have become more common. Started on the initiative of Pred Nai's leadership, but with the assistance of RECOFTC and the RFD, the village conservation group began hosting leaders from villages all over Thailand. This allowed the visitors to learn about and from the organization and methods of Pred Nai Community Forestry Group. Another important mechanism for horizontal

linkages was the establishment of the Trat Provincial forestry network. This network, established by Pred Nai and RECOFTC, has been important in establishing and encouraging communication between communities within the province of Trat, allowing them to share knowledge and experience relating to community-based forestry management.

Currently, the number of horizontal linkages connected to Pred Nai has increased dramatically. The community operates an "eco-tourism" program allowing leaders from other communities that manage community forests or are beginning to manage community forests to come and see the program in Pred Nai and learn from their experience. The provincial level network also continues to function, still supported by RECOFTC, but there have been new networks begun at different scales as well. The original Trat province network has spawned a "4-province network" involving communities from across the four coastal provinces of Trat, Rayong, Chantaburi, and Chonburi. In addition, another network has been created with funding from the UNDP to encourage networking between the two sub-districts of Hung Nam Khao, where Pred Nai is located, and Ao Yai, the sub-district to the south. This network is interesting as it was likely necessitated by geography, the two sub-districts share a small peninsula (see **Figure 2**). All three of the current networks that Pred Nai is involved in are important forums for communication and dialogue between communities and, because of the large number of communities participating, facilitate easier and more equal dealings with national and provincial branches of concerned government departments.

2. *Barriers/hindrances to the project*

There were no linkages discovered by the researcher which hindered the project.

3. *Whose initiative established these linkages?*

The first formal network, Community Coastal Resource Management Network (CCRMN) at the provincial scale, was initiated by Pred Nai with the assistance of RECOFTC as part of the PAR project. The "4-province" network was spawned largely from the success of CCRMN, again with assistance from RECOFTC. The Tambon Hung Nam Khao and Ao Yai network was started through the initiative of leaders from neighbouring villages. The informal linkages were often initiated by Pred Nai's leadership or through the guidance of either NGOs, such as RECOFTC, or government agencies, such as the RFD, who were able to send village leaders to Pred Nai in order to help them learn about community-based management.

Table 1: Cross-scale representation of community organizations and partners in Pred Nai Community Forestry Group (as of May 2005)

	Local	Sub-district	Province	National	International
PNCFG	X				
RECOFTC					X
CCRMN (Network)			X		
Tambon HNK & Ao Yai Network		X			
Tambon HQ		X			
TAO		X			
Village savings group	X				
Women's Group	X				
Village homestay group	X				
DMCR				X	
Royal Foresty Dept.				X	
Fisheries Dept.				X	
TRF				X	
World Bank					X
SIF				X	
Oamsin Bank				X	
Universities			X		
4-Province network				X	
Social Capital Development Office			X		
UNDP					X
Toyota Foundation					X
Wat Pilom		X			
CODI				X	
Royal Thailand Army				X	

X Level at which organization is based

Level at which organization is active in relation to the Pred Nai project

Level at which organization is not active in relation to the Pred Nai project

Note: There is a district level within the Thai administration, however, it was omitted from the table as it is noticeably absent of institutions, and in this case there were no significant linkages based at this organizational level.

iii. Key vertical institutional linkages

1. facilitating/enabling the project

During the initial stages of the project (see **Figure 3**), when the village was locked in conflict with outside corporations, the cross-scale vertical linkages were generally absent and those that existed were often weak or ineffective. Pred Nai's attempts to have the RFD enforce existing national forestry regulations which were being violated by the corporations was quashed as the Governor's office was in favour of the industrial development. Pred Nai's plight was finally given attention when a provincial government bureaucrat assisted the community to contact the media and bring their conflict to the attention of a national news audience. This forced the national government to become involved, and pressure was put on the provincial government to enforce the existing legislation and put a stop to the corporate logging and aquaculture developments taking place in Pred Nai.

From 1988-1997 (**Figure 4**), during the period of informal patrolling, vertical institutional linkages were largely absent from the conservation group. The community was largely on its own, content to protect their mangrove forest from internal or external exploitation. Only two vertical linkages of any consequence existed at this time. The first was between the informal patrol group and the RFD. The RFD provided some support to the patrol group and often assisted by arresting or fining individuals that the patrol group caught for offences in the mangrove forest. The other significant vertical linkage was the intervention of a monk from Wat Pilom, a Buddhist temple located in the provincial capital. The monk came to Pred Nai and helped them to establish their village savings group and also taught the villagers more about conservation.

The establishment of the Pred Nai Community Forestry Group in 1998 as a formal management group coincided with a large increase in the establishment and development of important vertical institutional linkages (**Figure 5**). The first important linkage was established in 1999 with the Social Innovations Fund (SIF), administered by Oamsin Bank who provided funding to Pred Nai in order to buy patrol boats, build a walkway through the mangroves, and build a cabin for patrol groups to stay over night. After Pred Nai received funding from SIF, members of the NGO RECOFTC learned about Pred Nai and began their longstanding and fruitful relationship. In 2001 RECOFTC began their Participatory Action Research Project in partnership with Pred Nai, which was funded by the Toyota Foundation. This proved to be an important step for the conservation group, marking the beginning of formal research in the mangroves, further development of the village's management plan, and in 2001 the establishment of the Trat Provincial Forestry Network. Pred Nai has also received training and assistance in patrolling their mangroves from locally stationed army units, the local police force and the coastal police, with some training also provided by the RFD and the fisheries department. The RFD and Fisheries Department were also involved in

more significant ways; the former in providing saplings for village reforestation efforts, and the latter by stocking young aquatic wildlife (shrimps, crabs and fish) into the canals of the local mangroves.

As the project has become more established, the number and importance of vertical institutional linkages present in the project has increased accordingly (see **Figure 6**). At the Tambon, or sub-district, level there are two important linkages. First, with the TAO (Tambon Administration Organization) a sub-district level government organization recently created in order to assist with decentralization and act as an intermediary between local villages and national level government agencies. The second important sub-district level institution is the Tambon Hung Nam Khao & Ao Yai Network This network, established in 2004, is funded by the UNDP (United Nations Development Project). In addition to the networking between communities, the primary goal of the Hung Nam Khao & Ao Yai Network is reforestation within the two sub-districts. Pred Nai's section of the sub-district is largely forested and Pred Nai's role in this network is principally advisory. At the provincial level, Pred Nai is in contact with numerous government agencies, the RFD, the Fisheries Dept. and the newly created DMCR (Department of Marine and Coastal Resources). The Fisheries Dept. and RFD have largely continued their role with Pred Nai, with the notable difference that the DMCR, which was created in 2002, has now assumed legal responsibility for the management of mangrove forests in Thailand. The other significant linkage at the provincial level is the "Happy Communities Project" created by the Social Capital Development Office, a non-profit, private NGO which operates in numerous communities in Thailand and is funded by the national Health Department of the Thai government (This project is discussed in greater detail in section 1.g). Another significant national level linkage with Pred Nai is from the TRF (Thailand Research Fund). The TRF was established by the national government in order to provide funding for research, and their current focus is on community-based research and the local environment. The TRF has established and funded numerous research projects which involve partnerships between university researchers and rural communities. Pred Nai is currently involved in a project with the TRF investigating local shoreline erosion and assessing methods of controlling it including the construction of off-shore bamboo "fences" to keep boats further from shore and fish houses constructed out of old tires in order to slow the movement of waves and wake from boats. There are numerous universities involved in Pred Nai, some of which are involved with the TRF project, while others are there to conduct their own research or to learn from Pred Nai. University participation varies in scale from individual students to entire classes. An additional linkage which is still in the planning process is a project initiated by the national office of the DMCR to build artificial coral reefs from large concrete blocks, in order to control coastal erosion, provide fish habitat and prevent fishing trawlers from coming too close to shore.

Although the participatory action research project has ended, RECOFTC has remained an important partner for Pred Nai, remaining in direct, regular contact

with the community and assisting them with conservation and management issues that arise. RECOFTC also remains actively involved in the Trat provincial network that they assisted Pred Nai in establishing. There has also been a new, national level network created. This "four-province" network received funding from Community Organization Development Institute (CODI) and aims to establish and strengthen communication between the provincial networks of four provinces in southeast Thailand (Trat, Chantaburi, Chonburi, and Rayong). This new network includes many communities from Thailand involved in managing their local forests and also sees the involvement of many national-level government departments from within the Ministry of Natural Resources: DMCR, RFD, and the Fisheries Department.

2. *Barriers/hindrances to the project*

There were no linkages discovered by the researcher which hindered the project.

3. *Whose initiative established these linkages?*

The establishment of the linkages is discussed in Section 3.2, f, iii, 1; along with the nature of the linakage.

iv. *How does the policy environment impact the project?*

Thailand is currently at a crossroads in terms of the legal status of community-forestry in the country. The national legislature is currently working on a Community Forestry Bill which will provide concrete legal status and a framework for all existing and future community-based forest management projects. As the bill is still in development it is currently under debate on whether mangrove forests will be included within the forestry bill. If mangrove forests are excluded from the final community forestry bill Pred Nai's mangrove forests may be endangered as the conservation group would lack official recognition and legal authority and the mangrove forests would likely be classified as "non-forested" land which is then more vulnerable to commercial exploitation and degradation.

v. *What change (if any) did the project trigger in government legislation or policy?*

The success of Pred Nai appears to have improved the opinions of many local government officials towards community forestry. In Thailand, however, all policies are set at the national level and the community's success, although recognized by some, has not had as wide an impact at the national level. Even as the government of Thailand is currently drafting legislation concerning Community Forestry, politicians are divided between those in favour of community-forestry, those that are afraid that local communities currently cannot handle the responsibility of managing local resources sustainably, and those that want to utilize natural resources for corporate extraction and development as they believe it to be better for the economic development of the country.

Despite the imminent implementation of the National Community Forestry Bill many politicians are against delegating any authority to communities out of fear

they will overexploit the land and resources. As the finalized version of the law has not yet been passed it remains to be seen how it will impact Pred Nai's conservation and management efforts.

g. *Are there any unusual interactions among gov't agencies, NGOs, development agencies, etc, that impact the project positively or negatively? What motivates these linkages? What are the drivers of positive or negative interactions?*

One interaction that struck the researcher as being unusual existed between Ban Pred Nai and the Social Capital Development Office, a provincially based NGO (see **Figure 6**). This linkage was unusual for two reasons. First, whereas, many social and economic development projects target communities with the assumption that the benefits will trickle down to the individuals, this particular project was aimed at the household and individual level with the assumption that the aggregated benefits from individuals and households would eventually be seen at the village level. Second, this project, funded by government and administered by a private non-profit NGO, attempts to reintroduce traditional Buddhist values as a means of improving economic and social welfare.

The relationship between these two groups was manifest in the "Happy Communities Project" funded by the national government and administered by the Social Capital Development Office. This ambitious project is multi-faceted and aims to improve the lives of individuals and households in rural villages in Trat province. The four facets of this project are diverse and include: individual self-improvement in-line with Buddhist principles, household budgeting, planting of organic "kitchen gardens" (growing herbs and vegetables for household use to minimize expenses), and planting of trees around the house and yard for lumber (domestic use or for sale).

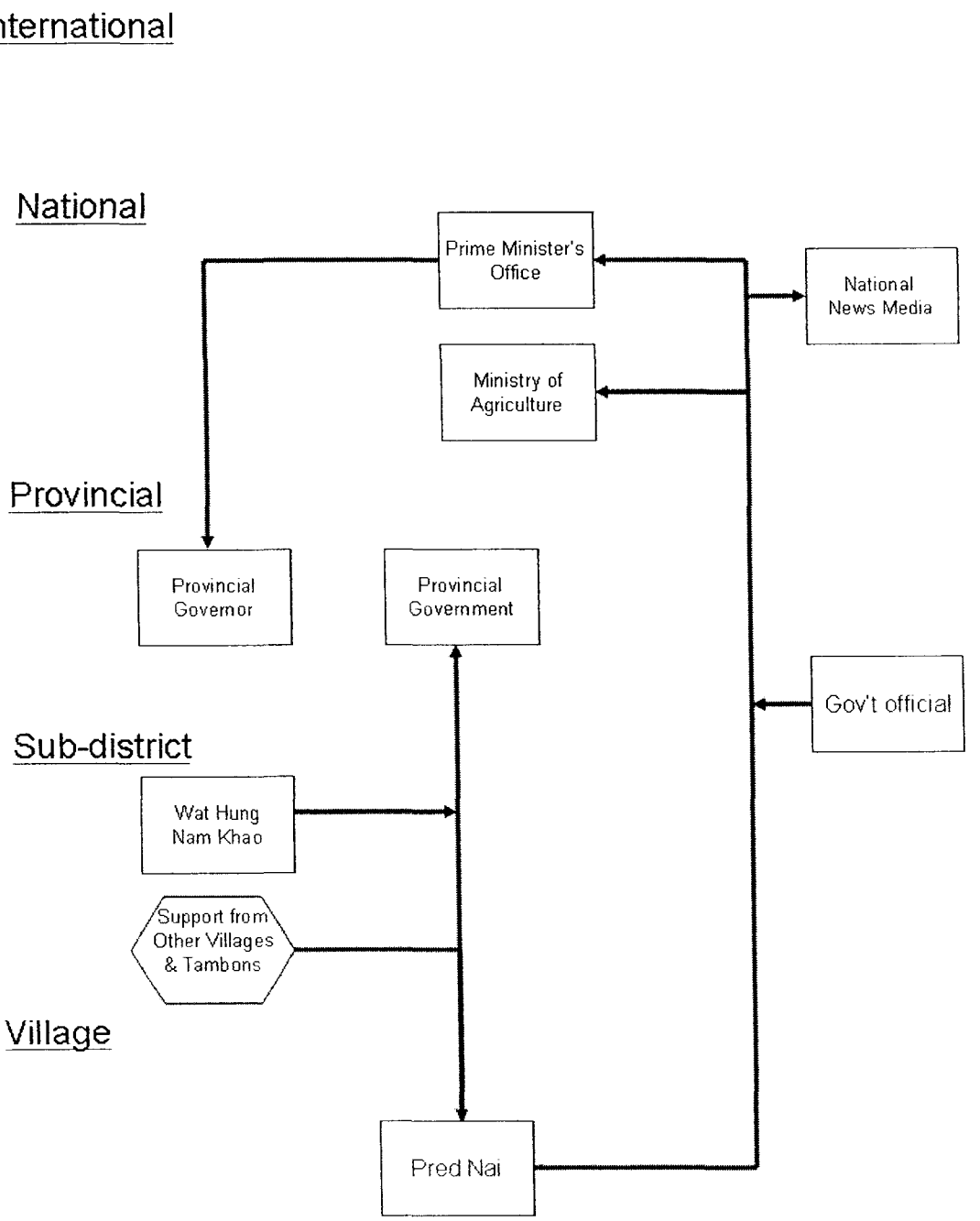

Figure 3: Network diagram showing institutional linkages during the initial stages of conflict (1982-1987)

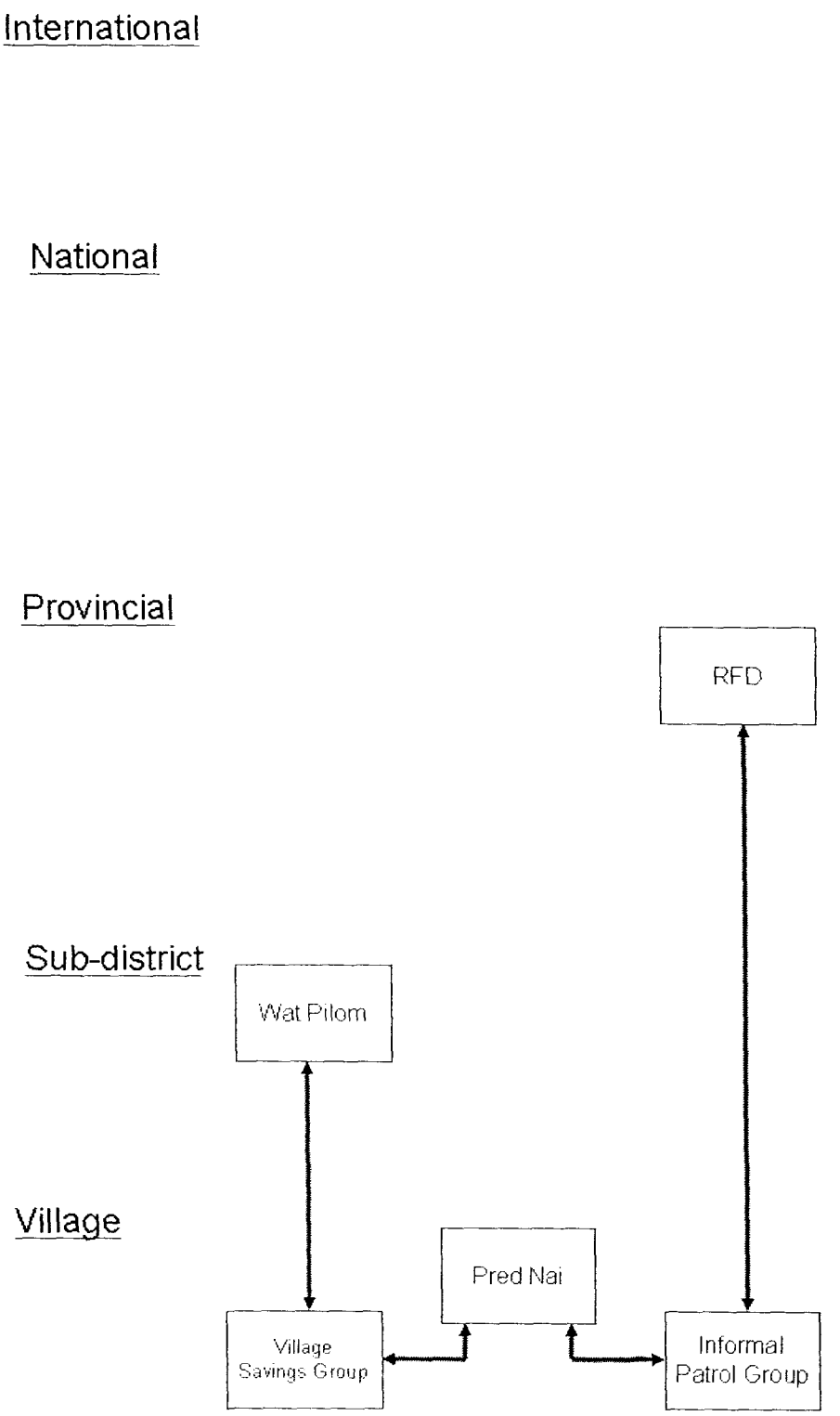

Figure 4: Network diagram showing institutional linkages during informal patrolling (1988-1997)

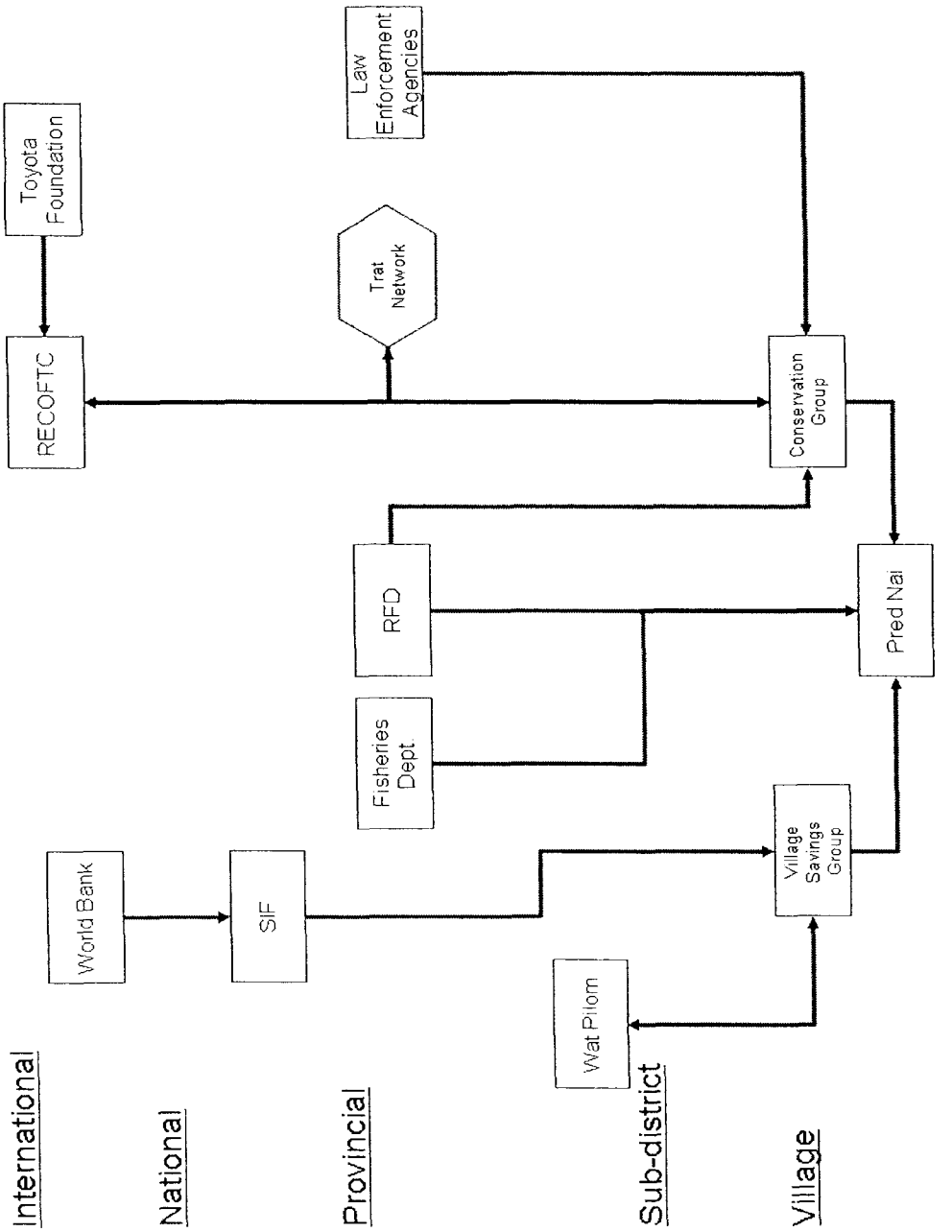

Figure 5: Network diagram showing institutional linkages during the beginnings of formal management (1998-2002)

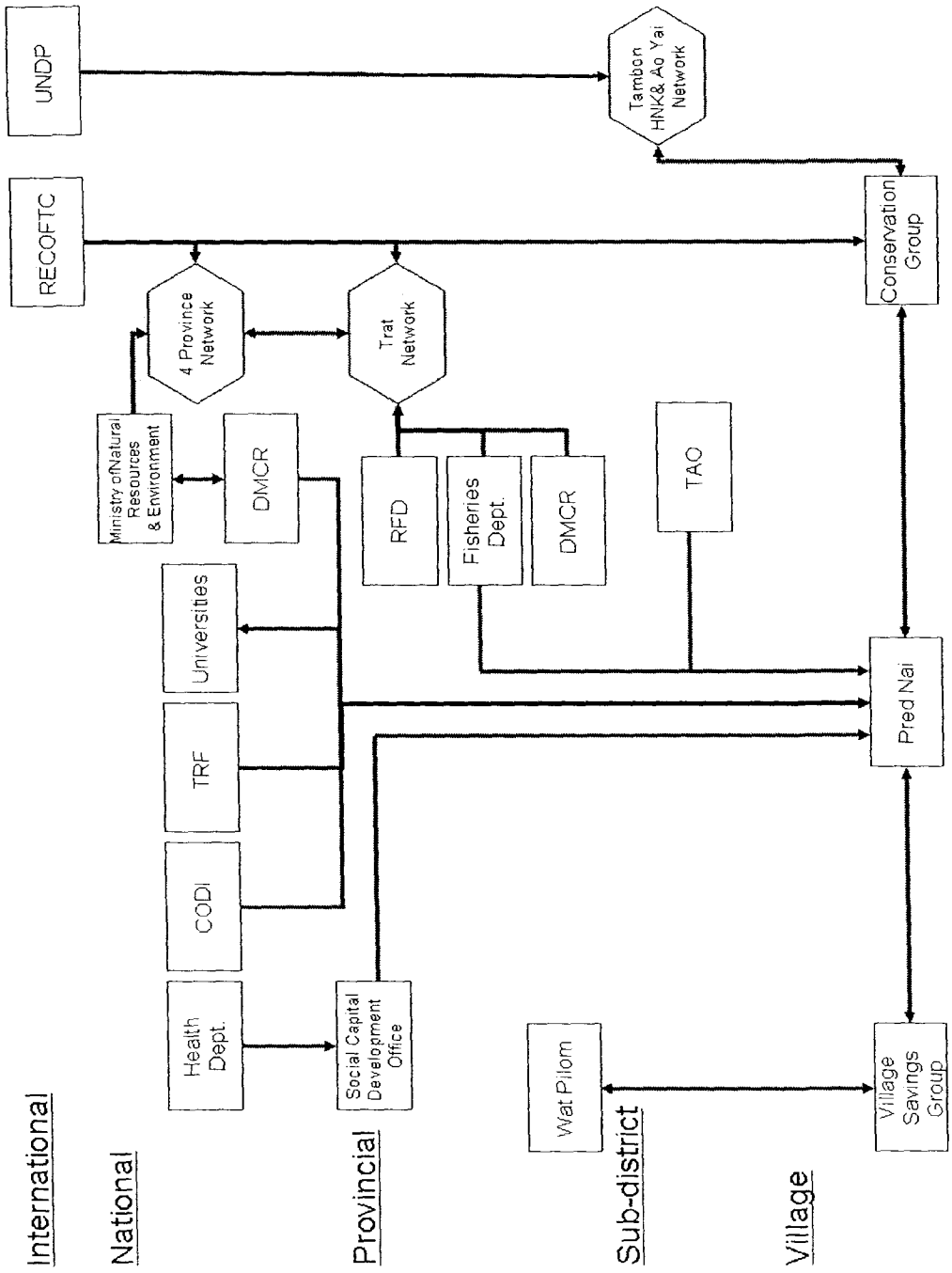

Figure 6: Network diagram showing institutional linkages during recent years (2002-Now)

3.3 Biodiversity conservation and environmental improvements

h. Conservation/improvement of what target resources

Overall, Pred Nai Community Forestry Group has been successful at conserving their local mangrove forest. The efforts of the village are two-fold. First they put a halt to the destructive activities of logging and shrimp farming which threatened to destroy the local mangrove forest and the terrestrial and aquatic wildlife that depend upon the mangroves for habitat. The results of their efforts can be clearly seen in **Figure 2**; the mangroves to the west of Pred Nai are the only significant forested area in the region. Secondly, the village has implemented various conservation measures, such as: the ban on crab collecting during the spawning season; the ban on logging; banning harvest in degraded areas to allow for regeneration; and restoration measures, such as reforestation, which have helped to improve environmental quality.

Successful conservation and restoration of the mangrove forest has benefited many species of marine and terrestrial wildlife. Villagers have reported the return of many species which had been absent since the beginning of logging and the appearance of new species, never previously seen. In addition, virtually all species which are harvested have increased in number despite an increase in harvesting pressure, thus indirectly indicating that the habitat is regenerating and environmental conditions are improving.

Despite their success in conserving the mangrove forests, the conservation group has been less successful in attempts to conserve offshore and marine resources. According to the villagers, one problem facing the village is large trawlers which often violate national fisheries laws by fishing within three kilometers of the shoreline. When fishing inshore the heavy nets of these boats destroy the sea bed, key habitat for many shellfish and crustaceans. The wake from these large boats also contributes to faster erosion of the shoreline. The conservation group has taken numerous steps to alleviate this problem, including: patrolling the coastal area along with people from neighbouring villages; building bamboo "fences" offshore in order to force the boats farther out and to slow their wake; and the construction of artificial habitat, locally called "fish houses", from old tires or concrete in order to slow erosion and provide alternative habitat for marine life. The villagers indicated that their efforts, especially the fish houses, are seeing some success, but large trawlers remain an important source of ecological problems in the region.

Pred Nai Community Forestry Group has also taken steps to eliminate the use of fish traps or nets with small mesh sizes. The conservation group has run into difficulty, however, when attempting to implement this rule, as a neighboring community from a different sub-district, which borders the mangroves to the north, has received permission from the provincial government to utilize fish traps with a small mesh size. This exception was granted by the government as a compromise, allowing the villagers to earn a living while stopping them from illegally logging the mangroves for charcoal production.

i. Changes in resource state

There have been no formal scientific studies which quantify the changes in the mangrove forest or the state of any specific resources at Pred Nai. An informal forestry survey was conducted by Pred Nai Community Forestry Group in partnership with RECOFTC near the commencement of their relationship, but this was done after the conservation efforts of the village had already begun. There is, therefore, a lack of baseline data which would allow for a quantitative analysis of the changes in the state of the mangrove forest and associated resources.

Although there is no formal scientific data available, the villagers reports of changes in their harvest can be used as a proxy for population levels. For example, the changes that have been recorded in the average harvest of aquatic wildlife such as Grapsid crab and Giant Mud Crab (*Scylla serrata*) are an excellent indicator of the population increase within these important species (see **Table 2**). Thus, monitoring of populations can be done informally simply through harvesting the wildlife. These numbers, although unofficial, are easy and inexpensive to obtain, easy to understand and also show the results of conservation in terms that are important to the livelihoods of local people. The data from local harvests indicate that populations of many of the economically important species are increasing. These increases are due largely to the effects of habitat restoration, regulations banning harvest during spawning periods, and restrictions on the size of animals harvested.

Table 2: Improvements in the harvest of key species

Type	Year 1998	Year 2003
Grapsid crab	8 kg/day (50 Baht = $1.25 USD/kg) (6 collectors)	15 kg/ day (40 Baht = $1 USD/kg) (30 collectors)
Mud crab	10,000 Baht ($250 USD)/ 1 crop / 3 months / 1 family (6 cultivators)	15,000 Baht ($375 USD) / 1 crop / 1 family (20 cultivators)
Clams	5 kg / day (25 Baht = $.063 USD/kg) (5 collectors)	6 kg / day (30 Baht = $0.75 USD/kg) (10 collectors)

Source: Building local capacity in forest and natural resources management, RECOFTC, 2004.

In addition to efforts to protect the existing mangrove forest the villagers have also been actively involved in assisting with natural regeneration. The first reforestation took place in 1987 after the successful expulsion of the corporations. This first reforestation was highly informal, carried out with no outside support. The villagers gathered shoots from trees in other parts of the forest, and replanted areas that were most in need of regeneration. After the formation of Pred Nai Community Forestry Group, the village's reforestation efforts were often given

assistance from both government agencies and NGOs in the form of seedlings to replant, as well as material and technical support.

Thanks to their efforts in conservation and reforestation, Pred Nai stands out from most other coastal sub-districts and even other villages within the same sub-district due to the large, contiguous area of mangrove forest that remains. In many other sub-districts what little mangrove forest that remains exists as thin patches right on the coast, often less than 50 metres in width.

j. Indicators of biodiversity conservation or improvement

The lack of any solid scientific measures of biodiversity conservation or environmental improvement forces us to rely upon indirect indicators of biodiversity conservation.

An important source of data about the changes in environmental condition comes from the qualitative observations of the villagers themselves. The villagers have noted that many existing species have increased in numbers and many more distinct species have returned to the mangroves including crabs, fish, birds, bats, monkeys, tree frogs, wild honey bees, and fireflies. Some of the specific species which were identified to the researcher as returning to the local area include: Spider crabs (*Dorippe dorsipes*), mudskipper (*Boleopthalmas boddarti*), and Crab-eating Macaque (*Macaca fascicularis*). Although it was difficult to identify individual species, one crab collector summarized the enhanced species richness present in the mangroves thus: "There are many more interesting birds now".

It is also important to note that the return of the mudskipper (*Boleopthalmas boddarti*) and firefly are important for another reason. Both species were identified by the villagers as species which can only survive in clean, prsitine environments. Thus, these species may serve as important indicators ecological health and integrity.

Another observation by villagers that indicates that the local environmental conditions have improved included numerous villagers commenting that various economically important species of crab, fish and shrimp are more abundant and easier to catch. Many of the crab-collectors also remarked that they were now seeing many young crabs, and that this was a good sign for future productivity.

k. Was there any reduction on threats to biodiversity?

The efforts of the conservation group have also resulted in fewer threats to biodiversity. One of the most significant steps taken to preserve biodiversity was the cessation and banning of intensive shrimp aquaculture in Pred Nai. Intensive shrimp aquaculture is notorious for releasing large quantities of chemicals into nearby waterways, eventually polluting areas past hope of restoration. By eliminating all intensive shrimp farms from their village, and banning the establishment of more shrimp farms Pred Nai has taken an important step towards protecting their local resources.

Pred Nai Community Forestry Group's persistent patrolling of the mangrove forest has also been important in protecting biodiversity. Their efforts at patrolling have drastically reduced the illegal harvest of trees from their mangrove forest, have ensured that outsiders who come to harvest Grapsid crab from their forest obey the conservation group's rules regarding harvest, and helped in reporting fishing trawlers that fish within the three kilometer boundary.

Pred Nai has been active in both educating other villages about the need for conservation and teaching them about the process of establishing their own community forestry program. By sharing their knowledge and experience with other communities and assisting in initiating new conservation programs Pred Nai has played a role in reducing the threats to biodiversity at a scale beyond that of their village. This accomplishment is particularly significant when it is considered that it is the recognition of the importance of conservation, especially in the face of poverty, that is often the most difficult step towards sustainable development in rural areas.

3.4 Poverty reduction

I. Indicators of poverty reduction

The first and most clear indication of poverty reduction was the increase in crab harvest which improved the livelihoods of the village crab collectors. The increase in populations of the Grapsid crabs is even more significant when it is considered that the number of full-time crab collectors, and thus harvesting pressure, more than doubled during the same period that saw the average yields per harvester double. This amounts to roughly a four-fold increase in productivity. The local conservation efforts also had an impact on the populations of other economically important flora and fauna, such as shrimp, fish, and lizards but these species were less important economically. In addition, the increases in harvest numbers for other species were not as dramatic, and they were not as well documented as the Grapsid Crab.

After the construction of the seawall in 1984, the villagers in Pred Nai gradually converted their rice fields into semi-intensive shrimp aquaculture ponds. In the short term, the shrimp ponds proved to be highly profitable for the villagers. In the long term, however, disease, and increasing input expenses combined with a falling export price for shrimp led to narrower profit margins and the eventual failure of the industry in the mid 1990s as expenses outgrew revenues. Intensive shrimp aquaculture within the village was eventually banned by the conservation group in 1998 but by this time most shrimp farms in the village had already ceased operation. Although they were unable to return to a rice-agriculture system, the villagers were able to successfully transition from shrimp aquaculture to a fish aquaculture system, raising primarily Grouper (*Epipephelus malabaricus*) and Sea Bass (*Lates calcarifer*). This shift from shrimp to fish

aquaculture resulted in incomes that were more stable and at a lower risk of total failure, as compared to intensive aquaculture.

Pred Nai Community Forestry Group, in partnership with the provincial office of the Fisheries Department, also constructed a holding area for spawning mud crabs, locally called a "mud crab bank", in order to increase villagers' incomes. The villagers initially thought of this project in order to help increase the numbers of crabs available for harvest. They requested the fisheries department to provide nets so that they could create an enclosure within one of the canals in the mangroves. After the creation of the enclosure, whenever villagers would catch gravid mud crabs or swimming crabs in their traps they would move the crabs to the enclosure. Within the enclosure the crabs were able to spawn and the movement of the water in the canals allowed the larvae to spread out naturally, thereby increasing populations. In addition, the villagers were still able to harvest the mature crabs after the spawning period with no loss in terms of their livelihood.

m. Improvements in community well-being

The establishment of the Village Savings Group within the village has been another important accomplishment in terms of poverty reduction. Established with the help of a local Buddhist monk in 1993, the village savings group was set up to allow villagers to purchase a pre-arranged number of "stocks" each month at a set price. Villagers are limited to purchasing a maximum of 50 stocks/month/member of the household and must purchase the same amount each month over a year. Thus the savings group acts as a forced-savings mechanism encouraging villagers to save money. Interest payments are paid out to the stockowners every 6 months, allowing them to make a small but secure amount of money from their savings. Once villagers reach 40,000 baht in stocks (approximately $1,000 USD) they are then permitted to begin withdrawing money from their savings.

The Savings group also functions to provide low-interest (currently set at 1%) loans to community members for social or economic development projects. A committee of 14 villagers operates the savings group and makes decisions approving or denying loan applications received from villagers. The priorities for approving loans are education and healthcare, with an emphasis on treatment of illness; but loans may also be provided for agricultural improvement projects or other projects deemed to be valuable to the village. Thus, while not directly improving incomes in the community, the Village Savings Group has functioned to improve social welfare and economic development, subtly assisting with income redistribution in the village (the wealthy tend to buy more stocks/month and the poorest villagers can receive low interest loans for development) and to encourage savings within the village. Participation in the savings group has also helped villagers to improve their money management skills within their households.

There are also currently two different tourist ventures operating in Pred Nai. An agro-tourism promotion program by the provincial government aims to attract visitors to the various agricultural locations within the Tambon (sub-district). Government placed signs point out fishponds, different types of fruit plantations, and agricultural processing centres within the sub-district.

The more significant tourist venture is an informal tourism program run by the Pred Nai Community Forestry Group. Pred Nai operates as an important learning center, hosting leaders of other communities, government officials, NGO representatives, and university students. These visitors come to the community to learn about community-based conservation and management from the experienced leaders and membership of the Pred Nai Community Forestry Group, as well as about mangrove ecology. Although the villagers have taken to calling it eco-tourism, in reality it is about the learning and sharing of experience and knowledge. The amount of visitors to the village is relatively small but they are generally housed and fed in the homes of villagers through a home-stay program which sees households take turns as hosts. The guests pay a small amount of money per night and the hosts retain 75 percent of the money, while the other 25 percent is given to the conservation group to help fund expenses such as fuel for patrol boats. When large groups of students come from universities or schools they are generally housed within the community centre and fed by the service section of the conservation group (the conservation group is organized into numerous patrol groups and a service group, responsible for hospitality), with all money paid directly to the conservation group.

The success of Pred Nai has also contributed to an overall feeling of well-being and pride within the community. The villagers are proud of their accomplishments in conservation and, at least within the NGO and government communities, are quite well known in Thailand. The "eco-tourism" program provides a further sense of pride within the community as outsiders come to learn from the community members.

n. Was there any reduction on threats to human well-being?

One of the important human impacts of the conservation group has been a reduction in methamphetamine drug use among crab collectors. Formerly, in the days when crab populations were lower, crab collectors would work a full night, from approximately 9 pm to 4 am, harvesting crab in order to earn a living. It was reported by some of the crab collectors and villagers that methamphetamines were commonly taken in order to give crab collectors the energy and alertness necessary to engage in this harvest all night long. Now that crab populations have increased, due to the conservation efforts of Pred Nai Community Forestry Group, crab collectors are able to harvest approximately double the amount of crab in only a half-night of collecting. This has led to a halt in methamphetamine use for crab collecting which reduces the threats to the health and welfare of the crab collectors.

Mangrove forests, in addition to their ecological value, provide an important natural barrier against wind, waves, and tsunamis. The maintenance of the mangrove forest around Pred Nai provides the village with a measure of protection which is difficult to quantify. The daily protection that the mangrove forests offer against damage and wear to the village; infrastructure, such as power lines and roads; as well as agricultural developments such as fish ponds, fruit gardens and rubber gardens is immeasurable. When considered in light of the recent tsunami in Southeast Asia the importance of these natural barriers during tsunamis and other natural disasters is further highlighted.

The conservation of the local mangrove forest has also ensured that there are more livelihood options available to villagers now and in the future. If consumer demand shifts away from Grapsid crab the mangrove forest supports a wide variety of flora, fauna and other resources which may be harvested or utilized for income. In other words, the maintenance of biodiversity has acted to promote the economic resilience of the community, providing more options for future economic development in the face of change.

3.5 Detailed analysis of community-based conservation (CBC)

o. *Mechanisms, dynamics, drivers*

i. *Analysis of catalytic element that made the initiative work*

Pred Nai's grassroots origin and on-going strong community support are one of its important strengths and a key factor in the community's success. The involvement of outside NGOs and government agencies, RECOFTC in particular, has also been an important contributing factor to the community's success. RECOFTC's contributions to Pred Nai's conservation and management program are multi-faceted and diverse. They include new initiatives, such as the forest survey and the establishment of the Trat Province Forestry Network, as well as helping to expand and develop initiatives that Pred Nai had begun on their own, such as the village management plan and the "eco-tourism" program. Through their involvement RECOFTC has helped to provide training and capacity building for members of the village and also helped to provide key contacts for village leadership within government, academia, and NGOs; which have further assisted the village in achieving their conservation and management goals. It is likely that Pred Nai would have been successful in conserving their local mangrove forest on their own, but RECOFTC has acted as an important catalyst in helping Pred Nai Conservation Group to achieve its goals and to continue to develop and expand its conservation efforts.

ii. *Decision-making process*

An important element of Pred Nai's success in community-based conservation lies in the grassroots nature of their conservation group. As such, all major decisions made by or within the conservation group are done with the participation of villagers at meetings. The leaders of the village and conservation group are, for the most part, well respected within the community and due to their

knowledge and experience, and the patriarchal nature of Thai society; their advice is often followed when choosing courses of action for the conservation group.

The leadership of the village and conservation group is important in meeting with representatives from government, NGOs and other communities; however, decision-making power has remained largely in the hands of the villagers. Leadership also retains control over the day-to-day operations of the conservation group, although since there is no formal infrastructure in place this is minimal.

iii. Conflict-management mechanisms

Within Thai culture conflict is generally avoided as conflict leads to a loss of face amongst participants. This is not to say that conflict does not exist between different stakeholders within the village, however, disagreements and conflict between fellow villagers are generally kept low key and often out of open view. For example, there has been a long-standing, low-intensity conflict/disagreement between two key leaders in Pred Nai; however, this animosity has not prevented them from working in the best interests of the village, often cooperating in order to pursue common goals. There does not appear to be any formal conflict-management mechanisms in place, but because Thai culture frowns upon conflict it has been kept rather low-key and, over time, the two leaders have built a mutual respect and understanding for each other.

Conflict between villagers and outside stakeholders is more common and often more acute. Currently, there are two existing conflicts between Pred Nai Community Forestry Group and two outside stakeholders. The first is with in-shore fishermen whose large trawlers are destroying the seafloor and accelerating shoreline erosion from the wake of their large boats. The leadership of Pred Nai has attempted to negotiate with these fishermen on behalf of the conservation group, encouraging them to obey the existing laws which prohibit these fishing boats operating within three kilometers from shore and attempting to negotiate a solution to their conflict. Unfortunately, these attempts have been in vain and the villagers have worked in conjunction with the responsible government departments, coastal police and Fisheries Dept., in order to patrol coastlines and report any violation of the rules, but with limited success. The second ongoing conflict exists between the conservation group and a group of people living in the sub-district north of the village, bordering the mangrove forest. These people have been using fish traps with a small mesh size in the river which forms the boundary with Pred Nai's section. The rules of the conservation group forbid the catching of small fish (<18-22 individuals/kg) (Pred Nai, 2003) and Pred Nai villagers were very upset by their neighbour's indiscriminate harvest, this led Pred Nai's patrols to destroy any "illegal" fish traps that they found. The government intervened in order to prevent further conflict and has begun funding a program to help the neighboring villagers to begin new livelihood endeavours and in the interim has sanctioned their use of the illegal traps.

iv. Conflict resolution and enforcement

When conflicts arise within the conservation group they generally occur over the approach used to solve problems. Conflicts within the conservation group are generally overcome by talking the issue out at meetings. The villagers attempt to reach a consensus and if this is not possible the majority opinion is followed.

p. Learning and Adaptive Management

i. How did previous observations lead to project formation and development?

The previous experiences of the village during the informal management of the mangrove forest appear to be absolutely critical to the formation and development of the formal conservation group. The villagers' experiences with management through the informal patrol group stimulated the formation of and heavily influenced the structure and composition of the formal management group.

After formation of the formal management group and the beginning of contact with RECOFTC, some of the key leaders from Pred Nai participated in a study tour to other, well-developed community forestry sites around Thailand. The leaders were able to learn more about the various approaches and problems involved in community-based management. The Pred Nai leadership was so influenced by this RECOFTC-sponsored trip that it helped to inspire Pred Nai to begin their own "eco-tourism" program in which the village plays host to leaders from other communities in order to instruct and share information about community-based management.

ii. How was experience incorporated into subsequent steps of the project? What learning processes did the different parts of the project go through?

One of the key lessons learned from this project was that experiences from various stages in the project's evolution seem to influence the success of Pred Nai in later stages. For example, the community's experiences running the village savings group and from their informal patrolling of the mangroves helped to develop and improve the later success of the formal conservation group.

Another example of learning processes is evident in Pred Nai's use of different approaches to solve the problem of the fishing boats coming too close to shore. The village experimented with different approaches. For example, the village originally attempted to talk with local fisherman and try to convince them to obey the law and stay three km out from shore. When this approach failed the conservation group tried different approaches, including: constructing bamboo fences in order to keep the fishing boats further out, patrolling with law enforcement authorities to catch fishing boats fishing illegally within the three km boundary, and constructing fish houses in order to arrest the erosion of the shorelines.

iii. What was the role of experimentation, if any?

Pred Nai has been involved in both formal and informal experimentation which has helped to shape their organization and management decisions. Formal experimentation has come in the form of collaborative research projects with universities and RECOFTC. For example, Pred Nai is currently collaborating with RECOFTC to determine the impact of thinning the mangrove tree density on the productivity of mangrove crabs. Formal experimentation in this manner can provide information and knowledge that the conservation group can utilize when determining rules and restrictions for resource use. Pred Nai is also involved with the TRF in a program researching the effectiveness of different methods in mitigating shoreline erosion caused by large fishing boats.

Informal experimentation has been conducted largely in an organizational sense. For example, Pred Nai began their "eco-tourism" project and hosted leaders from other communities without any certainty that this program would be successful in assisting other communities. Many of the conservation measures and rules instituted by the conservation group were also done in an experimental sense because they were often unsure of their outcomes. The actual organizational structure of Pred Nai Community Forestry Group has also undergone small changes in the number and placement of leaders as well as the number of patrol groups set up.

iv. How monitoring informs the project

Ecological monitoring has played an important role in Pred Nai's conservation efforts. The principal means of data collection is by monitoring harvest numbers of species such as Grapsid crabs and other economically important species. This data is obtained by the crab collectors and crab buyers and is reported to the conservation group.

Another important source of monitoring is qualitative observations from resource users and people who are out on the land more frequently, such as crab collectors. They have contributed observations about the ease of catching certain species of fish, and shellfish; the numbers of young observed; and the total numbers of individuals from species observed.

This qualitative and quantitative ecological data has provided important feedback to Pred Nai. Local ecological monitoring has kept the conservation group informed about the situation "on the ground" and has allowed the village to observe the positive ecological changes that their conservation measures have produced. Conversely, if the observations of local people indicate that populations of harvested species are decreasing it may provide sufficient warning for the conservation group to act to address the situation and arrest the negative change.

v. Barriers to community-based conservation, and how the barriers were overcome

The most significant barrier to community-based conservation faced by Pred Nai was the fact that unlike many other community-based cases, their project was initiated by locals who had no prior experience with conservation and, initially, had little in the way of outside support. This barrier was overcome largely through the determination and unity of the villagers of Pred Nai coupled with the strong leadership of key individuals in the community. Their combined will to ensure that local resources were conserved and used wisely ensured that the village rallied behind their local leaders and took small practical steps to ensuring local conservation efforts.

A second significant barrier to Pred Nai's conservation efforts was a lack of funding at the outset of the village's informal conservation efforts. To the eyes of many outsiders this obstacle would seem largely insurmountable; however, the villagers of Ban Pred Nai banded together and implemented local conservation rules and measures which were then enforced through social pressure as well as through the efforts of the volunteer patrol group. The village was realistic and pragmatic and took steps which they saw as necessary and achievable in order to conserve the resources that they relied upon. In addition, Ban Pred Nai's experience with the village savings group helped build credibility and assisted the village in obtaining funding after their conservation group was formally established.

vi. Combining knowledge systems to solve problems

The Pred Nai case presents an interesting example of the integration of conventional scientific knowledge and local ecological knowledge. Pred Nai Community Forestry Group has, since its inception, shown a great interest in technical and academic support/training often preferring this form of support to financial support in the form of direct funding. This thirst for knowledge is further borne out by the many linkages that Pred Nai has formed with important knowledge partners such as the TRF (Thailand Research Fund), RECOFTC, and universities across the country. It is also significant that knowledge transmission between partners is never one way, in all cases observed and discussed there is mutual sharing of knowledge and experience.

The practical integration of the two knowledge systems is visible in many forms. In their partnerships with RECOFTC the village has provided hypotheses for research projects, such as the current project examining the role of thinning areas of mangrove to see the effect on Grapsid crab populations. With the guidance and assistance of the RECOFTC staff the conservation group has taken the role of conducting the research and gathering the necessary data. This relationship has further evolved with the TRF who has provided funding and technical support to assist Pred Nai in studying various methods of keeping fishing boats away from shore and minimizing the effects of erosion on the shoreline (bamboo fences and fish houses made of tires). Pred Nai's work with universities has principally been in the other direction, where groups of students or academics come to the village principally to learn from the community and the conservation group about

mangrove ecology and successful community-based management. The researcher also observed a few examples where researchers from Thai universities conducted fieldwork in Pred Nai and the results of these studies were generally shared back with the community in order for the community to derive benefit from the research.

q. Community benefits from biodiversity conservation and environment improvements

i. What direct benefits were observed

The principal benefit that the community has realized is the stabilization and increase in the productivity of the resources they harvest from the mangroves as a result of their conservation efforts. Although all community members harvest resources to some degree, the increase in productivity has principally benefited the poorer members of the community who are more reliant on the mangroves for their livelihoods. The crab collectors of the community were the stakeholder group who benefited the most, as the majority of them own little or no land and often rely solely upon the commercial harvest of crabs for their livelihood.

The creation of the Village Savings Group, an important early stage of the conservation effort in Pred Nai, has also provided many benefits to the community. The savings group, through its loans to community members in need, has served as a vehicle to aid in social and economic development, for example assisting people to pay for education or health care costs. It has also provided a small, but relatively secure savings mechanism for all members of the village where the profits actually benefit the community.

The learning-tourism program that the conservation group runs has also helped the community to fund their conservation group. A portion of the profit made from feeding and hosting guests to the community is paid back to the conservation group and these funds are used to fund the community's patrols of the mangroves and other conservation efforts. Although most of the villagers felt that the learning-tourism program contributed little to the economy of the village, it is likely that outsiders visiting the community also provide additional income for the restaurants and stores in the community.

ii. What indirect benefits were observed (e.g., awards and recognition; publicity; increased funding opportunities for conservation)

The community of Ban Pred Nai has received widespread recognition for their successful conservation efforts. Two of the awards received include the Green Globe Award in 2002, and the 2004 Equator Initiative nomination. The villagers of Pred Nai are very proud of their successful conservation efforts and are eager to share their experiences with others. An additional benefit from the relative

fame that Pred Nai received is that the village has been approached by numerous government agencies and NGOs who wish to become involved with their conservation efforts. For example, during the conduct of this research the village leadership was approached by representatives from the national DMCR office who wanted to include Pred Nai in a pilot project testing the effectiveness of an artificial concrete coral reef in providing fish habitat and protecting against shoreline erosion.

Pred Nai was also fortunate enough to participate as one of the hosts in an Asia Pacific Economic Cooperation (APEC) youth camp in July of 2003. The camp brought together dozens of students from many different APEC countries to host sites across Thailand in order to learn about mangrove forests and sustainability issues. Pred Nai, because of its successful conservation efforts, was chosen as one of the sites to be visited by the dozens of students attending the APEC youth camp. Special events, such as the aforementioned youth camp, and recognition, through special awards, help to promote pride in the community and a sense of accomplishment.

r. Livelihood strategies, coping and adapting

i. How did involvement in the project affect other livelihood pursuits, negatively or positively?

Pred Nai's conservation efforts have had a positive impact on the livelihoods of the villagers. Their conservation efforts have stabilized and restored the local. ecosystem and improved the harvest of resources from the mangroves. This has helped not only those villagers who harvest mangrove resources as the main source of their livelihood but also the entire village as the majority of people supplement their livelihoods with fish, shrimp, crabs, and other resources from the mangroves.

Although the community members at large have benefited from the work of Pred Nai Community Forestry Group there is a small minority of community leaders who have seen their livelihoods adversely affected. This small group of leaders is actively involved in the activities of the conservation group and networking with other communities, often to the point where the time commitments they have made limit their ability to spend time on livelihood activities. For example, one prominent leader within the community shared with the researcher that in the month of June he was either involved in meetings or traveling between them for 24 days of that month.

ii. How did the project affect the ability of households and the community to adapt to changes?

The effect of the project upon the community's ability to adapt to changes in the market has been positive. The conservation of the mangrove forest and the numerous marine, aquatic and terrestrial flora and fauna that comprise the ecosystem has preserved the economically important harvesting options that are currently exploited. More importantly, the conservation of the mangroves also

preserves other species and harvest options which can be exploited in the future as market demands dictate. An example of the community's adaptability to market changes was evident this year when the region underwent a drought making their fruit gardens less productive. The fruit growers adapted by spending more time in the mangroves harvesting Grapsid crabs and other resources in order to meet their livelihood requirements.

s. *Resilience of communities, livelihoods and management systems*

i. *Did the project add options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?*

The conservation/management project in Pred Nai, by preserving the resilience and ecological integrity of the local mangrove forest, has maintained the options for exploitation and conservation that currently exist and has also preserved the potential for new options in the future. The resilience of the mangrove ecosystem in its relatively undisturbed state will allow the conservation group to experiment with different management regimes and techniques. In terms of livelihoods, there is a large number of flora and fauna that remain and may be harvested or utilized by villagers at a later date.

ii. *Did the project create learning opportunities?*

The conservation effort in Pred Nai has created numerous opportunities for learning, both at the academic and community level. Joint research conducted between the community and various universities can produce results which are practical and useful to the community's management but also of interest to the wider academic community. Pred Nai's "eco-tourism" program in which they play host to other community's leaders as well as government and NGO representatives teaches both policy makers, field practitioners/funding agencies, and community members about their experiences with community-based management. Another important learning opportunity that was created by this project is through the community forestry networks operating at the district, provincial and regional scale. These networks act as an important mechanism for communities to share information concerning management practices and as a convenient venue for academics and NGO representative to disseminate relevant and practical scientific information to a large number of communities.

iii. *Did the project create self-organization opportunities?*

The project not only created opportunities for self-organization but the creation and development, over time, of the conservation group was itself an exercise in self-organization. Community members participating in the conservation group have actively shaped the organization and composition of the conservation group, from its roots as an informal group of villagers patrolling the mangroves to its current formal status. The community has shown particular strength in its abilities to self-organize by initiating local conservation by its own initiative and creating

the conservation group without relying on outside funding in order to drive the process.

t. Transferability of the lessons from this Equator Initiative case

i. Which lessons were likely transferable? Why?

1. Availability of funding to proceed in small, practical steps

It is a common conception in the mind of westerners that funding must be available in order to proceed with any type of natural resource management. The experiences from Pred Nai suggest that, although funding was necessary, it may not always be necessary in the amounts and in the forms that people from developing countries typically perceive. Although Pred Nai's conservation and management efforts did receive some large inputs of funding in order to construct the walkway through the mangroves and purchase patrol boats, it seems that these elements were supplemental to the project. The success of the project instead relied upon the determination of the local population and some funding which was available in order to meet expenses and enable the community to proceed unhindered by the limitations of their own personal finances. For example, in Pred Nai's case as RECOFTC helped the community to set up the provincial community forestry network, the NGO often provided money to the leadership of Pred Nai and other communities in order to cover all or part of their fuel expenses to travel between communities and attend meetings. This assistance, although relatively small to the funding agency can make a huge difference to the participants; allowing them to participate in the networking process while minimizing their own personal expenses. By providing funds for smaller steps which met immediate needs the funding agencies also minimized the risk for waste or corruption.

Another point of note in regard to funding is that prior to the availability of funds, the community was already involved in conservation and management activities and had already begun establishing an organizational structure. When allocating funding for community-based projects it may be best to provide funds to communities which have already shown initiative in engaging in conservation or management. This allows funding agencies to capitalize on existing capacities within the community and to increase the chances of success. Alternatively, communities with less social capital in place may benefit more from funding of capacity building activities or assistance in the form of technical or managerial expertise, whereas placing funds directly under their control increases the chances of misuse of the funds.

2. A Village Savings Group provides capital, training, and lends credibility to the community

Pred Nai's case also illustrates the important role that a village savings group or micro credit program can play in achieving successful community-based management. There are four fronts in which a village savings group can assist a community; first, by providing capacity building and increasing the social capital in the village; second, increasing the available capital and improving the financial

positions of individual households; third, by creating a formal organizational structure in the community and lending credibility to the group's ability to handle finances without misuse or corruption; and fourth, by helping to build unity and a greater sense of belonging within the community.

The village savings group has provided a form of self-administered capacity building in the village. Although a local Buddhist monk was key in initiating the program and providing the initial training the villagers participation in administering and organizing the savings group provides invaluable experience which is also applicable to conservation and resource management. Participation in the savings group helps build skills in money management (individually & collectively), managing people, and creating and operating a formal organization (including running meetings).

The savings group also provides financial capital for the villagers who participate in the program in two ways. First, the savings group acts as a mechanism for villagers to save some income in a regular and relatively safe manner, by requiring villagers to commit to buying a given amount of "stocks" in the savings group every month. Once the villagers have saved up 40,000 baht (approximately $1,000 USD) worth of stocks they are permitted to withdraw up to half of the money to spend on whatever they wish. The second and more important financial benefit from the savings group is its loan program. Villagers who are members of the savings group can apply for a low-interest loan from the savings group. The village committee which administers the program decides on loan approvals with priority given to loans which will be used for education or healthcare.

In Pred Nai, the community had organized themselves informally in order to defend and conserve their local resources but the village savings group was an important formal organization implemented largely by the villagers with some outside help. The creation of the savings group likely impacted on the villagers' decision to formalize their conservation group. The pre-existing savings group not only helped the villagers in the creation, organization, and administration of the conservation group but also helped to create more confidence in the conservation group by outsiders. The savings group has demonstrated that the community is not only organized, but is also able to manage and account for significant sums of money, thereby increasing the chances of obtaining outside funding for the conservation group.

3. A number of steps leading to formal management

An important lesson learned from Pred Nai is that community involvement in informal conservation or development activities prior to engaging in active management can form a foundation for the success of formal management. In Pred Nai's case, the creation of the formal conservation group and the concurrent active management of their forest grew as a natural progression from the community's informal conservation and environmental protection efforts. Pred Nai's active involvement in conserving and protecting their mangrove forest

helped to establish a strong conservation ethic among community members, increased the unity and cohesiveness within the community and also facilitated a natural development of leaders within the community. The development of the village savings group acted to further increase the community's unity and also acted to build the social, financial, and technical capacity amongst individuals in the village. In addition, the savings group also helped to improve money management skills for community members and demonstrated organizational responsibility, which gave the community more credibility when seeking outside funding for their formal management group.

By engaging in conservation and development activities, prior to assuming the responsibility for management of their resources, communities gain valuable skills and important experience which helps them to succeed in future formal management. Communities which become involved in management of their local resources without any prior management or organizational experience would likely face a higher rate of failure due to a lack of experience. In cases of grassroots initiative for conservation and management these steps of increasing involvement may be even more important as they allow the community in question to not only build capacity within the village but also establish linkages, with NGOs, government agencies and other communities, which may be critical to their success in management.

4. Step-wise evolution allows for capacity building over time

Capacity building is widely recognized as an important part of community-based management. Pred Nai's success demonstrates that many skills and abilities relating to community-based management can be obtained prior to engaging in formal management, and in some cases, of the community's own initiative. The case of Pred Nai Community Forestry Group provides an excellent example of capacity building over time, accumulated from both within and outside of the community, as the community progressed towards management of their local resources.

In cases of grassroots community-based resource management the steps which occur prior to engaging in management activities are important in equipping the community with the knowledge, skills, and connections necessary to succeed in natural resource management and conservation. Pred Nai's case shows a considerable amount of capacity building which was provided in the form of training, carried out mostly by NGOs and government agencies. This formal training took place in conjunction with the activities of the village and conservation group which also helped to build capacity within the village. Pred Nai's case demonstrates that communities can, through their own means and organization, undertake internal or self-initiated capacity building which, although often limited in depth and breadth, will assist in conservation and management efforts. For example, in Pred Nai's case internal capacity building was both formal and informal and ranged from activities as diverse as forming and operating the informal patrol group; initiating a summer camp to teach village

children about local history, the conservation group, and the mangrove forest; and early efforts at reforestation done without outside support.

In many cases within Pred Nai it is difficult to differentiate between internal and external capacity building. For example, the idea for the savings group and the initial training was provided by a local monk, however, once established it was relatively self-contained and the villagers who administered the group gained many valuable skills. This also shows that successful capacity building by outside agencies does not necessarily have to be in the form of classes or formal training but may be delivered simply by facilitating or providing opportunity for the village to undertake activities which will provide members with valuable experiences and learning opportunities.

5. Interplay of leadership, community cohesion and NGO support

Pred Nai's success in conservation and natural resource management is due to a complex interplay of community involvement, support from outside institutions and communities, and strong, honest, leadership. When villagers were asked why Pred Nai had been so successful in their conservation and management efforts these three factors were the most common responses given. Community involvement and support for the project is critical, as participation provides the foundation for community-based management. Linkages with NGOs, government agencies and other communities are critical for capacity building, as well as legal, institutional and technical support. Strong, honest, accountable leadership is needed to provide direction to, and focus for, the community-based initiative as well as to ensure that the community remains in control and the project is not hijacked by outside organizations. In the case of Pred Nai, it appears that these three pillars were key to the success of the project.

6. Leadership key to grassroots movement

Leadership, as mentioned in the previous section, is one of three key elements, including community unity/support and NGO support, to the success of community-based management. The role of leadership, as exemplified by the case of Pred Nai, appears to be even more important as strong leaders may be able to develop unity within the community and cultivate the requisite support from NGOs and government agencies.

Strong leadership is important within most organizations in order to provide direction and guidance. Within community-based management initiatives leadership is important for these same reasons but also for many more unique to community-based projects. For example, charismatic leaders can act: to increase community participation; they can act as a strong unifying force within the community; leaders serve as focal points for networking with government, NGOs, and other communities. In addition, in many cases leaders are from more privileged socioeconomic classes and thus have more education and training, and more personal resources, including time and money, available to them.

Within Pred Nai strong leadership appears to be a key to the success of the project. For example, during interviews when people were asked why Pred Nai had been so successful in their conservation and management endeavors the most common answer given was due to the strong leadership in the community, with many interviewees pointing to one or another leader. Currently, there are two important leaders within the community, the head of the conservation group and the village headwoman. Both are actively involved in different facets of the management effort, including working with stakeholders within the village and networking with communities and organizations outside the village.

7. Partnership with a key organization for building capacity and establishing linkages

Cross-scale institutional linkages are recognized as being critical to the success of community-based management projects. Within projects that have grassroots origins, however, these linkages are not likely to be present at the project's outset. NGOs can play an important role in facilitating the initiation and development of these cross-scale linkages. In Pred Nai's case the NGO RECOFTC, was a critical enabling organization in developing the conservation group and management plan and in creating and developing both horizontal and vertical institutional linkages. RECOFTC became involved with Pred Nai soon after the establishment of the formal conservation group and in 2000 they began a participatory action research project with the community which served as an important catalyst for the conservation group. RECOFTC's involvement was multi-faceted and resulted in co-operative surveys of the mangrove forest, refinement of the management plan, capacity building and technical support. Horizontal linkages were encouraged through the creation of community forestry networks at the district, provincial and regional scale. Vertical institutional linkages were facilitated with government agencies and universities through RECOFTC and resulted in collaborative research projects between the community and universities; study tours of the community by government officials, academics, and other community leaders; as well as greater collaboration between Pred Nai and local government departments. The case of Pred Nai shows that NGOs can act as important catalysts in the development of community-based projects that are grassroots in nature.

It is also important to note that although RECOFTC was a critical organization and offered important support to Pred Nai, it was the initiative of the community which begun the conservation and management efforts. The community had already begun their conservation group, developed a rough management plan and was engaged in managing their mangrove forest when RECOFTC became involved. Thus RECOFTC acted as an important catalyst in helping the project to become successful and especially in developing linkages but the community had acted on their own initiative and had already achieved a number of successes. NGOs appear to be critical in supporting community-based projects; however, it may be best if they become involved after the community has initiated the process on their own. This allows the community to build on experience, establish what

their needs are for support and assistance, and to build community support and ownership of the project.

8. Horizontal learning among communities is the key to replication

Community-based management projects have been split between successful and unsuccessful cases. An important consideration for development and funding agencies is how to replicate, or facilitate the replication, of these successful projects within other communities. Pred Nai's case illustrates that horizontal sharing and learning, through networks and direct intercommunity connections, is an effective means of both replicating and initiating new community-based projects. In addition, horizontal learning and sharing between communities increases the probability of success for a given community-based project as it allows for the community, which is starting out, to draw from the knowledge and experiences, both successes and failures, of more experienced communities.

Horizontal learning among communities, supplemented by technical support from NGOs or government, may be the key to replicating successful initiatives and helping new projects to reach their goals. Instead of being told about an abstract concept from a NGO or development agency, communities seem to be more willing to try their own conservation or development projects when they can see the experiences and results from another community. The initiation of networking between communities allows communities which have not started their own conservation projects to learn about the process of organizing and administering projects, where to obtain outside support and funding, and how to overcome common obstacles.

9. Local ecological knowledge as the foundation for environmental stewardship

There is a growing recognition within academic literature of the important role that local ecological knowledge can play within natural resource management and conservation. Within the context of community-based or co-management arrangements, where the community is the operative level, local ecological knowledge can be especially important. In many cases, local ecological knowledge forms the foundation for the community's relations to the environment.

The case of Pred Nai is a prime example where a community's local ecological knowledge forms the foundation for environmental stewardship by contributing to their conservation and management efforts. For example, the crab collector's precise knowledge of the spawning cycles of Grapsid crabs enabled the conservation group to construct the rules prohibiting collecting crabs during the crab's spawning period. Pred Nai's case also illustrates that although local ecological knowledge can be an important ingredient for successful community-based management it is rarely sufficient on its own. Within Pred Nai, local ecological knowledge was useful for management but could offer the community little assistance in their mangrove restoration efforts. In this case the community's

partnerships with government agencies, which had knowledge on mangrove restoration, proved useful as the government agencies were able to provide needed, practical knowledge. This knowledge of mangrove restoration can then be maintained within the community through the same mechanisms used to transmit local ecological knowledge.

The potential also exists for the integration of local forms of environmental knowledge and conventional scientific knowledge. Local and traditional ecological knowledge can serve to act as hypotheses for collaborative research projects with universities or government agencies. More importantly for community-based management and local capacity building, there is often an opportunity for the community itself to become involved in the design, conduct, and analysis of research projects. For example, Pred Nai is currently engaged in collaborative research projects with: RECOFTC, testing the effect of thinning the mangroves on the populations of Grapsid mangrove crabs; and the TRF testing the effectiveness of bamboo fences and artificial rubber "fish houses" on reducing shoreline erosion. In situations where the community becomes involved in the conduct of the actual research they stand to benefit not only from the results of the research, but also from their participation in the research process itself.

ii. Which lessons were not transferable? Why?

There are two elements which contributed to the success of Pred Nai which are not necessarily transferable to projects in other areas of the world. The first is that within the project there was minimal internal conflict within the village. When conflict was present it was largely suppressed and kept from escalating. For example, there was an existing conflict and power struggle ongoing between two of the key leaders of the project. Despite this the two were openly willing to work together in the interests of the project and it took the researcher over a month in the field to discover the existence of the conflict at all. Although in some circumstances it is best to resolve conflicts as they appear, the relative lack of and low-intensity nature of internal conflict within Pred Nai seems to have led to an ease of internal management and helped contribute to the community's success. The lack of conflict in the community is due to two factors. First, avoidance of conflict has been noted as being characteristic of Thai society (Boyle, 1993) and second, the tight-knit, almost family like, character of the village has also contributed to the civility and lack of conflict in the community. Within different cultural settings where conflict is not socially taboo, community-based management is likely to be impeded and made more difficult through internal conflicts between stakeholders and different user groups within a community.

The second element which contributed to the success of the conservation group in Pred Nai is the patriarchal nature of Thai society (Boyle, 1993). As discussed earlier, leadership is a key element of community-based projects. Within a patriarchal society the task of leadership becomes somewhat easier as there is a cultural tendency to follow those perceived as leaders. This characteristic,

although not unique to Thai culture, is not common to all cultures throughout the world; thus, in some circumstances, leadership within a community may face a more difficult task in rallying community support and administering the community's conservation or management effort. The patriarchal nature of society also contributes to low levels of conflict in the project as villagers are often more willing to follow their leadership even in cases where they may not agree with their actions or decisions.

u. Recommendations to improve the Pred Nai case

Pred Nai Community Forestry Group has achieved great success in achieving both environmental conservation and economic development. Despite the success of the conservation group, however, the project does suffer from shortcomings in a number of areas. First, Pred Nai has developed from a largely independent, grassroots project to a community which stands in the centre of a large number of linkages with other organizations which have become involved in the project or with the community. Pred Nai Community Forestry Group would be well served by implementing an effective method of dealing with the many outside organizations which are involved, or want to become involved, with Pred Nai. It may even be necessary to limit the number of outside organizations to a manageable level. The project also needs to develop a better system of disseminating information about these outside organizations to community members. One of the complaints voiced by villagers was that there were simply too many organizations involved with Pred Nai and the average community member had no idea who these organizations were or how they were involved in the community.

A second and related problem identified by the leadership of the community was that they were simply becoming overwhelmed dealing with the many meetings and conferences required to administer the conservation group and maintain the linkages with the networks and outside organizations involved. The large amounts of time required of the village leadership has begun to detract significantly from their time spend on livelihood activities and with their families. For example, one senior leader in the conservation group shared that he had meetings or conferences, many in distant parts of Thailand, scheduled for 24 days in the month of June alone. If Pred Nai is able to better manage or streamline its linkages with other organizations this would assist in reducing the workload of project leadership. It may also be important to begin including more people in leadership positions, possibly based upon a mentoring relationship with current leaders. A mentoring system for leadership would involve more people in the administration of the project and also act to help to train future project leadership. If a system cannot be found to reduce the time required of Pred Nai's leadership then it may be necessary for the village to seek some outside funding and compensate the leaders for the time that they devote to the project.

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Lessons from the Equator Initiative: The *Casa Matsiguenka* Community-Based Ecotourism Lodge Enterprise in Manu National Park, Peru

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LIST OF ACRONYMS & ABBREVIATIONS

APECO	*Asociación Peruana para la Conservación de la Naturaleza* (Peruvian NGO)
CEDIA	*Centro para el Desarrollo del Indígena Amazónico* (Peruvian NGO)
EMM	*Empresa Multicomunal Matsiguenka S.R.L.* (indigenous enterprise)
COHAR-YIMA	*Consejo Harakmbut-Yine-Matsiguenka* (provincial indigenous organization)
COMARU	*Consejo Machiguenga del Río Urubamba* (provincial indigenous organization)
Ecotour-Manu ASSC	Association of Manu Tour Operator Agencies (private tourism sector)
FANPE	*Fortalecimiento del Sistema Nacional de Areas Naturales Protegidas por el Estado* (national project funded by the GTZ)
FENAMAD	*Federación Nativa del Río Madre de Dios y Afluentes* (provincial indigenous organization)
GTZ	*Gesellschaft für Technische Zusammenarbeit - Cooperación Técnica Alemana* (German Technical Cooperation, funding agency)
INRENA	*Instituto Nacional de Recursos Naturales* (governmental institution)
NGO	Non-Governmental Organization
PA	Protected Area
PNM	*Parque Nacional del Manu* (Manu Nacional Park)

Resumen del Informe

Este informe examina las experiencias aprendidas en el proyecto de ecoturismo Empresa Multicommunal Casa Matsiguenka (EMM) perteneciente a las Comunidades Nativas de Tayakome y Yomibato, Matsiguenkas que viven en el Parque Nacional del Manu, Perú. Este proyecto fue elegido como uno de los estudios de caso para contribuir a la investigación sobre estrategias colaborativas (collaborative) para la conservación y desarrollo en países en desarrollo. Esta investigación esta siendo desarrollada por un equipo del Natural *Resources Institute* de la *University of Manitoba* con el apoyo del *International Development Research Centre* de Canadá. Este informe es producto de las entrevistas y visitas de campo conducidas por la autora entre Noviembre de 2004 y Marzo de 2005, así como también informes y otros documentos facilitados por varias personas e instituciones.

La primera parte del informe describe los objetivos, metodología y antecedentes teóricos de la investigación. La segunda parte provee una breve reseña histórica del contexto en que surge el proyecto Casa Matsiguenka. La tercera parte del informe describe los principales resultados y discusión sobre estos resultados.

Esta última parte se subdivide en seis secciones en los que se describe aspectos relevantes del proyecto Casa Matsiguenka en relación a los objetivos de la investigación. La primera y segunda sección describe los elementos de organización comunal que desempeñaron un rol central en el origen, implementación y desarrollo del proyecto, señalando las instituciones y líderes que colaboraron así como también las fuentes de conocimiento y financiamiento utilizados. La tercera sección examina la red de instituciones que estuvieron y/o siguen vinculadas con el proyecto, identificando los principales 'grupos de interés' (stakeholders) directa o indirectamente ligados al proyecto, y describe sus escalas institucionales desde el nivel local-comunal al internacional; también describe el tipo de vínculo institucional (horizontal o vertical) establecido con la EMM y su impacto en este proyecto. La cuarta sección menciona brevemente los posibles factores de impacto del proyecto en la conservación del medio ambiente y su biodiversidad. La quinta sección examina los indicadores de reducción de pobreza y mejora del bienestar comunal ligados a la EMM. Luego el informe finaliza con un análisis descriptivo de la EMM, identificando seleccionadamente una lista de aprendizajes adquiridas a través esta experiencia.

Los aprendizajes mencionados en este reporte están divididos de acuerdo a su potencial de tranferibilidad a otros proyectos comunes y con contextos similares. Los aprendizajes identificados como potencialmente transferibles incluyen entre otros: la importancia de la incorporación de conocimientos tradicionales, el largo proceso necesario para la creación de nuevas capacidades, el éxito económico de la producción artesanal en la economía casera, la necesidad de implementar un estudio de mercado y de marketeo, la necesidad de desarrollar asociaciones empresariales estratégicas particularmente con el mercado justo ("Fair Trade" market). Los aprendizajes derivados al proyecto que se mencionan como no transferibles (a nivel internacional) son: el uso del sistema de faenas para la implementación de la Casa Matsiguenka, y los vacíos y/o ambigüedades en la legislación peruana en relación a empresas multicomunales que proveen servicio turístico. Finalmente se provee una lista de recomendaciones dirigidas a las organizaciones internacionales de desarrollo, a las instituciones responsables del manejo de las áreas protegidas en Perú y a la Empresa Multicommunal Matsiguenka.

Este informe se hizo posible gracias a la colaboración de muchas personas e instituciones a las cuales se les expresa un inmenso agradecimiento.

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1. Introduction

1.1 Brief description of research

Community-based ecotourism that is directed by indigenous communities in protected areas may provide them with an ecological and economic strategy that would allow them to diversify their livelihood by adding supplementary income (from the cash economy) to their subsistence lifestyle while also supporting biodiversity conservation. Indigenous groups' innovative initiatives in the tourism industry, a sector in which they have always been marginalized, may open up an array of possibilities for improving their quality of life, particularly in the case of groups living in protected areas of the rainforest. By engaging in community-based ecotourism, they may gain a new perspective on different opportunities and develop ways of managing resources in protected areas. This might also prove to be an environmentally and institutionally sustainable strategy for both socio-economic development and the conservation of biological diversity.

This report presents preliminary findings from fieldwork carried out in Peru on the *Empresa Multicomunal Matsiguenka* (EMM), a community-based ecotourism lodge within Manu National Park. This research is one of several Equator Initiative (EI) case studies being conducted through a coordinated team project at the Natural Resources Institute of the University of Manitoba and supported by the International Development Research Centre (IDRC), Canada. The documentation of the research findings will contribute to further refining the theory and practice of collaborative strategies (community-based conservation) for addressing both biodiversity loss and growing impoverishment, particularly in Third World countries.

I wish to acknowledge all the individuals who generously gave of their time by participating in the interviews and focus groups, and who in some cases also provided documentation they considered relevant to this research. I am particularly grateful to the Matsiguenka communities and colleagues in the field; without their generous support and participation this study would not have been possible.

1.2 Purpose

The purpose of this study is to research the principal lessons learned from the *Empresa Multicomunal Matsiguenka* (the Matsiguenka Multi-community Enterprise), a pilot project on community-based ecotourism in the Peruvian Amazon concerned with how biodiversity conservation and generation of income for local residents may be simultaneously achieved.

1.3 Research objectives

This report primarily addresses the following objectives:

1. To document the role of community organization in the development of the EMM
2. To identify and describe the cross-scale institutional linkages of the EMM

1.4 Methods

The research employed a case study approach. The case study method is useful for investigating a contemporary phenomenon within its real-life context, and it allows for the analysis of a variety of evidence (e.g., documents, interviews, participant-observation) (Yin, 1989). The unit of analysis in this study is the EMM lodge, *Casa Matsiguenka*, which is located in Manu National Park (PNM), within the Biosphere Reserve Zone, in the Department of Madre de Dios, in southeastern Peru (see Figure 1); the headquarters office is located in Cusco. The two

major components of the research were the literature review and the field research. The literature review provided the researcher with a theoretical framework for the study. Fieldwork was conducted from November 2004 to April 2005 at multiple sites (Lima, the capital of Peru; Cusco, a provincial city; Tayakome and Yomibato, which are communities and the ecotourism lodge setting within PNM; and Puerto Maldonado, a city in the province of Madre de Dios).

Data were collected from primary sources: a combination of semi-structured and open-ended interviews, focus groups, participant observation and personal discussions; and from secondary sources, which included reports prepared by consultants, NGOs, researchers and the Peruvian government, evaluation studies of the project; tourism surveys previously conducted by the enterprise, academic articles, publications and theses, videos, websites and brochures.

The researcher conducted a total of 55 semi-structured and open-ended interviews with multiple participants who continue to be directly involved in the EMM at the present time or have been involved in the past (community leaders, EMM managers and staff, NGO personnel, regional and national government officials, researchers, consultants and facilitators), as well as with others who have been directly involved in the ecotourism industry in Manu National Park (tour agency managers and/or owners, tour guides, park guards, the community priest, tourists and academics). A total of 4 focus groups were held: one in each of the two communities, one with the staff of the ecotourism lodge, and one with community leaders. These focus groups were conducted to gather information on opinions and expectations about the EMM, the amount of time they were willing to dedicate to the EMM, and the type of training each one would like to acquire to carry out their work in the EMM. Participatory observation was carried out through involvement at the EMM office and participation in community meetings and social events in order to better understand both the dynamic at the EMM (in the lodge and main office) and also the Matsiguenka culture. The researcher also participated in an ecotourism package conducted by a local tour agency in PNM, which employed indigenous tour guides from the EMM.

Finally, with the objective of gaining a clearer perspective on the EMM through comparison, the researcher visited the Ese'eja Native Community of Infierno, a community-based ecotourism lodge that was a finalist among the projects considered for the 2002 Equator Prize (www.undp.org/equatorinitiative/secundary/equator_prize2002.htm#peru).
The researcher conducted 8 interviews and one focus group there and also visited tourism circuits.

The present technical report aims to respond to a series of questions elaborated by the University of Manitoba research team in order to provide information for comparing case studies. Here the researcher looks at the different stages that the EMM has gone through.

1.5 Theoretical background

With the increasing concern in global politics about environmental degradation, a new perspective on tourism has been proposed since the 1980s which aims to integrate development with biodiversity conservation. This alternative model of tourism is referred to as ecotourism. Campbell (1999) states that definitions of ecotourism vary according to the priorities of actors and analysts. From a global perspective, ecotourism has been introduced as a synergetic strategy that embraces both biodiversity conservation, especially in rainforest areas, and socio-economic development (Bookbinder, Dinerstein, Rijal, Cauley, & Rajourias, 1998; Koziell, 2001; Yu, Hendrickson, & Castillo, 1997). Ecotourism is viewed as a primary "means of avoiding environmental degradation while sharing economic benefits with the local people" (Toepfer, 2001).

Within ecotourism, one alternative model is a community-based approach to conservation and development that promotes empowerment of local people and respect of traditional lifestyles (Belsky, 1999; Campbell, 1999; Langholz, 1999). This alternative model of ecotourism is commonly called community-based ecotourism. Promoters of community-based ecotourism

argue that a locally owned and controlled ecotourism economy will direct proceeds into local hands, provide incentives for biodiversity conservation, support grassroots organizations, and educate both visitors and residents (anaicr.org 2002). Moreover, Stronza (2001) claims that "when ecotourism is truly participatory – that is, when local hosts are involved as decision-makers as well as employees – ecotourism can become a transforming experience rather than simply an economic incentive."

Community-based approaches for conservation and development such as community-based ecotourism work through a network of institutional linkages that involve numerous actors and interests. These linkages can take place at multiple scales and involve institutions linked across different levels of organizations (vertically) and across space (horizontally) (Berkes, 2003). Vertical linkages refer to the hierarchical relationships of different organizations, from local institutions to international organizations. Horizontal linkages may include a community network involved in resource management initiatives as well as the experience that results from this exchange. These horizontal and vertical institutional interconnections are known as cross-scale linkages (ibid). Obtaining a better understanding of the cross-scale institutional forms of linkages and their role in the success of initiatives is central to identifying lessons learned from a research project. Additionally, by understanding the consequences of involving governmental and non-governmental institutions, it may be possible to suggest tools that could be used by community groups, government, and NGOs to maintain and enhance support for strengthening local institutions.

Community-based ecotourism can bring different benefits to an indigenous community, such as empowerment in decision-making on resource management and also supplementary income for local people. However, there are issues related to this type of community development that are more complex and profound. This development model is proposed and promoted to native communities (and maybe imposed on them) by external actors whose interests are mainly market-driven. The model not only reflects an unequal power relationship between the multiple stakeholders in the context of conservation, development, and ecotourism (the environmental conservation entrepreneurs and *professionals* in tourism and marketing, governmental and NGO personnel, and the native people who are "the unskilled forced labour" – that is, the white upper middle class fraction and the indigenes), but it also reflects the western values that predominate in promoting integration into the monetary market economy, which may contribute to the *cultural homogenization* of societies over the long term.

From my perspective, the restoration of local people's rights as actors in tourism (for instance, their rights to recreate and reinvent their identity) is a primary concern. However, undertaking an ecotourism project always involves multiple local and non-local interests that are in competition with each other (Lanfant, 1995). The images projected through ecotourism (e.g., the "noble salvage" in harmony with "pristine" nature) are mainly produced and managed by international tourism marketing interests that are concerned with meeting western tourism's hunger for authenticity. This process of commoditization of ethnic identity, in which identity is a product manufactured and packaged according to marketed procedures (ibid), both challenges and limits local people's capacity to "negotiate" their fragile and dynamic identity (but not their agency, i.e., their capacity to continue to recreate their own identity). Nonetheless, ecotourism, as a form of the international tourism phenomenon, and as a mainstream discourse of sustainable development, constitutes a *paradox*. Participatory ecotourism produces both positive and negative impacts for the communities involved (Duffy, 2002). It supports some cultural aspects of ethnic minority cultures; it may strengthen community organization and economic sufficiency; and marginalized local groups may be empowered through participation in decision-making processes and ownership. However, ecotourism also intervenes in the definition of values, and the redefinition and marketing of identities. Furthermore, it is a main factor behind cultural homogenization of societies. That being said, ecotourism can also act as the political and cultural

ground on which *negotiations* are taking place as a form of struggle and resistance by indigenous groups that interface with both tradition and modernity.

2 Background information

2.1 General information on Peru

Peru is a multicultural and multi-ethnic nation with an ancient history. It has great cultural diversity that includes approximately 96 different ethnic groups, which together constitute a total population of 27.5 million. Peru is the third most "mega diverse" country in the world due to its biological diversity (Ohl, 2005). Peruvian territory consists of one of the most diverse ecosystems in the world: it contains the tropical Andes; one of the most threatened hotspots; one of the most relevant wildlife tropical zones; and the rainforest of Peru, which is one of the largest in the world (700,000 km^2) (Herrera, 1989). Nowadays, tourism is the second-largest contributor of foreign currency after mining. Tourism represents: a) 1 million tourists per year; b) it generates approximately US $ 1,200 million in profit annually; and c) it supports 500,000 jobs directly and indirectly related to the sector (Chavez, 2004).

Ecotourism, particularly in the rainforest of Peru, has grown rapidly since the mid-1980s (Yu, et al., 1997). The number of ecotourism agencies has increased tremendously due to the growing demand for this type of alternative tourism. However, the lack of a certification program for ecotourism agencies has meant that there is no guarantee that tour operators will practice ecotourism as it is commonly defined. As a result, a number of "ecotourism" agencies in Peru may be using "ecotourism" primarily as a label to attract "eco-tourists".

2.2 Manu National Park (PNM), indigenous inhabitants and ecotourism

One of the most well known areas for ecotourism in Peru is Manu National Park (PNM), which is located in southeastern Peru between the departments of Madre de Dios and Cusco, in the provinces of Manu and Paucartambo respectively (Smith & Huaman, 2001). PNM covers 1,533 million hectares of land and is the core zone of the Manu Biosphere Reserve, one of the largest protected areas of tropical rainforest in the world (Shepard, Rummenhoeller, Ohl, & Yu, in press). Shepard, et al. (ibid) state that PNM was founded on the deep contradiction of "untouchable" forest which is in fact home to various indigenous populations, including the Matsiguenka[1]. The Matsiguenka, among other ethno-linguistic groups, have been moving around the Manu and Madre de Dios watersheds since before 200 BC (Huertas & Garcia, 2003). The Matsiguenka as well as other indigenous groups[2] are "refugees from the violence of a savage global economy" – they are survivors of persecution and exploitation (including slavery) by rubber harvesters, woodcutters, *haciendas*, missionaries, and others – who manage to survive by isolating themselves from outsiders, and they have been living in settlements around Manu River since the 1960s (Shepard, et al., in press).

The two Matsiguenka communities, Tayakome (with a population of 200) and Yomibato (with a population of 220), were recently recognized (1988)[3] by the government (Figure 1). Tayakome was established as a result of the influence of Protestant missionaries of the Summer

[1] Amazonian ethnic group that belongs to the Arawak linguistic family, the largest in the Amazon of South America. Nowadays, they are the largest group in PNM.

[2] Which include the Yora (Nahua), Mascho and Mashco-Piro, Piro (Huertas et al., 2003).

[3] These are the only communities legally recognized within PNM, but which do not hold land titles. (Chinchiquiti, 2000). There are also "non-contacted" people living within Park boundaries, some of them Matsiguenkas who are partially in contact, particularly with Yomibato (Shepard, personal communication, February, 2005).

Institute of Linguistics (SIL), who in the early 1960s settled there to evangelize the population; they also built a school and provided educational and medical services (Shepard, 2002; Shepard, et al., in press). The eviction of the SIL missionaries soon after the establishment of PNM (1973) created a vacuum in basic services for the Matsiguenkas, which resulted in emerging tensions within the community and caused the separation of one group, who moved to a more remote location that later became known as Yomibato (1980s) (Chinchiquiti, 2000; Shepard, et al., in press).

Since the middle of the 1980s some tour agencies have started to bring tourists to Manu National Park. During this time the tour agencies have promoted adventure tourism in which nature equals adventure and Manu equals "Amazonian paradise" with spectacular fauna and flora. Then, during the 1990s the increasing demand from "ecotourists" led tour agencies to promote "ecotourism" as a marketing label. From the beginning, only tour agencies from Cusco have been making a good living through bringing European and North American tourists to Manu land. In my fieldwork I learnt that approximately 70% of these companies are owned by foreigners.

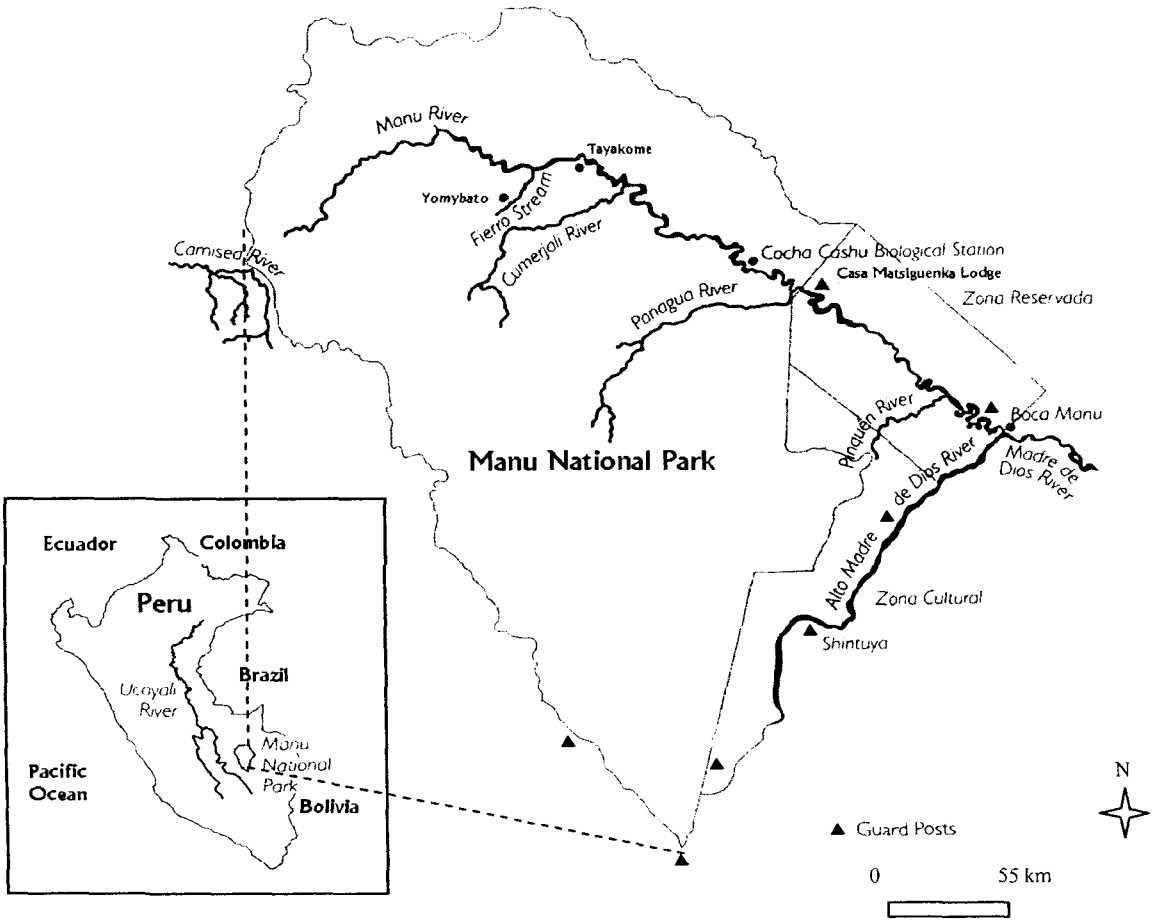

Figure 1. Peru and the study area, Manu National Park, showing the two communities, Tayakome and Yomibato. Casa Matsiguenka lodge is an 8-hour boat trip downriver to the closest community (Tayakome), and two days or more from the more remote community (Yomibato) (Source: Map adapted from Shepard, 2002).

2.3 The *Empresa Multicomunal Matsiguenka* (EMM): An indigenous ecotourism enterprise

The Matsiguenka leaders of the communities of Tayakome and Yomibato decided to participate in the tourism market, but without giving up their territories or abandoning their traditional means of livelihood. Beginning in the early 1990s, they started putting pressure on PNM officials to allow them to develop an economic alternative as compensation for the restrictions placed on them due to living in a protected area. The Matsiguenka leaders' main interest has been to steer some economic benefits from tourism towards their communities in order to improve their quality of life. I decided to study the EMM because it is a project that has emerged from a very grassroots level and with a strong sense of autonomy. From an anthropological perspective this case allows a look at the indigenous drives towards ecotourism.

The EMM is a partnership of the two Matsiguenka communities in PNM, both of which are willing to negotiate with, and learn from, various institutions and people in the conservation endeavor and the tourism market. I find it important to pay attention to this type of local community effort; I understand "local" to mean a group of people who have a deep historical connection to their culture and environment. In the proposal presented by the Matsinguenka communities to the 2002 Equator Prize, they expressed their discomfort with top-down conservation and the international tourism industry in their territories (e.g., the marginalization and commodification of their cultures as Amazonian tourism attractions). Instead of being passive, they are putting a great deal of effort into creating their own indigenous ecotourism enterprise, in accordance with particular priorities. They are broadening the parameters of doing business and dealing with global processes, while exploring in truly participatory terms an approach for sustainable development and conservation.

3 Major Findings and Discussion

3.1 Contact information

Casa Matsiguenka Lodge: *Quebrada Salvadorcillo*, in the Reserve Zone of Manu National Park, Province of Madre de Dios, Peru.
Headquarters office: Av. Sol 627 "B", of. 305, Cusco, Peru
Key Person: Margot Valer (Assistant Manager)

3.2 Community organization

3.2.a Origins of the project

i) *Date of community initiation*

The indigenous leaders of Tayakome and Yomibato, the two communities that own the EMM, stated that they began to explore the idea of creating a Matsiguenka lodge in the early 1990s. Between 1992 and 1996 the two Matsiguenka communities, in collaboration with outsiders and NGOs, repeatedly requested land concessions from the Peruvian Department of Natural Resources (INRENA) in order to build their Matsiguenka lodge within Manu National Park (PNM).

ii) Date of formal establishment (EI date)

The project planning process for the establishment of the lodge started between July and August 1996, when INRENA officials visited the indigenous communities of PNM with the objective of supporting the development of the Matsiguenka lodge project. In 1997 the two

Matsiguenka communities formed the enterprise, *Empresa Multicommunal Matsiguenka S.R.L.* (EMM), and constructed the *Casa Matsiguenka* tourist lodge. This lodge enterprise was formally established as a *pilot project* through agreements between INRENA, the German Technology Cooperation (GTZ), and the two indigenous communities, under the auspices of the EMM. INRENA and the EMM signed a 20-year renewable agreement in which a 6-hectare land concession was granted to the communities for tourism purposes. In exchange, the indigenous enterprise committed to give 5% of their monthly profit to the PNM office.

iii) What inspired or precipitated the project? What were the sources of inspiration for the project?

The need to find a sustainable strategy that would ensure biodiversity conservation while compensating the indigenous communities within PNM pointed towards ecotourism as the best solution.

Since the creation of PNM in 1973, the indigenous people have lived under restrictions within the Park. They have been prohibited from using guns and from commercializing any resources from the forest. This situation has made it difficult for the Matsiguenka to conduct trade or to obtain monetary income unless they emigrate to other territories. Therefore, the Matsiguenka leaders have constantly asked the PNM officials to compensate them and requested an economic alternative that would provide them with some monetary income.

a) Whose idea was it? Locals, outsiders, government, NGOs, etc.

Several interviews with locals and outsiders revealed that a North American biologist brought the idea of ecotourism as an alternative business for the Matsiguenka in PNM in the early 1990s. He belonged to Wildlife Conservation International and was conducting research in PNM. This person proposed that the Matsiguenka in Tayakome work together on tourism as a way to obtain some economic benefits. In 1992, the Matsiguenka from Tayakome community, together with the biologist (researcher) and a NGO, built the first setting for an ecotourism lodge. But PNM officials considered the project illegal and its continuation was prohibited. The biologist and the ecotourism NGO were banned from entering PNM. The Matsiguenka leaders from Tayakome were disappointed and saw their relationship with the PNM officials fall into a deep(er) crisis.

b) Trigger event & Catalytic element

In 1987, the first concession of land in PNM was given to a private tourism agency to build a lodge on a 10-hectare site within the Reserve Zone of PNM (Rummenhoeller, 2000). Between 1994 and 1995 more land was given as concessions to other private tour agencies, and they were given permission to build their own campsites. These events triggered NGOs like CEDIA[4] to propose the concession of 40,825 hectares of land within the PNM for the benefit of the Matsiguenka communities so they could build an ecotourism lodge. Such a project was proposed as a way of compensating the Matsiguenka for their lack of land title and for the prohibition against commercialization of natural resources. So, in 1994, CEDIA formally presented the first Matsiguenka lodge project proposal to INRENA, asserting that it was written based on a request expressed by the indigenous communities (Rummenhoeller, 2000). INRENA did not approve the project proposed due to an apparent lack of technical and economic support (INRENA & Sociedad Zoológica de Frankfort-Coppin & Asociados, 2004; Rummenhoeller,

[4] CEDIA is a NGO that works for recognition of land title and other indigenous rights of Amazonian indigenous groups in Peru.

2000). In spite of this result, the indigenous communities' leaders persisted in requesting approval for the lodge project.

In 1995, in the absence of any response from PNM officials, the leaders of the two Matsiguenka communities within PNM and the Matsiguenka regional organization (COMARU[5]) wrote a letter to the Ministry of Agriculture complaining of the negligence on the part of the PNM officials. In support of their claim, leaders of surrounding indigenous communities wrote a letter to the President of Peru (Alberto Fujimori) asking for the immediate approval of the Matsiguenka lodge project. Furthermore, the national newspaper *La República* wrote an article that reported on the struggles of the Matsiguenka communities in the PNM to gain approval for their lodge project (INRENA, et al., 2004). Additionally, the FANPE[6] project, which was based on an INRENA-GTZ agreement, included a budget for INRENA to implement better management of the designated protected areas in Peru.

In sum, the trigger events and the catalytic elements for the Matsiguenka lodge project were a combination of factors: 1) outsider influence brought the idea of ecotourism; 2) the desire of the Matsiguenka communities in PNM to have an economic alternative; and 3) the pressure that the indigenous communities and NGOs exerted on INRENA authorities (at a regional and a national level) to take action to improve the Matsiguenka's living conditions by giving them an economically sustainable alternative.

3.2.b Leadership and key people

i. Individuals: locals and/or outsiders. What role did they play? How did their role change during the course of the project?

"The Matsiguenka who have worked on the lodge project are the true leaders."
(Former FANPE consultant for the EMM monitoring plan, 2005)

Local leaders

A number of community leaders, such as the presidents of the communities as well as some new leaders, have emerged through the processes of establishing and developing the EMM. The new leaders tend to be young indigenous males who have received some formal education, speak Spanish (although limited), and have been exposed to western ideas. These new leaders are Matsiguenka who feel comfortable having contact with outsiders.

The roles of the EMM leaders have changed during the project development (see Table 1). For example, the community leaders have played a key role in getting authorization for the lodge project. After the lodge project was approved, these leaders took on various responsibilities in organizing their communities and allowing new leaders to emerge.

- **The managers (*gerentes*)**

New leaders have emerged in the planning and development process of the lodge project. The most active community members in the project were elected by their community as *gerentes*, who have worked together with the supporting institutions (i.e., GTZ/FANPE, INRENA, APECO[7]). Since the beginning of the lodge project, each community has elected a manager every two years.

During the first two years of the lodge project, the construction phase, the managers' main responsibility was to organize their people to participate in the construction of the lodge.

[5] *Consejo Matsiguenka del Río Urubamba*
[6] *Fortalecimiento del Sistema Nacional de Areas Naturales Protegidas por el Estado* (FANPE)
[7] Peruvian Association for the Conservation of Nature (APECO)

Other responsibilities have been: 1) to inform the community about problems related to the lodge; 2) to make decisions, with prior approval from the communities, on important issues related to the lodge; and 3) to represent the EMM at any meeting within or outside the community. With the operation of the ecotourism lodge the managers' responsibilities have been refocused and increased: 4) to be in constant radio communication with the assistant manager from the headquarters office in Cusco, 5) to train new staff about the maintenance of the lodge, 6) to manage the operation of the lodge *in situ*, 7) to welcome and guide the tourists, and 8) to administer the handicrafts that the communities have sent to be sold in the lodge and to deliver the profits to the community producers.

- **School Teachers**

School teachers have had a strong influence on the communities. In this sense, their opinion about the EMM has had an impact on the Matsiguenka communities. Also, they have played a "public relations" role on behalf of the communities because the teachers speak and write very well in Spanish (Rummenhoeller, 1998; Shepard, 1998). Some participants of the project have expressed their concern that the teacher from Yomibato is not totally convinced of the benefits of the EMM. These participants think that his opinion might be affecting Yomibato members' participation in the EMM (see Box 1).

Box 1. Leadership crisis in the Matsiguenka communities?
In 2004 and 2005, particularly in Yomibato, there seems to be a lack of interest among most of the Matsiguenka to take on the role of manager (*gerente*) because it involves many responsibilities outside of their traditional activities. Besides having to stay in the lodge for long periods (i.e., one to two years away from the community), managers have to take care of their families, which sometimes also stay at the lodge. This means that they cannot eat traditional food because they cannot hunt, fish, or cultivate land around the lodge area. Their diet is based on western products that they are not used to (pasta, rice, canned food). An indigenous leader from Tayakome, who had been manager for almost five years, stated that he was about to turn into a "gringo without land" because wild animals were destroying his agricultural plot while he worked in the lodge; therefore, he quit the lodge. Also, Shepard (1998) observes that there is a fear among the *gerentes about* being identified as *curaca*[9], which is a negative figure in the Matsiguenka culture. Within the Matsiguenka there is a strong sense of democracy and resistance to any tendency for a powerful group to emerge; at the same time, the Matsiguenka culture cultivates modesty, rather than "egocentrism", as a good human quality, which inhibits the Matsiguenka from standing out as leaders. This cultural characteristic may influence the lack of interest among the Matsiguenka to take on the role of *gerente* (Shepard, personal communication, February 2005). Moreover, in Yomibato many people were discouraged from participating in the project because there were rumors within and outside of the communities about the misuse of money and power usurpation; Shepard advises to reinforce training so that more Matsiguenka will be able to assume the responsibility of *gerentes*, and thereby avoiding that "*curacas* of tourism" emerge (*ibid*).

Outsiders (key people)

- **Assistant Manager of the EMM**

"It took me many years to develop a relationship of trust with the Matsiguenka people."
(Assistant Manager of the EMM, 2005)

As soon as the headquarters office for the EMM was set up by FANPE in Cusco in 2000, a tourism specialist (a woman from Cusco) was hired to be the assistant manager of the EMM. The assistant manager has played a very important role in the decision-making process of the indigenous enterprise. The assistant manager has various responsibilities:

1. to coordinate with the various institutions outside of the communities, such as INRENA personnel tour agencies[8] and other tourism stakeholders in PNM,
2. to ensure that legal requirements, such as accounting, comply with the law; and to do bank transactions,

[8] Since the Matsiguenka are almost isolated, the assistant manager has a key role in representing and developing business relationships with other stakeholders of the ecotourism industry in PNM.

3. to maintain daily radio communication with the Matsiguenka managers,
4. to report to managers and communities about the administration of the EMM and any profit, and
5. to assist the managers and communities in making decisions about the EMM and the lodge, for instance, problems that involve knowledge with which they are unfamiliar such as the modern technological needs of the lodge.

ii. Key organizations: locals and/or outsiders. What role did they play? How did their role change during the course of the project?

"This project has survived not because of the NGO support, but because of the indigenous communities. The Matsiguenka have made sacrifices and persisted in the project." (Anthropologist & Matsiguenka interpreter, personal communication, February 2005)

Local organizations:

- **Tayakome and Yomibato: two Matsiguenka indigenous communities**

Tayakome was the community that first started to seek opportunities to work on an ecotourism lodge in PNM, seeing it as an option to obtain monetary income. Based on a suggestion made by INRENA, they invited the neighboring community of Yomibato to join them in the project. In 1997, these two indigenous communities formally established a joint venture: the *Empresa Multicomunal Matsiguenka S.R.L.* (the Matsiguenka Multi-community Enterprise). Since then, Tayakome and Yomibato have worked as business partners and co-owners of this Matsiguenka lodge enterprise, sharing 50/50 the benefits from enterprise revenues.

Despite the help that these communities have received to create their EMM, none of the institutions has put as much energy into the project as the two indigenous communities themselves. However, participation from both communities has not been even. According to some interviewees, Tayakome's community members have been keener in participating in the development of the EMM while people from Yomibato have been often hesitant about their time investment in such a project. However, some members from Yomibato have expressed feeling marginalized by the EMM, because most project-related activities have been held in Tayakome[10].

Outsider organizations

(Table 1 summarizes the role of the following institutions in the EMM)

- **Instituto Nacional de Recursos Naturales (INRENA)**

Located in Lima, the capital, INRENA's central office is responsible for the administration of the protected areas in Peru. This governmental institution also makes sure that people in and around those territories obey the Law of Protected Areas (*Ley de Areas Naturales Protegidas, Ley N° 26834*) (INRENA & PRO-MANU, 2003).

On the one hand, the institutional role of INRENA in relation to the EMM is to make sure that the law is followed in all initiatives undertaken by this Matsiguenka enterprise. On the other

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[9] *Curaca* is a very powerful figure in the Matsiguenka social imaginary. It is a dominant figure that emerged from the social relationship with the outside world. The *curaca* is a leader with socio-economic power who because of his knowledge of the official language and both cultures (in this case, the Matsiguenka & the western world) mediates between the indigenous population and the economic relationships with the western world (Shepard, 1998: 5-6).

[10] Geographically, Yomibato is much more isolated than Tayakome; this factor has influenced the rate at which outside participants of the lodge project have visited Yomibato compared to the more frequent visits to Tayakome.

hand, INRENA is responsible for supervising the process of executing this pilot project (Rummenhoeller, 2000).

The EMM received strong support from INRENA's central and regional office during the first years. INRENA got the funding for the EMM through the GTZ. It seems that changes among the officials at the INRENA and GTZ administration offices have affected their relationship with the EMM because new officials usually shift priorities and often lack a political approach towards indigenous people in the protected areas.

- **INRENA headquarters office for Manu National Park (PNM)**

Located in Cusco, the headquarters office of INRENA manages PNM in coordination with the park guards who control the area. The INRENA central office fosters the EMM, and the PNM office "formally" assumes the responsibility for the development of the EMM. According to testimonies, it seems that the INRENA headquarters office had had a close relationship with the indigenous communities in the establishment and development of the EMM project, but it has not been clear about the rules that should be applied to this indigenous enterprise.

- ***Fortalecimiento de las Areas Naturales Protegidas por el Estado* (FANPE)**

Through FANPE, a project funded by GTZ to support the Peruvian national park system, the German institution facilitated funding and personnel to collaborate in the development of the EMM. FANPE was responsible for the management of the project's budget.

- **Peruvian Association for the Conservation of Nature (APECO)**

This Peruvian NGO participated in the EMM project from 1998 until 2002. APECO was in charge of managing the budget for the construction of the *Casa Matsiguenka* lodge and for organizing training workshops for the two communities involved in the EMM. Specialized personnel from APECO with extensive experience in working with Amazonian communities developed five training workshops during four years. The workshops aimed to strengthen the Matsiguenka communities' cultural identity and to transfer knowledge in order to enable the Matsiguenka to manage their tourism enterprise.

3.2.c Funding and other resources

INRENA obtained funding from the GTZ to implement the EMM. INRENA and the GTZ signed an agreement in which the latter committed to provide funding and support through their FANPE project. The GTZ provided the funding to FANPE from 1997 to 2003, which was used for transportation, construction material for the *Casa Matsiguenka* lodge, the various training workshops, and the establishment of the EMM headquarters office in Cusco. A total of US$ 110,000.00 was invested by the GTZ, which was distributed as shown in Figure 2.

FANPE was responsible for managing expenses for the planning and establishment of the EMM. It also provided consultants and facilitators to assist in this project. INRENA provided logistical support whenever it was required (e.g., boat and truck transportation).

i. Human resources for initial organization

a. Volunteer support from pre-existing groups

The *Casa Matsiguenka* lodge was built using *faena,* which is a type of community volunteer based organization system that the indigenous communities used to organize themselves by means of a rotating system: groups of families (men, women and children) traveled from the communities to the lodge site and worked voluntarily, taking turns with other

Matsiguenka families every two weeks. The *faena* system was used first to prepare the forest land for the lodge and second to build the lodge infrastructure.

b. NGO and government personnel providing their time or services for free

There was a high level of commitment from NGO and governmental personnel involved in the EMM project; the personnel from the various governmental and NGO institutions often worked in their free time, staying in PNM longer than expected and traveling whenever necessary to resolve problems and move the project forward (Rummenhoeller, 2000).

PNM officials who participated at the planning stage of the EMM project helped the Matsiguenka with even the smallest details. For instance, to be able to establish the EMM the Matsiguenka had to have their citizenship papers (most of them did not), so the PNM officials helped them to fill out the paper work and obtain their documentation. This assistance was not formally part of the EMM project, but it was necessary that the indigenous become citizens for the project to continue.

c. Enlisting free help from outside groups.

There are several researchers who have been working with these communities for many years. These people have helped the Matsiguenka community project by writing letters and preparing proposals, reports and other documents. For instance, one researcher who speaks the Matsiguenka language has been participating in the EMM meetings and doing translations. This help has been provided for free. Likewise, the EMM occasionally have not paid transportation fees when their goods have been sent to the communities or the lodge site; they have benefited from the good will of the people who own/manage the boats (e.g., Governmental/NGO officials, PNM staff, researchers, tour guides, and a few tour agencies).

d. Were there pre-existing relationships between these groups and the community?

Apparently the main relationship these communities had was with researchers and NGOs that often brought donations and/or conducted trade with the Matsiguenka people. The EMM project helped to develop better relationships between INRENA and the Matsiguenka communities in PNM. Some indigenous leaders feel that they have "new friends", like the assistant manager of the EMM (see Box 2), some tour guides, and other people they have met through the EMM.

Box 2. Access to new sources of assistance for the Matsiguenka communities

Through the establishment of the headquarters office in Cusco, the assistant manager has been helping the indigenous people beyond her formal duties. For example, some sick Matsiguenka had to travel to the city to receive treatment. They traveled and received health assistance thanks to the constant support of the assistant manager of the EMM. The relationship between the assistant manager and the Matsiguenka in PNM has grown; on some occasions she has assisted some young Matsiguenka to move to the city, helped with personal money transactions, and facilitated the sending of clothes or other goods to the Matsiguenka in PNM, etc. In sum, access to this type of support would not have been possible without the project.

ii. *Use of free facilities*

APECO donated radio devices to the communities and to the EMM; the GTZ donated solar panels and the water system for the *Casa Matsiguenka* lodge.

3.2.d Knowledge

i. Sources of knowledge: local/TEK and/or outside knowledge

The EMM has benefited from a combination of indigenous and outside knowledge and technology. The Matsiguenka and the outside participants in the project have worked together on the planning and establishment of the EMM. Traditional knowledge in particular has been incorporated in the *Casa Matsiguenka* lodge project.

ii. If there is local knowledge and if relevant, who holds this knowledge?

Traditional indigenous knowledge was used in preparing the forest land for the construction of the lodge infrastructure. Most construction material came from the area and was also provided by the Matsiguenka. The lodge was built by men, women and children from Tayakome and Yomibato, with the participation of some outside personnel for specific tasks (e.g., an architect and specialized construction personnel).

The lodge architecture followed Matsiguenka style throughout the whole setting, and the look of a traditional Matsiguenka household was reproduced. Women prepared the *crisnejas*[11] for the roofs of the lodge cabins (Rummenhoeller, 2000).

The lodge staff (who are all Matsiguenka men) occasionally guide tourists and provide information about the fauna and flora of Manu forest and about how they use them in their traditional activities. Additionally, most of the craft work sold in the lodge is made by women and elders from both communities. Exceptions are the bows and arrows, and some specific crafts that are made by men.

iii. If there is outside knowledge used in the project, was there capacity building (education, training, knowledge exchange)? Who was involved in providing capacity?

"The workshops were always done with the attendance of community leaders and managers ...We always said that this experience was part of a process; we'll learn step by step..."
(APECO consultant, 2004)

The enterprise, lodge and eco-tourism are all new concepts that were introduced to these Matsiguenka by outsiders. APECO personnel provided training workshops to the Matsiguenka during the first four years of the project. The main purpose of the workshops was to strengthen the Matsiguenkas' cultural identity while transferring knowledge to the Matsiguenka so they could work in tourism (see Table 1). Besides APECO personnel, other people have taught the Matsiguenka practical technological knowledge. For instance, the Matsiguenka learned to use radio equipment and gained basic knowledge about water and solar panel systems from technicians hired by the EMM.

Casa Matsiguenka Lodge in PNM

[11] *Crisneja* (*Chamaedora spec.*) is a palm leaf that Matsiguenka women weave to make roofs for their houses.

A group of Matsiguenka leaders from the EMM had the opportunity to visit other indigenous lodge projects. For example, they visited the Ese'eja Native Community of Infierno in Madre de Dios, Peru, which runs the Posada Amazonas lodge; they also visited the Mayangua and Misquitos in Nicaragua, and shared experiences about working in ecotourism. They also participated in international events such as The World Ecotourism Summit-Quebec, in 2002. All of these activities were very enriching experiences for the Matsiguenka leaders; they exchanged their knowledge and visions of a better future with other indigenous people that work in tourism. Also, Matsiguenka leaders made new friends and had the extraordinary opportunity to visit and learn about different places beyond their rainforest territories.

iv. Were there other ways of integrating knowledge systems?

> "As soon as I arrive at the Casa Matsiguenka lodge, I stop acting like a tour guide and transform myself into an interpreter between two cultures: the Matsiguenka's and the tourist's, translating everything that the indigenous guides say to the tourists and vice versa."
> (Manu tour guide, 2005)

The lodge was built by integrating modern architectural designs with Matsiguenka architecture. This characteristic of the lodge was an essential factor for the Matsiguenka peoples to feel a sense of identity within the *Casa Matsiguenka* lodge.

The Matsiguenka have been learning to act as guides through observing how outside tour guides interact with tourists at the lodge. These Matsiguenka guides offer their interpretation of nature only to the tourists or tour guides who request their service while staying at the lodge. One of the outside tour guides interviewed, who brings tourists to the Matsiguenka lodge once a month, mentioned that prior to arriving there she prepares her tourist groups by giving them information about the Matsiguenka culture and the Matsiguenka lodge project. Once they are at the lodge she asks the Matsiguenka staff to act as guides. Also, on the third and last evening of the tourists' visit to the lodge, she organizes an "intercultural meeting" in which the Matsiguenka and the tourists share a table and answer questions about each other's culture. In this way, as in the training sessions, the Matsiguenka and their international guests learn about each other's worlds, their ways of thinking and their different perspectives.

v. Were there learning networks (self-organized groups consisting of people from different organizations, who are engaged in problem-solving, subsequently recycling their experience to tackle new problems)?

During the first years of the EMM, a coordination committee was formed by the supporting institutions, the managers and the community leaders. They met periodically to discuss problems and to propose solutions. Unfortunately, this committee has been inactive over the past two years. Also, the training workshops provided a space for discussing any concerns coming from the Matsiguenka. Because there was usually a diversity of backgrounds and experiences represented at these activities, unique solutions could be found. However, some issues are taking a longer time to resolve such as the tour trails reserved for the exclusive use of the Matsiguenka lodge and the designation of a specific area for agricultural cultivation (*la chacra*)[12] .

[12] Section 3.3.e explains this issue in more detail.

Casa Matsiguenka lodge manager teaching tourists how to hold a bow and arrow, PNM,

3.3 Cross-scale linkages

3.3.a Identification of main stakeholders

The EMM is a partnership between Tayakome and Yomibato, two Matsiguenka communities that have received support from governmental organizations and NGOs. Section 3.2.b describes the roles of the key individuals and organizations in the EMM. See also Table 1 and Table 2. As an ecotourism enterprise that began as a *pilot project*, it has provoked both supportive and non-supportive reactions among the various stakeholders in the PNM, particularly within the private tourism sector.

3.3.b Institutional linkages related to the project

Figure 3 shows the cross-scale interactions of stakeholders and the institutions that have intervened in the establishment and development of the EMM and the Casa Matsiguenka lodge; from 1996 to 2003 the EMM received financial support from FANPE. Figure 4 shows the cross-scale interactions of the stakeholders in the EMM in 2004 and 2005.

3.3.c Key horizontal institutional linkages

i. facilitating/enabling the project

Since the beginning of the project, the strongest horizontal linkage has developed between the two indigenous communities that established the EMM, *Empresa Multicomunal Casa Matsiguenka*, in 1997[13].

[13] The formal establishment of this Matsiguenka enterprise was GTZ/FANPE's condition for providing funding. The GTZ's other condition was a formal agreement between INRENA and the two Matsiguenka communities for the execution of the Matsiguenka project (Rummenhoeller, 2000).

Through the implementation of the EMM, an important horizontal linkage developed between GTZ/FANPE and APECO (1997-2002). Personnel from FANPE got in touch with APECO, an NGO that is well known for its experience in working on environmental education projects with different Amazonian indigenous communities. APECO and the GTZ signed an agreement in which the former was contracted to manage the first stage of the Matsiguenka project. The Terms of Reference for APECO stipulated its responsibility to administer the budget and to provide training to the Matsiguenka (FANPE-INRENA-GTZ, 2000; Rummenhoeller, 2000). Another linkage has been established between the personnel of GTZ/FANPE and the EMM through the assistant manager of the EMM. Unfortunately this horizontal linkage ended in 2003, when GTZ funding support was shifted towards other regions of Peru.

In 2004 and 2005 a solid horizontal linkage exists between the managers from the two communities and the assistant manager of the EMM. There is fluid communication and improved coordination between these groups. The assistant manager reports every day by radio to the manager on duty at the *Casa Matsiguenka* lodge. They communicate regarding the operation of the lodge and the weather conditions, and they also coordinate supply shipments to the lodge, new tour bookings, and other issues. The assistant manager of the EMM also prepares annual economic reports which are presented regularly at community meetings.

The EMM has developed good horizontal linkages with a couple of private tour operators from Ecotour Manu ASSC[14] in Cusco. These tour operators have committed to bringing tourists to the *Casa Matsiguenka* lodge on a regular basis. One of the tour agencies brings tourists once a month. In exchange, the indigenous enterprise offers them a special discount on rental fees. However, new alliances are necessary for the EMM to become a profitable business (see Box 3).

Box 3. New Alliance

The EMM has been asking INRENA to allow it establish business alliances with independent private tour operators. Since 2000, only eight private tour agencies have been allowed to operate in PNM. These tour agencies are members of the Ecotour-Manu ASSC[14] and they signed exclusive agreements to gain land concessions and operate within PNM in exchange for paying annual fees to the PNM office. The PNM-Ecotour-Manu ASSC agreement has produced a monopoly in PNM. Recently, during the process of completing this technical report, INRENA approved changes that would allow the EMM to partner with other tour operators (assistant manager of the EMM, personal communication, September 2005).

ii) as barriers/hindrances to the project

One horizontal linkage that has acted as a hindrance has been CEDIA NGO. GTZ/FANPE reported that CEDIA's influence has been a serious threat to the EMM because its personnel have been constantly spreading rumors and creating mistrust about the EMM. This was especially the case during the first years of the project (FANPE-INRENA-GTZ, 2000). CEDIA presented a formal complaint to the ombudsman's agency in Peru (*Defensoría del Pueblo*) against INRENA, it appealed the institution's formal rejection of the Casa Matsiguenka technical project and it even accused the project of intellectual property theft (Defensoría del Pueblo, 1998; Shepard, et al., in press). This accusation had a negative effect on the Matsiguenka communities as they felt discouraged in their effort to develop their own enterprise and felt particularly offended by CEDIA's allegation of ownership of the Casa Matsiguenka project. The Matsiguenka communities felt that the project belonged to them (FANPE-INRENA-GTZ, 2000; Rummenhoeller, 2000; Shepard, 1998). As a result,

[14] *Asociación de Ecotour Manu* is the association funded in 1992 by the first Manu tour operator agencies, all of them located in Cusco and owned mostly by foreigners.

Tayakome broke links with CEDIA by sending a report to the PNM office and other indigenous organizations (COHAR-YIMA and FENAMAD) in which they stated that CEDIA was no longer welcome in their community (Rummenhoeller, 2000). Before the incident, CEDIA had had a good relationship with Tayakome.

The Matsiguenka communities in PNM and the CEDIA leaders had worked together for more than a decade. CEDIA played a meaningful role in both Tayakome and Yomibato because they were responsible for the recognition of both as indigenous communities within the PNM. Nowadays, Yomibato still maintains a strong relationship with CEDIA because there are kinship ties between this NGO and one of the school teachers.

3.3.d Key vertical institutional linkages

i. facilitating/enabling the project

Since the beginning of the project, the strongest vertical link has been between the Matsiguenka enterprise and the governmental institution INRENA at the national and regional levels. The two Matsiguenka communities initiated contact by asking for government support for their lodge project. According to the agreements signed between INRENA and APECO in 1997, INRENA together with the two Matsiguenka indigenous communities are responsible for the EMM in PNM (FANPE-INRENA-GTZ, APECO, Comunidad de Tayakome, & Comunidad de Yomibato, 1998). However, there are gaps in the law regarding multi-community tourism enterprises as well as in the law governing indigenous people that live within protected areas. This has inhibited the INRENA- EMM relationship. In other words, many interviewees expressed that INRENA has put up barriers that have impeded the progress of the Matsiguenka enterprise.

During the implementation of the EMM, a strong vertical linkage developed between INRENA and GTZ/FANPE. The latter was contacted by INRENA, which knew that this international NGO could provide funding through their FANPE project. In 1997, the project proposal, "Development of Matsiguenka Lodge for Indigenous Communities in PNM – Stage I," was prepared by an anthropologist hired by FANPE, who worked on it together with the two Matsiguenka communities in the PNM (Rummenhoeller, personal communication, November 2004).

Because of the strong vertical linkages, the INRENA headquarters of PNM in Cusco follows the decisions made by the INRENA central office. According to the assistant manager of the EMM, the relationship with INRENA has not always been smooth, particularly with the headquarters office. Usually when the EMM makes a request or claim, or when it reports problems, it takes a very long time for them to receive a clear response from PNM officials. Therefore, on various occasions the assistant manager of the EMM stated that the strategy has been to direct the enterprise's concerns to the INRENA central office.

ii. as barriers/hindrance to the project

> "In Manu Park, the authorities are conservationists who have not put much emphasis on supporting indigenous communities within the park."
> (Anthropologist researcher, personal communication, November, 2004)

According to the testimonies of the various participants involved in the Matsiguenka lodge project, the attitude of INRENA officials has been one of ambivalence and uneven support of the EMM (see Box 4).

3.3.e *Impact of policy environment on the project*

Box 4. Mismanagement in PNM
The assistant manager stated that the EMM has been affected by the mismanagement of PNM at the regional level. For instance, during two years (2000-2002), PNM park guards were allowing tour agencies to use the Pakitza Guard Post within PNM as a temporary camping site for local tour agency tourists. This situation directly affected the Matsiguenka lodge business and therefore the EMM presented a complaint to the INRENA central office to stop such activities (FANPE-INRENA-GTZ & APECO, 2000).

- Since the beginning of the project, the Matsiguenka leaders have been asking to have a small-scale agriculture plot next to the lodge (*la chacra*) to grow their main food staple (cassava or manioc, *manihot esculenta*). By having an agriculture plot, staff in the lodge could continue to enjoy their traditional diet and depend less on a western diet (rice, pasta, canned food, etc.). The Matsiguenka assert that the benefits of having *la chacra* would be both cultural and financial; cultural because they would not have to change their diet and it could also be another attraction at the lodge; and it could provide a financial benefit because it would decrease their dependence on importing outside food and thus reduce expenses incurred to bring supply shipments to the lodge. The Matsiguenka vividly remember when the park guards destroyed the few cassava plants they had been cultivating near the lodge area. It has been more than five years since *la chacra* was requested by the Matsiguenka, but INRENA officials have yet to complete their evaluation of the request.
- In 2000 an "experimental agreement" was established among the eight tour agencies operating in PNM and INRENA. The tour agencies represented through the Ecotour-Manu ASSC signed a three-year contract with the PNM office for land concessions within PNM, in the *Quebrada Salvadorcillo* of the Reserved Zone. This contract has allowed them to build their own campsites near the Casa Matsiguenka lodge. In exchange for these concessions, the tour agencies agreed to pay the PNM office an annual fee equivalent to 7 UIT (*Unidad Impositiva Tributaria*; in 2000 each UIT was equivalent to $ 840.00 US). The agreement was signed under the condition that *only* members of Ecotour-Manu ASSC (i.e., the eight tour agencies) would be allowed to operate within the PNM. At the 2001 General Meeting of indigenous organizations in the province of Madre de Dios, Tayakome and Yomibato leaders declared that such an agreement greatly affected EMM business[15]. The Matsiguenka communities within PNM felt that the INRENA-Ecotour-Manu ASSC agreement was a treacherous approach on the parts of the private and governmental institutions because: 1) Ecotour-Manu ASSC tour agencies were bringing tourists primarily to their own campsites and using the Matsiguenka lodge only as a last option; and 2) from 2000 to 2004 INRENA had no clear rules on whether the Matsiguenka lodge could work with independent tour operator agencies. This also reflected the significant decline in tourist visits to the Matsiguenka lodge since Ecotour-Manu ASSC tour agencies had opened their campsites in 2001 and 2002.

3.3.f *Change the project triggered in government legislation or policy*

Three new regulations approved by INRENA have helped the EMM:

[15] According to PNM officials, the agreement with Ecotour-Manu ASSC complied with the Natural Protected Areas Law, which stipulates that such areas should be used toward productive activities such as tourism. PNM authorities believed that the Matsiguenka enterprise was a unique lodge service that truly did not have competitors in PNM; in this sense, it should not have been affected by the agreement with Ecotour-Manu ASSC.

1) The EMM can have "experimental groups", which is a category that refers to tourist groups directly organized by the EMM, sometimes in partnership with other tour agencies that are independent from the Ecotour-Manu ASSC. This regulation aims to facilitate the entrance of tourists in the EMM. Its purpose has been to help the Matsiguenka lodge staff to have tourist visits as they receive training in tourism services; INRENA is flexible with "experimental groups" of tourists by facilitating their permission to enter the PNM.
2) Campsites in PNM have to be closed during the rainy season (a three-month period from December to March), whereas the Casa Matsiguenka lodge is allowed to continue operating throughout the whole year. This law has aimed to force the Ecotour-Manu ASSC agencies to bring tourists to the EMM (Ohl, 2005). However, only a few tour agencies sell tour packages for the rainy season.
3) In 2005, INRENA has just approved a new regulation, i.e., *Reglamento de uso turístico*, which allows the EMM to work with other tour agencies besides the Ecotour-Manu ASSC agencies. This recently approved regulation aims to support the EMM. Five tour agencies, independent from Ecotour-Manu ASSC, are now bringing tourists to the EMM — 450 tourists visited from January to September 2005.

3.3.g Unusual interactions or relationships among actors

- There have been controversial interactions with/ reactions towards the EMM. One of the unusual interactions occurred in the third year of the project (1998) when CEDIA, the NGO that initiated the original idea of working together with the Matsiguenka on an ecotourism lodge, accused INRENA of plagiarizing the Matsiguenka lodge project. They sent this complaint to the ombudsman agency in Peru, and a trial began. The ombudsman agency was concerned that INRENA and the other institutions involved in the project were not being cautious enough in terms of the risks and negative effects that an ecotourism project might bring to the Matsiguenka in the PNM. It was already unusual for INRENA and the Matsiguenka community leaders to be working together; even more unusual was that they went to trial together and successfully overcame it. Perhaps due to the fact that the main protagonists of this entrepreneurial project belonged to a vulnerable ethnic minority group,[16] the ombudsman agency led CEDIA's complaint into trial. This conflict paralyzed the EMM's work for several weeks.
- An unusual interaction is between the EMM and Ecotour-Manu ASSC, which suggested to the EMM that they join the association. But the Matsiguenka communities did not accept the proposal, nor did they agree to rent or sell their lodge to any of these private tour agencies. According to some interviewees, most Ecotour-Manu ASSC members have been fearful and jealous of the EMM because it is seen as a competitor that enjoys some "privileges" for operating in PNM, such as not having to pay an annual fee to INRENA.

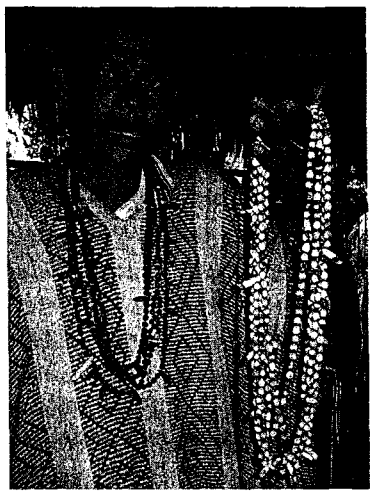
3.4 Biodiversity conservation and environmental improvements

3.4.a Conservation/improvement of target resources

Only a few studies exist that deal with the effect of tourism activities on the flora and fauna in the PNM. One study monitored giant otters in the area during the 1990s, and showed that their population had remained stable (Ohl, 2005). Moreover, Enriquez and Morantes (2004) argue

[16] The Matsiguenka is a tribe that has had sporadic contact with western society and still strongly maintains its traditional subsistence livelihood and language.

that ecotourism activities are at an early stage in the PNM and that the environmental impacts on the Reserve Zone of the park are minimal. They argue that the EMM creates less of a negative impact than the other tour agencies' campsites (ibid). Also, because the Matsiguenka lodge is located within the Reserve Zone of PNM – an area reserved exclusively for tourism and research purposes – nobody is allowed to hunt or cultivate there; only fishing is allowed as an exclusive right of the indigenous people. EMM staff members have gradually learned to respect the conservation laws in the Reserve Zone of PNM. Receiving INRENA support for their lodge has been an incentive for the Matsiguenka to obey the conservation laws (Ohl, 2005).



Since the creation of the EMM, the relationship between the Matsiguenka and INRENA officials has apparently become less tense (Ohl, 2005). In this sense, the EMM has benefited from the improvement in biodiversity conservation and INRENA socio-politics toward the indigenous communities in the PNM.

3.4.b Changes in resource state

One of the important environmental impacts of the project may be on birds like the Scarlet macaw (*Ara Macao*) and Cuvier's toucan (*Ramphastos cuvieri*), which indigenous craft producers have been using to decorate bows and arrows. Such consumption of feathers may affect the population of these bird species in the long term (Shepard, personal communication, February 2005). Nonetheless, no monitoring has been conducted to support this assumption.

In general, according to evaluations of the environmental impact of the Matsiguenka lodge, the positive impacts of the construction and operation stages were higher than the negative impacts (SEGECO, 1997). Impact was low during the construction period because locally adapted techniques were used. The main elements of negative impact were produced through the transportation of tourists (ibid). Thus, water pollution of the Manu River has been a significant concern, as has been the management of garbage, part of which remains buried in PNM (Enriquez & Morante, 2004).

3.4.c Was there any reduction on threats to biodiversity

According to some interviewees, if the lodge enterprise did not exist to give economic benefits to the communities, the Matsiguenka would probably be trying to commercialize wood from trees that fall naturally into the Manu River. This alternative, however, is highly conflictive; on the one hand, the population surrounding the PNM often uses that particular wood; and on the other hand, the heavy boat traffic required to transport wood would produce contamination and negatively affecting the Manu River.

3.5 Poverty reduction

3.5.a Indicators of poverty reduction

The two indigenous communities in the PNM have gained different economic benefits from the Matsiguenka lodge project (see Table 3). Through the ecotourism enterprise, the Matsiguenka have created three new sources of income:

i) Wage Labor as temporary staff of the EMM: A study carried out by Ohl (2005) from 1999 to 2002 shows that the participation of the households varies between the communities. 80% of the households from Tayakome and 62% of the households from Yomibato have been contributing their labor to the ecotourism lodge enterprise – mostly young males from 20 to 30 years old. There is not any published study about the monetary income of Tayakome and Yomibato households prior to the EMM project. Ohl's study shows that 95% of the Matsiguenka household income comes from the tourism lodge activities. It also shows that the average annual household income has increased in Tayakome from approximately less than US$ 5.00 to US$ 152.00, and from approximately US$ 1.00 to US$ 107.00 in Yomibato through working at the ecotourism lodge business (see Table 3).

Jobs are equally distributed between the two communities: 4 workers (3 staff and a manager on duty), which ensures the participation of two workers from each community. The staff has been rotating every two to four months during the first five years. During the past two years the rotation period has been every six months in order to reduce transportation expenses for the enterprise. Through a rotating system of staff, the communities ensure a broad participation of their households in the lodge enterprise.

ii) Annual Community earning from the EMM: The EMM has provided an average of US$ 950.00 per year to Tayakome and Yomibato for their basic necessities. The distribution of the money designated for the two communities is primarily used for transportation, medicine and school supplies (Figure 6). The enterprise earnings have been equally distributed between the two communities (Ohl, 2005). 2004 was the first year in which earnings were invested in the renovation of the lodge and for that reason the enterprise could not spend money on the necessities of the communities.

iii) Income generated from craft production: Ohl's research also observed that indigenous women from the two communities have obtained 40% of their total income from selling crafts (for example, necklaces and cotton purses). Of the total number of craft producers within the communities, 30% are elders (above 50 years old) who obtain 8% of their total earnings by selling crafts at the *Casa Matsiguenka* Lodge. The price of crafts has increased from US$1.50 to US$25.00 (ibid).

3.5.b Improvements in community well-being

> "Before the Matsiguenka lodge existed I had to go to Boca Manu to look for a job to be able to get batteries, a mosquito net and other things. Now we only need to go to Salvadorcillo [the Matsiguenka lodge] to work and earn some money."
> (Tayakome community President, 2005)

The EMM has enabled the households of Tayakome and Yomibato to earn some monetary income without having to leave their territories. These Matsiguenka communities have very few options for developing other economic activities within PNM, which they have inhabited for centuries. It appears that their only possible alternative is the tourism business. Moreover, these indigenous people do not feel totally comfortable with going to bigger villages or urban areas to work for long periods because they have often experienced exploitation. Most of them have difficulties communicating because they do not speak Spanish (the official Peruvian language).

3.6 Community-based conservation

3.6.a Mechanisms, dynamics, drivers

i) Analysis of catalytic elements that made the initiative work

On the one hand, the indigenous communities exerted strong pressure on INRENA officials to grant them an economic opportunity as compensation for not having the right to commercialize natural resources in the PNM. This restriction lasted for more than 20 years, from 1973 to 1996, and was caused by a top down approach to conservation based on a western framework. Thus, the indigenous people of PNM were completely marginalized from the conservation agenda in Peru. The first time that ecotourism was mentioned as a sustainable option for indigenous people within the PNM was during the Committee meetings for the PNM Operational Plan (1991-1993). This proposal was not taken further because PNM officials did not think that it was feasible for these indigenous people, unfamiliar with the market system, to manage a business (Rummenhoeller, 2000). Additionally, in Peru there were no examples of Amazonian indigenous communities managing their own lodges. On the other hand, FANPE had a budget for improving the management of protected areas in Peru. The Anthropological Policy of PNM aimed to work in conservation while addressing issues of concern to the indigenous communities within the area (Ohl, 2005). In 1996, with the new designation of INRENA as being responsible for the National Protected Areas, a commitment was made to support the Matsiguenka communities' request for a lodge. The Matsiguenka leaders were more than eager to organize their people so that the lodge project could become a reality.

ii) Decision-making process

As was indicated in conversations with some of the Matsiguenka leaders, it has been a challenging process for them to familiarize themselves with and adjust to western concepts, such as enterprise and utilities, and to different activities such as working in accordance with a schedule. The indigenous owners of the EMM are people whose contact with western society has been sporadic and their notions about western life and habits are very limited. For this reason, making business decisions has been a slow process based on community consultation.

At the beginning of the lodge project, decisions were made through meetings between the Matsiguenka communities and the supporting institutions (FANPE personnel, APECO and the INRENA headquarters and central office). In 1997, when the EMM was formally established, a Coordination Committee was formed with these supporting institutions (Rummenhoeller, 2000). This Committee was the key to the decision-making process during the first years of the EMM (FANPE-INRENA-GTZ, et al., 1998). As supporting NGOs left the Matsiguenka project, important decisions have involved the Matsiguenka managers and the assistant manager of the EMM. The assistant manager of the EMM makes decisions about the transmission of information about PNM administration and other issues (Ohl, 2005). It is important to emphasize that the opinions of the assistant manager of the EMM – now the only western person participating in the project – has a strong influence on the managers of the EMM, most likely because this person is a tourism professional, while the indigenous managers continue to lack knowledge about the tourism business and the market in general.

iii) Conflict-management mechanisms

"There was open communication and discussion between all of us about any project issue."
(Former chief of PNM, 2005)

Conflicts among members of the EMM are discussed by the two Matsiguenka managers and the assistant manager of the EMM. Whenever a conflict remains unresolved, discussion goes to community meetings. INRENA acts as a mediator when conflicts occur between the EMM and other actors or stakeholders in PNM (see Box 5).

Box 5. Unresolved conflict
During the first years of the EMM project (1996-1997), FANPE and INRENA worked in constant coordination with the Matsiguenka communities to develop the lodge project plan. One of the original main objectives of the EMM project was to transfer knowledge of managing an ecotourism lodge to the Matsiguenka community members of PNM. The objective of the EMM was to be an ecotourism attraction in which the Matsiguenka could offer their interpretation of nature while providing basic accommodation for tourists. Groups of tourists would be brought by private tour agencies that operate in PNM. Since 2000, after changes GTZ/FANPE leadership, FANPE has shifted the emphasis of the EMM emphasis towards turning the project into another tour operator and promoting the lodge as a Matsiguenka cultural attraction. Various interviewees asserted that the reaction of Ecotour-Manu ASSC members was one of feeling betrayed by the EMM. Thereafter, the relationships between the EMM and most of the tour agencies operating in PNM have been highly conflictive, to the point that Ecotour-Manu ASSC members got concessions for their own campsite, and thereby minimize their use of the Matsiguenka lodge.

iv) Conflict resolution and enforcement

A common element of conflicts between the EMM and INRENA has been the accusations that the Matsiguenka lodge staff are hunting, gathering fruit or opening unauthorized trails around the lodge area. In some cases, when real evidence of the accusations are found, the outside participants in the Matsiguenka enterprise (e.g., the assistant manager of the EMM) try to negotiate with INRENA officials to "justify" such incidents. In recent years of the project, the Matsiguenka managers have been assuming complete responsibility and informing INRENA officials whenever accusations have been made.

3.6.b Learning and Adaptive Management

i) How did previous observations lead to project formation and development?

"Some indigenous people from the Matsiguenka communities of PNM had worked with tourism agencies on many occasions. These people had an idea about what tourism was about."
(PNM chief, 2005)

At the beginning of the 1990s, CEDIA and a biologist from World Life Conservation International attempted to develop an ecotourism business with the people of Tayakome. They had several meetings in which the outsiders explained to the Matsiguenka the benefits that ecotourism could bring to their community. There were plans to develop a partnership between the outsiders and the Matsiguenka, and a few huts were built for lodging. The Matsiguenka leaders gained awareness of tourism as the most feasible economic alternative for their community. In spite of the denial of INRENA support in this first attempt at ecotourism, the Matsiguenka leaders insisted and persisted in seeking an opportunity to develop their own tourism lodge project.

ii) How was experience incorporated into subsequent steps of the project?

Only a couple of Matsiguenka men had ever worked in the tourism industry, so in 1999, with the inauguration of the EMM lodge, Matsiguenka staff and managers truly began to learn to

provide tourism services for the first time. The first tour groups were brought primarily by private tour agencies from the Ecotour-Manu ASSC. Thereafter tour group visits increased, giving the Matsiguenka more opportunities to continue improving their tourism service[17]. Workshop sessions organized by APECO reinforced their on-the-ground training (Table 1). Furthermore, through a learning-by-doing process, the Matsiguenka, particularly the managers, have learned to maintain their lodge, provide guiding services and improve their Spanish communication skills.

iii) What was the role of experimentation, if any?

"The Matsiguenka were open and enthusiastic to learn and to work in ecotourism."
(FANPE consultant, 2005)

The whole EMM project was based on experimentation, i.e., it was a *pilot project.* Members of the supporting institutions (INRENA, GTZ and APECO) have expressed that the EMM has been a challenging experience. At some levels, they were aware of the difficulties and dilemmas involved in a project that would contribute to the articulation of the Matsiguenka communities with the market economy. The cultural risk of supporting indigenous entrepreneurship was assumed by the network of institutions that were collaborating with the EMM (FANPE-INRENA-GTZ & Villar, 2000). Unfortunately, since 2004 most of these network of institutions are no longer involved with the EMM.

iv) How monitoring (e.g., rare species) informs the project

There has been constant monitoring of tourists' opinions about the services provided at the EMM. These have been periodically summarized and reported to INRENA and other participants in the EMM. The tourists' responses to Matsiguenka services have provided clues for improving their services. For instance, some tourists mentioned that the entrance to the lodge (at the shore of the river) did not feel very safe, so the Matsiguenka built ladders to make it more secure.

Despite the fact that a socio-cultural and an environmental monitoring plan had been developed, these plans have not been applied satisfactorily. However, a 2000 FANPE-INRENA/GTZ report, in response to a request made by the ombudsman agency, expressed that in the sociocultural realm, the Matsiguenka project has not created any unacceptable negative effects on the Matsiguenka communities (for more on monitoring see section 3.6.f.i)

v) Barriers to CBC, and how the barriers were overcome

The most significant barriers have been in marketing with the aim of bringing enough tourist groups to guarantee revenues to the communities. To ensure more visits to the lodge, FANPE negotiated with INRENA to allow the EMM to have "experimental groups" (see 3.3.f.). In this way, the Matsiguenka enterprise will depend less on the private tour agencies.

vi) Combining knowledge systems to solve problems

During the five first years of the EMM, problems were resolved in meetings between the community leaders and the supporting institutions. Problems were exposed by the participants who, in accordance with their roles (as manager, consultant, facilitator or INRENA officers), assumed the responsibility of doing follow-up paper work to solve the problem. While the

[17] In 2002, due to the decrease of tourists by 50% (see Figure 5), FANPE assisted the EMM in marketing and in retrieving tourists to visit the Matsiguenka lodge.

supporting NGOs were active, the tendency was for FANPE personnel to advocate on behalf of the EMM in discussions with INRENA. Since 2003, the Matsiguenka managers and the assistant manager have had to deal with solving problems on their own.

vii) Was there adaptive management (learning-by-doing) with the organization structure and/or with ecosystem management?

The operation and management of the lodge have been real learning-by-doing experiences in how to provide good service and run an efficient enterprise. For example, in the beginning the idea was for tourists to experience the Matsiguenka lifestyle, which meant sleeping on the ground. Therefore the lodge beds were on the ground. But after receiving complaints from tour agencies (who did not like seeing their clients sleeping on the ground), the Matsiguenka decided to modify their beds so that they would be raised above the ground. Through this example we can see that they put an effort into finding a middle ground between their own and a western standard of comfort.

3.6.c Community benefits from biodiversity conservation and environment improvements

i) What direct benefits were observed

> "If the lodge didn't exist, there would not be a way for us to buy clothes and other basic stuff. Now, we don't need to bother Fitzcarrald or the Mayor of Boca Manur about our problems and necessities."
> (Group interview to Tayakome leaders, 2005)

Having an enterprise and owning a lodge is something for the Matsiguenka to be proud of, and now other ethnic groups from the Amazon look at them with more respect. For this reason, the EMM is considered a successful project in social terms. Also, with the profit made from the lodge enterprise, the communities have satisfied some essentials/necessities, such as transportation, school supplies, and improved medical services (Figure 6; also see section 3.5).

ii) What indirect benefits were observed

In 2002 the EMM was the only one of its kind and it was invited to the World Summit of Ecotourism in Quebec. In 2003, it was given an award by the President of the Peruvian Republic and the Ministry of Agriculture for being an honorable example of organization and successful rural development.

3.6.d Livelihood strategies, coping and adapting

i) How did involvement in the project affect other livelihood pursuits, negatively or positively?

According to Ohl's study (2004a), the impact of the EMM on the communities' traditional economic system has not been significant. One main reason for this is that the community members do not generally invest much time in working for the EMM.

In the interviews I conducted, the Matsiguenka leaders clearly expressed their intentions to continue working on the EMM. They are willing to adapt to the work requirements at the lodge, which means temporarily moving out to the lodge: 6 months for staff and 2 years for the managers. They have had to adapt to a new routine (e.g., working under a rigid schedule) and new living conditions (e.g., eating western products because they cannot cultivate or hunt).

The most affected households have been those of the managers; the manager moves to the lodge and sometimes his family comes, too. Besides disrupting communication with the community, this move implies temporarily abandoning the family land plots. One of the worst results has been changing their diet to western food, because this is mostly what is available within the lodge. The men working as staff also have had to stop providing meat to their families for the period that they are away from the community. Positive impacts have come from the profit made through working at the lodge. The earnings have allowed their families to acquire supplies that they could not produce on their own.

ii) How did the project affect the ability of households and the community to adapt to changes (e.g., markets)?

Overall, the project has helped the Matsiguenka to adapt to changes by giving them a chance to earn some monetary income without having to completely abandon their territories and traditional economic activities. The EMM has allowed these indigenous communities to articulate with the market economy in a gradual and more advantageous way than they had previously experienced (for more explanation see section 3.5.b and section 3.6.f.i).

3.6.e Resilience of communities, livelihoods and management systems

i) Did the project add options?

"Some NGOs thought that we would not be able to manage a lodge because we speak little Spanish...but we want to do it ourselves...if it fails we'll know that we can not do it. But Casa Matsiguenka remains open, so that must mean that we can do it and now we do not need to leave our land or our children."

(Community Leaders from Tayakome, 2005)

The EMM is a new source of income for the indigenous community members. The EMM aims for the Matsiguenka to be able to manage their own lodge enterprise. The managers in particular have been slowly learning and gaining confidence to assume more responsibility, however, they are aware that it is a long process and they need more training and assistance. Some members of the younger generation are looking to the enterprise as a future source of employment.

ii) Did the project create learning opportunities?

Since the first years of the EMM there have been several workshop sessions to train the indigenous people, particularly the managers. Workshop objectives have varied along with the progress of the EMM: 1) to prepare some Matsiguenka to work with the non-Matsiguenka (i.e., tourists and the tour agency staff); 2) to improve their reading and writing in Spanish, and their mathematic skills; 3) to understand some basic concepts of the monetary system, such as enterprise, utility, investment, banks, bank accounts, job scheduling and management, etc. Through these workshops, the non-indigenous participants have also learned about the levels of expectation expressed by the Matsiguenka as well as some of their important cultural concepts (Rummenhoeller, 2000).

iii) Did the project create self-organization opportunities?

One of the meaningful effects of the EMM has been strengthened community organization. None of the foreign institutions has put as much energy into this project as the indigenous communities. In this sense the EMM has been a stimulus for the Matsiguenka to

strengthen their community organization. Otherwise the EMM would not have survived through various crises. Both communities quietly overcame their own disparities and tensions to organize themselves in order to work together for the EMM (Shepard, et al., in press).

3.6.f Transferability of the lessons from this EI case

i) Which lessons were likely transferable? Why?

Some of the following lessons might be transferable, particularly to other community-based ecotourism projects under similar socio-economic and cultural conditions:

- **Inclusion of traditional knowledge plays a meaningful role in the Matsiguenka's identity and pride in the EMM**

"...of course there has to be storytelling...we can show plants but Matsiguenkas know not only plants, we know how the Earth was in the past, where monkeys come from, where all animals come from, this has to be told...if not , this is not an indigenous lodge."
(Leader of the EMM from Yomibato, 1998)

The inclusion of traditional knowledge in the EMM is an example for other development projects. The strong identity and sense of pride in the lodge enterprise ownership is based on the fact that it was created by the will of the Matsiguenka people; more importantly, it reflects their Matsiguenka culture through various elements: architecture, crafts, interpretation of nature and traditional use of plants, and sometimes their storytelling. However, discussions have been held since the planning process of the EMM about not turning Matsiguenka culture and people into "tourist attractions" and "objects", which is a constant risk in any indigenous tourism enterprise. For instance, the original proposal aimed to build a tourist-native relationship that would prevent natives from turning into servants of the tourists. Therefore, the original plan proposed that the tour agencies take charge of most of the tourism services (such as transportation and food supply), while the indigenous lodge would only provide basic accommodations and guided tours around the lodge area. In 2004 this feature continues and the EMM was looking into hosting workshops on ethno-ecology for international students, with the participation of Matsiguenkas and some researchers in the field.

- **Capacity building is a very long process**

"If we would stay on our own, this [project] wouldn't have worked...we were not ready to assume full responsibility of the lodge...we still don't know... [we are] like children who have to be fed first and someday will manage their plant plot by themselves..."
(Leader of the EMM from Yomibato, 1998)

"The young generations are the ideal candidates for learning about Matsiguenka lodge management because they can stay in the lodge and don't have to worry about taking care of their plant plot and children."
(Leader of the EMM from Tayakome, 2005)

The Matsiguenka people, in particular the leaders, have expressed that through their involvement in the EMM they have been acquiring great experience in ma naging the lodge, as well as in providing appropriate quality service to their visitors. Although formal training was not completed, the Matsiguenka staff felt that they had improved the quality of their work over the six years of operating the lodge; most of the improvement has been accomplished through a

learning-by-doing process. Because the lodge staff is organized through a rotating system, every new shift usually involves the training of new, inexperienced staff. So, the EMM has displayed a very slow learning process of training and retraining, which has taken into account that the Matsiguenka are not familiar with western concepts and languages (Spanish and English). Therefore, the Matsiguenka are constantly demanding ongoing and specialized training sessions by qualified people in ecotourism services. The long capacity-building process may be a transferable lesson for ecotourism projects that involve different cultural groups and non-exclusive participation in trainings.

Also, the Matsiguenka leaders have realized that the best candidates for the jobs offered at their lodge come from the younger generation, primarily because they do not have big families to take care of and can easily move on a temporary basis to work at the lodge rather than permanently migrating outside of their communities.


Matsiguenka woman making cotton thread

- **Craft production has been successful as it has provided ongoing direct economic benefits to the producers residing in the Matsiguenka communities in PNM**

A great success of the EMM has been in relation to the production of crafts, which are mostly made by the community women in their households. Through a learning-by-doing process, women have learned to improve craft quality and production, and these crafts are then sold at the lodge. The whole price paid by tourists goes directly to the craft producer. Apparently, the profit generated by craft production has been steady and has become a main source of income for women and elders, who otherwise would not have other options to obtain monetary income without disturbing their traditional livelihoods. This type of indirect participation through craft production may be transferable to other tourism projects with the aim of increasing community participation.

- **The EMM needs clear cross-cultural communication between the indigenous people and other participants**

Another lesson of the EMM that can be transferred to other development projects concerns the need to hire consultants/facilitators with extensive experience and familiarity with the participating indigenous communities. Several interviewees mentioned that the progress of the EMM could had been improved if there had been better cross-cultural communication between the various participants of the project; it would have helped if outside participants had better knowledge of the Matsiguenka communities' characteristics and livelihood; for instance, knowledge of the traditional annual calendar in order to improve coordination in planning the project. Some interviewees mentioned that the period required to build the lodge infrastructure (1997-1999) was longer than originally planned because the project agenda was prepared without considering the indigenous people's own agenda. Furthermore, the indigenous people's progress in training could have been faster if trainers had spoken the native language.

Another lesson related to communication is that the outside participants in the EMM project found it difficult to coordinate between the various institutions. A fulltime general coordinator was needed who could facilitate communication between the various people involved in the project, supervise project activities, and solve conflicts.

- **More sales promotion/marketing should have been implemented before opening the EMM lodge**

"The success of a tourism enterprise depends on knowing the features of the product to be sold and then doing a market study to locate demand. In so doing, market networking can begin."
(Rainforest Expeditions ecotourism agency, managers, 2005)

Marketing is an essential component in any entrepreneurial project. However in the EMM this has been a weak element according to some interviewees. It appears that marketing components have not been a priority from the beginning of the planning process of this community-based ecotourism project. The interviewees mentioned that there has not been a clear vision about the Matsiguenka lodge as a product to be offered in the market. For instance, is the EMM an ecotourism or ethno-tourism enterprise? (Both features could be complementary).

Marketing of the EMM has mostly depended on the private tour agencies that work in PNM. Thus, a lesson learned by some project participants is that when one is working on an ecotourism development project, marketing components should be planned and developed from the very beginning. To make such tasks less challenging, it is essential that participants (such as facilitators and/or consultants) have experience in the tourism market and in marketing; in this way they can provide appropriate assistance to the indigenous people to deal successfully with the market dynamic (e.g., how to negotiate with other stakeholders in the tourism industry such as tour agencies). The lessons related to marketing in the EMM can help other indigenous entrepreneurs to learn from their mistakes.

- **Developing a strategic business alliance with tour agencies should have been a priority in the EMM's agenda: "A lizard among the crocodiles"**

Since the EMM put emphasis on acquiring business partners with tour agencies besides the ones from the Ecotour-Manu ASSC, some of the tour agencies from this association shifted their attitude from that of potential allies to persistent and sometimes hostile competitors of the Matsiguenka enterprise. According to some participants in the EMM, Ecotour-Manu ASSC leadership seems to see the EMM as a potential threat to their tourism business domain in Manu, so they often bring tourists to the Matsiguenka lodge only as a last resort. Moreover, Ecotour-Manu ASSC successfully reached an exclusive agreement with the INRENA headquarters office in Manu to allow only members of the Ecotour-Manu ASSC to operate in PNM in exchange for regular revenues to INRENA. Such a monopoly led the EMM to an economic crisis (see section 3.3.e for more explanation). Therefore, the indigenous enterprise put pressure on INRENA to allow other tour agencies to operate in PNM, but only through the EMM. After several years, this petition was finally approved in 2005.

A main lesson for PNM officials, as a governmental institution and the party responsible for the EMM, has been to act more thoroughly when arranging agreements with the private sector and in ways that do not favor personal interests but instead increase trust between the various stakeholders in protected areas. A main lesson for the EMM is that they need tourism business partners who can take into consideration the unique features of the EMM. The transferability of this lesson is relevant because the private sector, directly or indirectly, plays a role in this type of project. For this type of project, there is a need to look for business partners within the "Fair Trade" market sector.

- **The EMM is about experimenting with a potential model of conservation in PA that involves indigenous groups. It demands long term institutional commitment**

According to some former government authorities in charge of managing Protected Areas (PA) in Peru, the implementation of the EMM and the lodge has been an opportunity to gain experience in developing a management model for Protected Areas in the Amazon that involves the local indigenous groups. The EMM is a pilot project that is providing an opportunity for governmental and non-governmental officials to realize that this type of project requires a long-term institutional commitment. In doing so, the project has a better chance to be appropriately planned, implemented, and monitored, all of which are essential conditions for successful pilot projects. However, at the present time the Peruvian authorities work very much in a western framework, and thus the appropriate time for establishing a community-based conservation approach that would empower indigenous communities in PA is at the very beginning.

- **Monitoring would be relevant if it were applied based on the indigenous people's criteria; it should be a simple monitoring system**

At the beginning of the EMM, monitoring studies were initiated. During the project planning, establishment and the lodge-building infrastructure stages, sociocultural monitoring activities were difficult to pursue. One of the main lessons of this first monitoring experience was that monitoring should be a specific task carried out by experienced consultants or a graduate student who can focus on this task for a period of several years[18]. Further monitoring was conducted by a team of consultants who developed a very sophisticated "Sociocultural and Environmental Monitoring System of the Matsiguenka lodge, Manu National Park" in 2000, with the valuable guidance of experienced researchers at PNM. However, according to some interviewees, this monitoring system could only be applied by academics. A relevant lesson of the monitoring experience was that it would be more valuable if the indigenous people could apply their own perceptions to the monitoring system because in this way they would be enabled to identify main concerns and the impact of the project on their communities. Therefore, some simplification of the monitoring system was applied, and some short training was offered to the indigenous people. However, for the indigenous people to continue the monitoring task, further training is essential. The monitoring lessons and the system developed for the EMM are relevant and transferable, especially for community-based tourism projects, because they provide indicators and methodology that could be adaptable and applicable in different contexts.

- **A project such as EMM can strengthen community organization, leadership and identity**

A remarkable lesson is that the EMM was a great motivation for community organization. Social organization in communities is fairly new among the Matsiguenka (see section 2.2). Therefore, this can be considered a successful experience, and it is particularly the case in, relation to the social aspect. Although managing an enterprise is not an activity that belongs to this indigenous people's traditional economic system, the Matsiguenka communities have successfully organized themselves to create and maintain their eco-ethno-tourism lodge enterprise in the market, while also continuing to practice their traditional livelihood system. Moreover, their sense of pride and self-esteem in their Matsiguenka culture has increased, as they have become increasingly respected by the other ethnic groups in the Amazon, who used to underestimate the Matsiguenka culture.

[18] The economic monitoring of the EMM has been developed into a PhD dissertation by a German student hired by the GTZ, who has provided quantitative and qualitative information about the economic impact of the EMM on the Matsiguenka traditional system (see: Ohl, Julia, 2004).

The Matsiguenka leaders have persisted in being the main protagonists of their multi-community enterprise rather than allow other agencies to take on the management responsibilities. Although, the Matsiguenka leaders are open to exploring different options and business partnerships that could allow them to improve the marketing and economic revenues for their enterprise, they would prefer to make mistakes and work as their own bosses and staff rather than allow strangers (for instance, experienced ecotourism agencies) to take control of their multi-community enterprise.

- **Partnerships between two communities may encounter less internal conflicts when they belong to the same ethnic group**

Pre-existing differences and tensions among the two Matsiguenka communities in PNM were put aside to be able to work together for the development of the Matsiguenka ecotourism lodge project. The Matsiguenka leaders have a clear understanding of the economic potential of the ecotourism lodge for their communities, particularly for future generations. They are hopeful that their children will be able to gain more benefit by learning how to manage their lodge enterprise. Therefore, unorganized but united, these two Matsiguenka communities have been persistent in creating dialogue and negotiating with park authorities and NGOs to gain support for their EMM. This lesson may be transferable to other tourism projects with indigenous people in which ethnicity often plays an important role[19].

ii) Which lessons were not transferable? Why?

- **Community organization in *faena* was a very effective organization system for the EMM**

The *faena* is an organization system that comes from the highland mountain communities and was quite recently adopted by communities in the Amazon during the 1960s and 1970s. This system was very effective for the project, specifically for building the Matsiguenka lodge (see section 3.2.c.i.a.). The communities continue to use the *faena* system for other community works.

- **Gaps in the Peruvian legal system have created obstacles for management and progress of the EMM**

Another lesson that may be transferable, particularly to pilot projects, is that they may be dealing with gaps in the legal system, which could create obstacles for the management of the project. For instance, Rummenhoeller (1998) mentioned that the Peruvian regulations (i.e., *DS 045-93-AG*) in 1990s are not clear about the constitution of multi-community enterprises that provide tourism services. Additionally, there have been mistakes in the EMM bylaws regarding the level of intervention of INRENA officials in the decision-making process of the multi-community enterprise[20].

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[19] I visited the Equator Initiative finalist project, the Ese'eja Native Community of Infierno, which is a partnership between the Rain Forest Expedition and the Infierno Native Community, Madre de Dios, Peru. One of the main indigenous leaders of this project mentioned that despite the economic success that their project has achieved, there are internal conflicts that can not be overcome yet. According to the interviewed leaders, one main element of conflict (which involves mistrust and differences of interest) has been determined by the ethnic differences among the members of their community.

[20] Rummenhoeller (1998) also emphasized that the INRENA office has had no intention to interfere in the decision making process of the multi-community enterprise.

On the one hand, various interviewees expressed that despite the formal responsibility of INRENA for the EMM, the institution has provided insufficient support to this indigenous pilot project. For instance, INRENA could have implemented and enforced rules for the local tour agencies collaborating with the EMM by setting a percentage of tourists for each year. On the other hand, former officials of the INRENA headquarters office that were interviewed mentioned that the local governmental institutions have not had enough power to reach agreements or enforce bylaws/rules effectively within the private sector in Manu[21].

3.6.g Recommendations to improve the EMM

The following recommendations emerged from interviews and discussions during the fieldwork[22]; a few are reformulations of ideas proposed by other researchers:

i. <u>To international development institutions that support the EMM indigenous enterprise project</u>

- **Facilitate funding and its management;** there is a need for middle and long-term financial support and institutional commitment to the EMM. Funding should be delivered for general planning; capacity building and strengthening leadership for the indigenous people[23]; updating and undertaking the sociocultural and environmental monitoring system of the EMM; and also the creation of an evaluation system.

- **Enhance local capacity and leadership by providing ongoing access to education and training programs to community members,** particularly to leaders such as the EMM indigenous managers. Through interviews the Matsiguenka leaders expressed that they needed more training and language education in both Spanish and English. Training will be most effective if the teaching method is through "learning by doing" and delivered in the indigenous people's native language. In doing so, the process of a truly Matsiguenka-managed lodge can become a reality. Also, it is important to evaluate how much time in the year the community members are willing to spend working at the lodge[24]. There appears to be a strong interest among some youth members in the communities to receive training to work in the Casa Matsiguenka lodge.

- **Reinforce community organization and improve communication between the EMM and the communities;** for example, assistance to create an advisory committee or to reactivate the coordination committee for consultation on EMM issues and problems.

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[21] Currently, there is a trial against INRENA due to accusations from some members of Ecotour-Manu ASSC; the main reason appears to be mismanagement of the park.

[22] Other researchers who have done research on the EMM project have produced similar recommendations (see Ohl, 2005; Shepard 1998).

[23] I wish to aknowledge Dr. Glen Shepard of the Instituto Nacional de Pesquisas da Amazônia, Brazil, for providing the main idea for this recommendation.

[24] I wish to acknowledge that this recommendation emerged through personal conversations with Dr. Julia Ohl of the University of East Anglia, UK.

- **Facilitate support for conducting market studies,** prepare entrepreneurial business and marketing plans, and assist in their implementation and development. For instance, seek the assistance of professionals to develop tourism marketing plans for the EMM.

- **Assist the EMM in creating and strengthening partnerships** with local, regional and international tour agencies that truly exercise both fair trade and ecotourism principles.

- **Support and facilitate the exchange of ideas and experiences between similar projects across regions and countries in Latin America**[23] (horizontal learning). This can be accomplished through visits to indigenous and non-indigenous ecotourism lodge enterprises; participation in national and international forums, festivals and other events and the publication of handbooks or manuals about their experiences. The EMM has been positively influenced by other indigenous tourism experiences within Peru and from other countries. A highlight of the exchange experience is to strengthen Matsiguenka confidence in their capability to carry out the EMM project. Nonetheless, more exchanges are required to expand, improve and strengthen the Matsiguenka enterprise project.

ii. <u>To INRENA, Department of Protected Areas</u>

- **Develop a long-term institutional commitment** towards a co-management partnership policy that accounts for the indigenous inhabitants in PNM through a transparent and collaborative management approach.

- **INRENA should be flexible but consistent with its regulations** in order to facilitate the continued success of the EMM project.

- **There is an urgent need for clear tourism market regulations in PNM** that address multi-community enterprises, particularly of indigenous inhabitants in PNM. Through an ongoing and continuous consultation, such a legislation-building process should account for pilot projects such as the EMM community-based ecotourism enterprise. The different scopes of responsibility of the INRENA central office and the INRENA headquarters office upon the EMM should be clearly stated.

- **Promote ongoing and continuous emphasis on communication** among the INRENA headquarters office personnel, the central office, and the indigenous communities in PNM. For instance, there should be a designated professional committee to work closely with inhabitants in PNM to bridge communication gaps between them and INRENA officials.

- **Educate all stakeholders with regard to policy and responsibilities;** INRENA has recently updated the Anthropological policy for the indigenous population in PNM. However, it appears that this policy has not been adhered to. In various interviews with different stakeholders of PNM, there was little clear understanding about INRENA's anthropological policy. Also, the indigenous people in PNM appear to not have a clear idea about what their rights and/or duties are. It is recommended that INRENA provide

training workshops for park personnel, regional and local authorities, tourism personnel and other stakeholders on areas such as PA policy; PNM indigenous population, culture, rights and duties; environmental conservation in PA; and they should emphasize the need to work together in a concerted effort. Likewise, similar workshops should be provided to the indigenous population in PNM.

- **Provide support to small satellite projects that would supplement the ecotourism lodge project**[25] and broaden the participation of the community members. For example, educational activities that include the community school for the creation of a Matsiguenka interpretative room, an ethno-botany garden and other projects.

iii. <u>To members of the EMM</u>

- **Seek support for the creation of an advisory committee** for consultation on EMM issues and to assist them in evaluating the progress of their enterprise.

- **Seek support for the creation and implementation of a marketing plan**, including the development and maintenance of a website about the Casa Matsiguenka Lodge project.

- **Seek support for ongoing training programs for the Matsiguenka people** to work at and manage the lodge. The communities should be encouraged to train and hire youth and young adults. A particular set of training programs should be delivered to improve craft production within the communities.

- **Seek support to update and undertake the sociocultural, environmental and economic monitoring system of the EMM** and to complement it with a health monitoring system.

- **Protect the Matsiguenka people's health;** the Matsiguenka workers of the lodge are exposed to illnesses that their immune systems are not prepared for. For instance, the Matsiguenka are highly susceptible to influenza, which can be devastating and often cause death, and it can be spread to the other community members. Therefore, it is recommended that medical care services be provided to lodge workers, and a complete and updated medical kit should be accessible to the Matsiguenkas working at the lodge. The regular visit of MINSA[26] staff to the lodge would be highly beneficial.

[25] I wish to acknowledge that Biol. Chris Kirkby provided the main idea for this recommendation.
[26] Ministry of Health

Tables and Figures

Table 1. Stages of the enterprise project, objectives, key leaders and organizations, and workshops in the EMM, Peru. See List of Acronyms & Abbrevations.

Year	Stage of the EMM	Objectives	Key local leaders	Key outside organizations & people	Workshops for Matsiguenka Communities
1996-1997	Planning and establishment of the EMM	• To set up the lodge • To develop the services management of the lodge	1. Com-munity leaders (males) 2. Two managers (one per community) (males)	1. INRENA 2. PNM (INRENA headquarters office) 3. GTZ-FANPE 4. Anthropologist & Architect	• Several meetings to define the objective of the project and of the multi-community enterprise
1997-1998	Construction of Casa Matsiguenka lodge	• To build the lodge infrastructure	1. Com-munity leaders 2. Two managers	1. INRENA 2. PNM (INRENA headquarters office) 3. GTZ-FANPE 4. APECO	• Training Plan design • Motivational workshop • Motive for and use of intercultural bilingual handbooks
1999	Adaptation and testing	• Adaptation of community members to lodge work • Elaboration of sociocultural & environmental monitoring plan	Two managers	1. INRENA 2. PNM (INRENA headquarters ofice) 3. GTZ-FANPE 4. APECO	• Training • Evaluation of training • Giant otters management
2000	Learning tourism services	• Provide tools to help management of organization and planning about the EMM • Strengthen Matsiguenka self-esteem and cultural identity • Implement sociocultural & environmental monitoring plan	Two managers	1. GTZ-FANPE 2. APECO	• First training for lodge ownership management • 2nd sociocultural monitoring meeting • Training

2001-2002	Improvement of tourism management	• Improvement in tourism service • Learning enterprise management • Practicing maintenance of lodge infrastructure	Two managers	1. GTZ-FANPE 2. APECO 3. Assistant manager of the EMM (female)	• Sociocultural & environmental workshop • Training
2003-2004	Experimentation & Self-learning	• Consolidate active participation of Matsiguenka in self-management and success of project • Training to develop their own enterprise	Two managers	Assistant manager of the EMM (female)	• First tour groups brought by tour agencies out of Ecotour-Manu ASSC. • More "experimental groups" of tourists visit Matsiguenka lodge

Table adapted from the *Empresa Multicomunal Matsiguenka S.R.L* (2004).

Table 2. Cross-scale representation of stakeholders in the EMM, Peru.

Stakeholders	Local/Community	District	Province	National	International
EMM	X				
Matsiguenka communities: Tayakome & Yomibato	X				
PNM*		X			
Ecotour-Manu ASSC			X		
INRENA*				X	
GTZ*					X
FANPE*				X	
APECO*				X	
CEDIA				X	
CCBS (biological research center)					X
FENAMAD			X		
COHAR-YIMA	X				
COMARU	X				
Defensoría del Pueblo (ombudsman agency in Peru)				X	
Tourists					X

X Level at which institution is based

Level at which institution is active in relation to the EMM

Level at which institution is not active in relation to the EMM

* Institutions that have supported the implementation of the EMM.

Table 3. Annual Income for Tayakome and Yomibato earned through the EMM

Annual Income	Tayakome US $	Yomibato US $
• Wage labor to staff and managers of Matsiguenka lodge	1,100.00	1,100.00
• Average Community earnings from Matsiguenka lodge	900.00	900.00
• Earnings from selling crafts at Matsiguenka lodge	1,200.00	1,200.00
Total	3,200.00	3,200.00
Increased Income per household: Tayakome (21 households) Yomibato (30 households)	**152.00**	**107.00**

Source: Adapted from Ohl (2005)

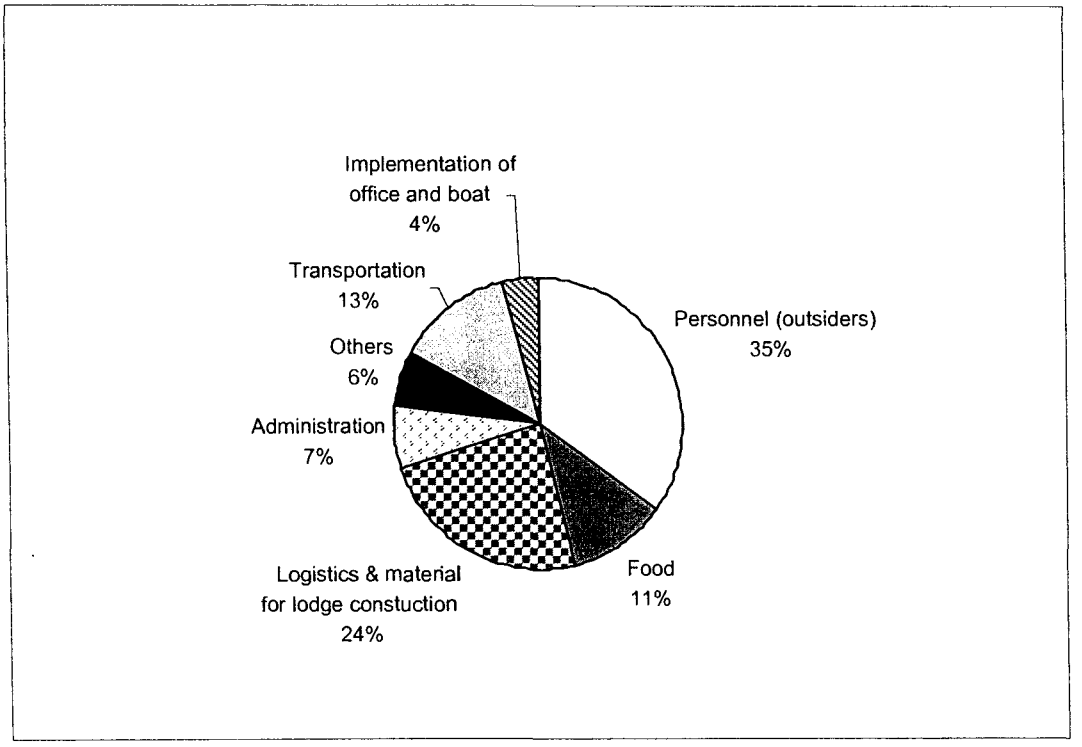

Figure 2 . Percentage distribution of funding donated by GTZ to the EMM (1997-2003)
Source: Adapted from Ohl (2004)

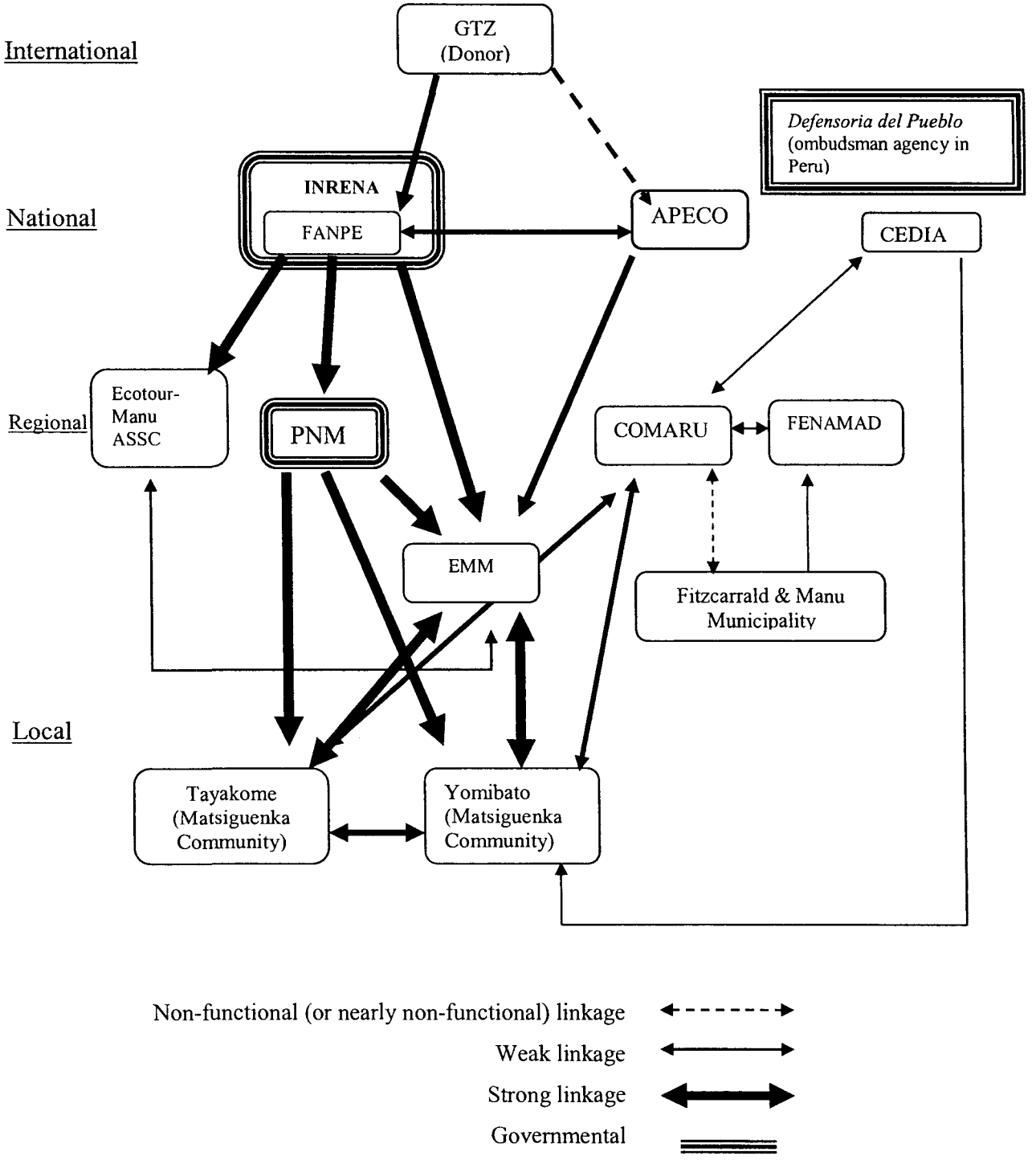

Figure 3. Cross-scale interactions of stakeholders in the early years of the EMM (1996 – 2003). See List of Acronyms & Abbrevations.

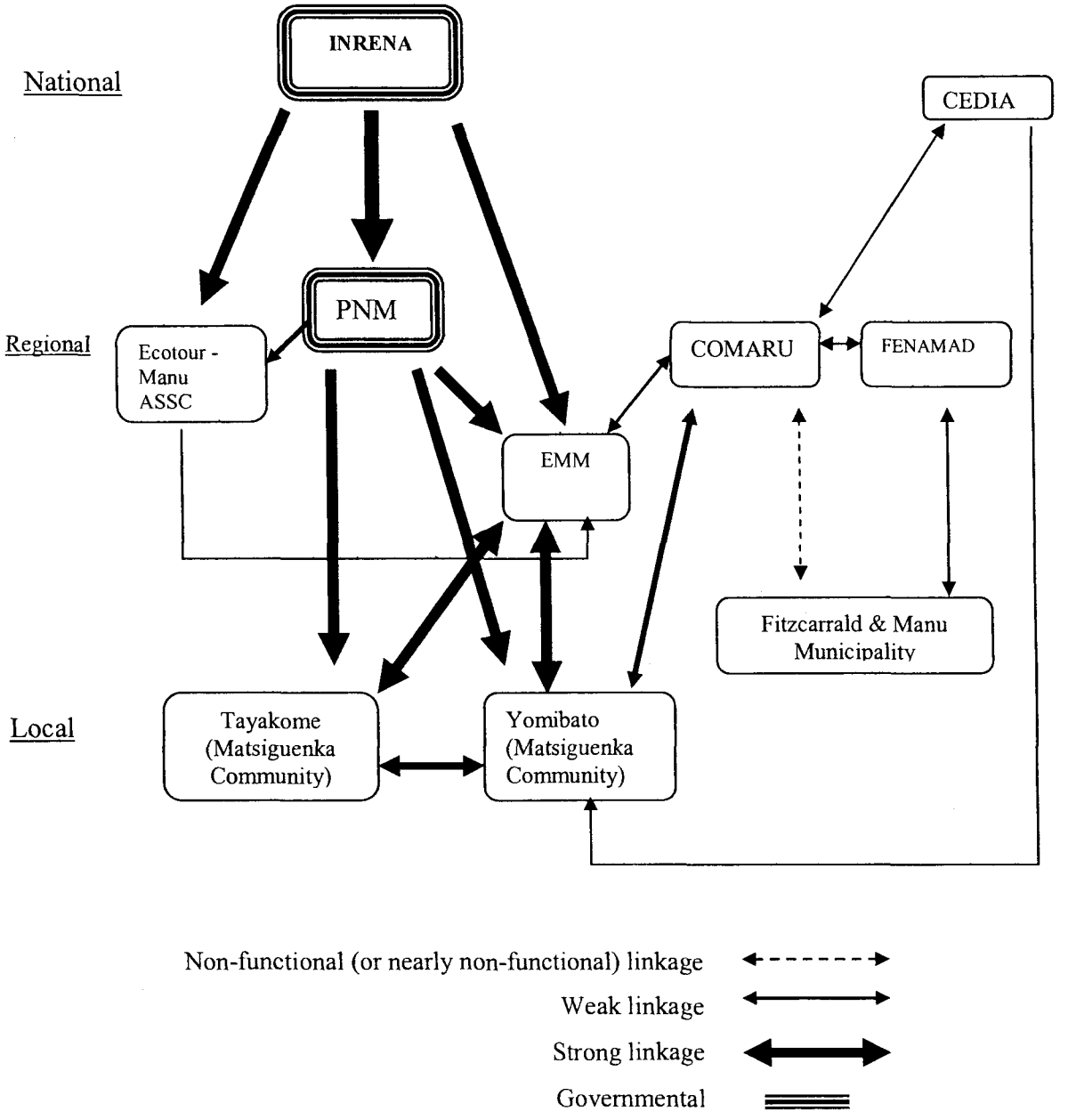

Figure 4. Cross-scale interactions of stakeholders in the EMM in 2004 - 2005. See List of Acronyms & Abbreviations.

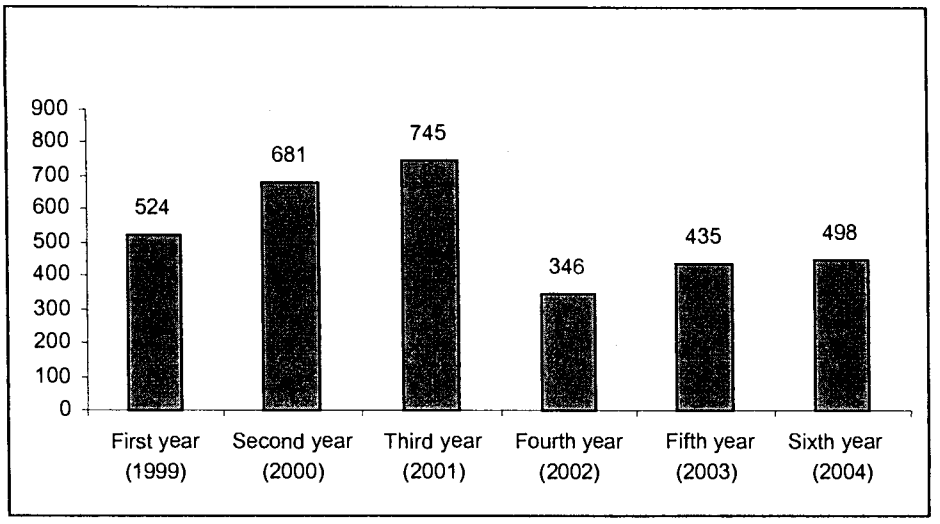

Figure 5. Number of tourists visiting the EMM (1999 - 2004)

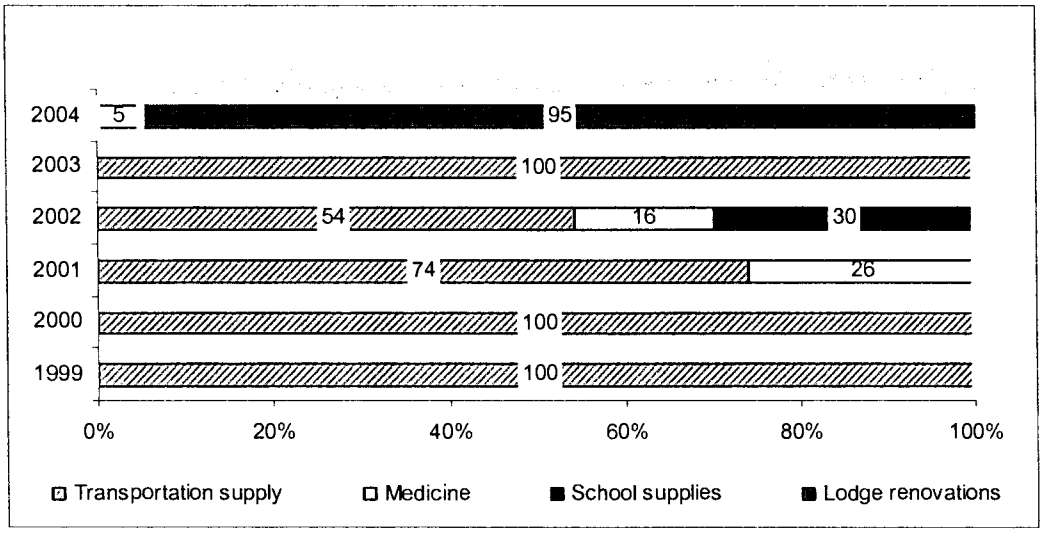

Figure 6. Percentage annual economic benefits for Tayakome & Yomibato from the EMM
Source: Adapted from Ohl (2004)

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Lessons from the Equator Initiative: The Community-Based Enterprise of Nuevo San Juan, Mexico

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Chapter 1: Introduction

1.1 Research Justification

Some of the most important efforts in the path of finding sustainable ways of using natural resources and providing solutions to the socio-economic problems of highly impoverished areas are the ones canalized through the Equator Initiative. The initiative was created to support community systems that address needs of both environmental protection and development at the grassroots level in countries in the equatorial belt (Timmer and Juma, 2005). The Equator Initiative has identified a large number of locally designed indigenous/local enterprises that combine development and conservation objectives. Some critics of these kinds of indigenous/local enterprises argue that conservation and development objectives cannot be linked and that it is too ambitious to believe that biodiversity can be used and at the same time conserved (Redford and Richter, 1999). However, there is still the need to analyze more deeply what are the contributions of these communal enterprises. There is also a need for learning whether such apparent incompatibility between conservation and development comes as a result of external drivers such as the market economy (MA, 2005), and/or is due to the lack of the appropriate institutions to canalize the community efforts, to bring about and reinforce the required cross-scale linkages, and to help the enterprises to absorb changes and reorganize (be resilient) over time.

To carry out the above-mentioned analysis, the experience of the indigenous Purhépecha in Nuevo San Juan, Michoacán, was taken as a well-suited example. Nuevo San Juan enterprise operates a community-based forest management system in Mexico, and was a winner of one of the 2002 Equator Initiative Prizes (Timmer and Juma, 2005). The community of Nuevo San Juan has created an enterprise that is trying to promote the sustainable management of a temperate forest. It represents a case of integration of conservation and development objectives, backed by strategic partnerships, that can contribute to dealing with the complexities of, and promoting, sustainable development.

1.2 Purpose of the Research

The purpose of the research was to identify and analyze the characteristics of the Nuevo San Juan community-based resource management system (CBRMS) and how institutional and organizational cross-scale linkages support of the system.

1.3 Objectives

1. *To describe key characteristics of the self-organization of the CBRMS of Nuevo San Juan.*
2. *To identify drivers that help or hinder the development of the Nuevo San Juan system, including policies for poverty reduction and environmental protection.*

3. *To identify and analyze the institutional and organizational cross-scale linkages between Nuevo San Juan and other organizations and how these linkages affect the local management system.*

1.4 Methodology

During the fieldwork in the community of Nuevo San Juan, discussions were held with representatives of the communal enterprise about the procedure and methods to gather information. Taking into consideration the interest of local institutions, and availability of comuneros[1] and of community members[2] in general, the research methods adopted were semi-structured interviews and participant observation. In coordination with persons at the management level, the heads or deputies of the enterprise's productive areas were interviewed. The initial findings of this first set of interviews, together with the findings from formal interviews and informal discussions with other players at the local and regional level, contributed to an understanding of the local and regional context, to reshape the research focus, and to identify key informants and important secondary sources of data. Further interviews helped to build understanding of the different processes that give life to the enterprise, the role of leadership, the importance of external help in the development and consolidation of the enterprise, and changes in the enterprise over time due to endogenous and exogenous drivers.

The categories of interviewees included founders of the enterprise, persons currently linked to the enterprise, consultants currently and previously linked to the enterprise, comuneros working with government agencies and NGOs, academics, representatives of government agencies, and general community members. In total approximately 65 persons were interviewed in more than 70 informal and semi-structured interviews, and two group discussions were carried out.

The findings presented in the present report are based on the information collected through the above-mentioned interviews and documents provided by the comuneros and the enterprise, except when referenced.

1.5 Theoretical Background

1.5.a Self-Organization

Social and ecological systems are complex in nature. Holling (2001) explains that the complexity present in social-ecological systems does not emerge from random interconnections among the components and factors of these systems, but is the result of a few controlling processes. Holling indicates that there is an inherent self-organization in

[1] Comuneros: members of the indigenous group whose list was officially recognized under Presidential resolution in 1991. The Presidential resolution recognizes the land rights of the comuneros.

[2] Community members: refers to persons living in the municipality, this includes comuneros, their family members, owners of private property and foreign settlers.

complex systems that is able to adapt depending on varied influencing factors. Similarly, Waltner-Toews (2004) defines self-organization as the process by which progressively organized cycles of negative and positive feedbacks, developed as a result of the energy and information entering and leaving the system, allow the system to build the required structures to adapt and survive over time. In Holling's (2001) perspective, the system's mechanisms for self-organization are the key to its sustainability. The reduction of natural variability and diversity (biological and human) in the system, therefore, reduces the capability of the system to adapt to change caused by disturbance of various degrees. In this regard, the self-organization and adaptability of social-ecological systems suffer when human action minimizes their natural variability and diversity.

Self-organization is an attribute that contributes to the resilience of the system. Walker et al. (2004, p. 3) define resilience as "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks". Berkes et al. (2003), expanding on the importance of considering the whole to be much more than just the sum of its parts, explain how resilience is an emergent property of the system that cannot necessarily be understood by analyzing the system's components. The study of self-organization then is extremely relevant to understanding how flexible and adaptable the social system, ecological system or social-ecological system is when dealing with unpredictable conditions.

1.5.b Cross-scale Linkages

The processes taking place in ecosystems and the scales at which they occur must be identified to properly analyze the system. Furthermore, it is necessary to identify the subsystems nested in the system to understand the whole (Berkes et al., 2003). In complex systems interventions may vary strongly depending on the scale at which they are applied. Management systems designed for the species scale differ radically from the ones applied to ecosystems or landscapes. The documented negative impacts of management decisions taken based on the needs at a single scale suggest the needfor the design of management institutions involving more than one scale. The design of institutions linking various scales, therefore, is vital to address factors influencing or being influenced by more than one scale of time and/or space (Berkes, 2002).

Authors such as Ostrom (1990) and Berkes (2002) have recognized the importance of studying the institutional linkages between different scales and the dynamics of these linkages. Robust common property regimes have often been characterized by nested institutions and sub-systems that constitute part of the social-ecological system's structure for self-organization and, therefore, contribute to the resilience of that system. These local level systems or regimes can be positively or negatively impacted by the processes initiated at higher levels, depending on factors such as the speed of change produced by the processes and the characteristics of the social-ecological systems, including the resources they manage (Berkes, et al., 2002). There is no doubt that analyzing the impacts of interventions is important when studying common property regimes such as community-based resource management systems. Such analysis could help in the design

of interventions to strengthen holistic management of ecosystems and the societies depending on them.

In addition, because uncertainty is an inherent characteristic of complex systems, the institutions guiding the management of these systems need to be studied in detail to analyze the way that they deal with uncertainty and adapt to change. Numerous community-based institutions, embracing diversity and validating human presence in ecosystems, have applied approaches such as adaptive management. These institutions have been interacting with and adapting to interventions from other, usually larger-scale institutions, with many of them unable to survive these interventions. It is time to give attention to the community-based institutions of this sort that still exist to comprehend their systemic vision of the environment and to learn from them key features in the art of managing complexity and uncertainty.

1.5.c Drivers of change

Other important forces influencing social and ecological systems are external drivers of change. Under management practices guided by a systems view, the identification of these forces is extremely important, but not always easy to achieve. The Millennium Ecosystem Assessment (MA) (2005) explains how the modification of ecosystem services and attributes and the consequent impact on human well-being are a result of both deliberate and unintentional human actions. Therefore, the understanding of the forces causing these changes is crucial to designing interventions that enhance positive impacts and minimize the negative (MA, 2005). The MA (2005, p. 86) defines *drivers* as "any natural or human induced factor that directly or indirectly causes a change in an ecosystem. These drivers can be endogenous or exogenous depending on scales of time and space. However, by their nature, many drivers are difficult to define and to classify. The MA also distinguishes between direct and indirect drivers, the former being those that clearly affect ecosystems and their services, and the latter being those that affect direct drivers. The major categories of global driving forces used by the MA are demographic, economic, socio-political, scientific, technological, physical and biological drivers. The MA explains that these drivers seem to be exogenous because their current condition cannot be influenced directly, with the changes taking place in them mostly resulting from cumulative effects of decisions taken at varied scales. However, when these drivers are seen with a longer perspective, it is easier to see how they can be or are influenced by deliberate human decisions.

The identification and understanding of these exogenous and endogenous ecosystem drivers is an extremely important research area for the promotion of sustainable development. This topic is particularly relevant when studying community-based resource management systems. Frequently, assessments of the successes or failures of many of these systems are based on the effectiveness of their institutions to maintain healthy relationships between humans and ecosystems; however, it is not always evident that even well-founded common property regimes have been seriously undermined or have disappeared due to exogenous drivers. Such drivers, similar to the cross-scale

linkages and self-organization of community-based systems, deserve to be researched further.

1.6 Study Limitations

For this study it has been assumed, based on secondary sources, that the Nuevo San Juan case represents a successful community based system whose institutional arrangements and structures can contribute, as a living example, to promoting institutions able to foster sustainable development and conservation. Based on this assumption, no large efforts were made to find, during the research, detailed data to demonstrate the success of the system in reducing poverty and protecting biodiversity. Some of this kind of information has already been documented (eg. Chávez et al., 2003; González et al., 2003; Monroy et al., 2003; Sánchez et al., 2003; Sosa, 2003; Torres et al., 2003; Garibay and Bocco, 2003; Fregoso et al., 2003; Pego, 1995).

The study and analysis of the research is based primarily on contributions from community members linked directly and indirectly to the Nuevo San Juan community-based system and some of its key allies. The field research was not designed to provide a comprehensive enumeration of all the possibly relevant characteristics of the social-ecological system, but to give a synopsis of key components of the system and their relevance over time.

Chapter 2: Research Background and Study Area

2.1 Mexican Socio-Political Context

The laws regulating the use of natural resources and particularly forest resources in Mexico have given life to the different processes of use, appropriation and management of resources and lands, most of them with detrimental consequences for rural communities. Merino (2004) describes how the Mexican constitution for the nineteenth century favored the appropriation and unsustainable exploitation of forest resources through the absolute right given to private property, where the interests of private national and international companies trumped the interest of communities fully dependent on these resources. In the twentieth century, she indicates, the constitution of 1917 vested ownership of the land and its resources in the state, where these could pass to private or communal hands through government concessions. The parameters established in Article 27 of the 1917 Constitution were the starting point for subsequent governmental actions and legislation to restore or provide land to peasants and communities and for regulations, which continue to this day, limiting access to and exploitation of natural resources, including land. Among the laws created was the Forest Law of 1926, which established the requirements to exploit forest resources. These requirements were quite high for rural communities and ejidos[3] without the technology or access to economic resources needed to fulfill the requirements, but at the same time they put the exploitation of communal forest resources in communal hands (Caro, personal communication, 2005; Merino, 2004). Because of the requirements established in the Forest Law, numerous communities were forced to rent their land to private enterprises with scarce long-term benefits. Subsequently reformed and created laws made varied positive and negative contributions to change the situation of forest communities. These reforms passed from the provision of concessions to private companies enforced through the Forest Law of 1940 to an open recognition and support to the local management of forest resources stated in the Forest Law of 1986 (Merino, 2004). See Merino, 2004 for detailed information on legislation and its impact on ejidos and communities in Mexico.

2.2 The Region of the Meseta Purhepecha[4]

The Meseta Purhepecha, identified as one of the two main natural regions of the State of Michoacán, is a region characterized by pine-oak forests and large populations of indigenous peoples, which have had the collection of resin as one of their main economic activities (Merino, 2004). The changing government administrations and changes in land use rights caused significant changes in this region, with a shift from the appropriation of communal land by the government during the administration of Porfirio Diaz in the second half of the nineteenth century, to the provision of land for large numbers of communities and ejidos at the beginning of the twentieth century. These legislative changes, especially in the Agrarian Law of 1915 and Article 27 of the 1917 Constitution, which directly addressed the recognition and entitlement of communal land and resource

[3] Ejidos are defined by the Mexican Agrarian Law of 1992 as legal entity with land ownership rights.
[4] Except when referenced all the information under this section has been provided by interviewees.

property rights, had their maximum expression at the national level during the administration of Lazaro Cardenas, who as President distributed land to communities and to dispossessed and poor peasants through the entities of Ejidos[5] and Agrarian Communities.

At the level of the State of Michoacán, Cuauhtemoc Cardenas, first as Forest and Fauna Sub-secretary and later as the state governor, from the mid 1970s to the mid 1980s, spurred the communal exploitation of forest resources by authorizing ejidos and communities, some of them without official documentation of their property rights, to use and manage their resources. This support given to communities and ejidos from the state, inspired many communities to organize themselves to exploit their resources in a systematic way, among them the community of Nuevo San Juan.

2.3 The Nuevo Parangaricutiro Municipality

Located in the western part of the State of Michoacán at an elevation of 1880m., the municipality covers 234.31 km^2, of which the communal land comprises almost two thirds. In 1995 there was an estimated population of 14,637 inhabitants (Encyclopedia Municipalities of Mexico 1999). in the municipality. Current estimations indicate a population of about 16,000 persons, with about half of them being comuneros and their family members. The rest of the residents in the municipality are members of surrounding ejidos, private property owners and outsiders. Many comuneros and their families live in the communal land, but most of them reside in the capital of the municipality.

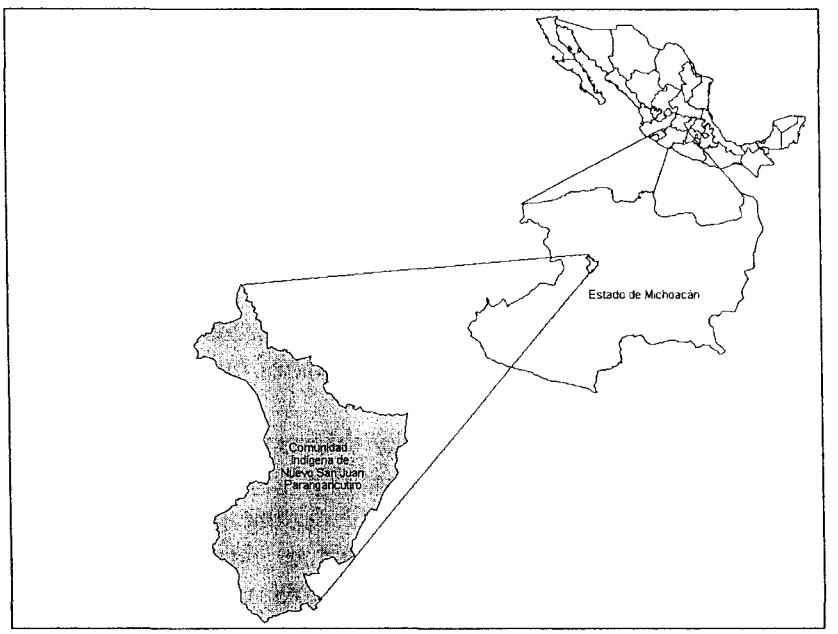
Among the economic activities taking place in the municipality, forest exploitation represents the largest activity and is almost entirely carried out by the communal enterprise; this is followed by avocado farming, cattle raising and commerce respectively. Other agricultural activities take place such as maize farming but do not have a significant economic impact in the municipality. Timber extraction by the communal enterprise accounts for 75% of local economic growth and is the primary source of employment in the municipality.

2.4 The comuneros of Nuevo San Juan

Nuevo San Juan is one of the Mexican rural communities that kept secure documents from 1715 where the Spanish king recognized their property rights. They were originally settled inside their communal land, but an eruption of the Paricutin volcano in 1943, which destroyed the community together with approximately 1500 ha. of forest, forced the community to move outside the perimeter of the communal land. The comuneros settled in Los Conejos, a property located beside the communal land. Interested in

[5] The Mexican constitution from 1917 institutionalized the Ejidos, together with communities and private property as legal property-owning entities. Numerous communities did not have documents to demonstrate ownership of the land, and many others had documents from the time of the colonialism that required verification and authentication processes established in the Agrarian Law from 1915; therefore large numbers of communities used the entity of Ejidos to acquire property rights over their lands during the administration of Lazaro Cardenas.

exploiting their timber, the community led an organizational process, together with other communities and ejidos that gave birth to the Union of Ejidos and Indigenous Communities Luis Echeverria Alvarez (UECIFOMET) at the end of the '70s. After three years of operation, the members of the Union had differences of opinion and leadership problems that resulted in the Union's dissolution at the beginning of the '80s. At this time San Juan, one of the communities advocating for radical changes in the management of the Union, was ready to organize itself independently to exploit its forest. In this way, in 1982 the comuneros from San Juan through key leaders started to envision the communal enterprise[6] and make it a reality. During the '80s the community did not have official recognition of their property rights; however, the leadership that united the dispersed communeros, that gave life to the communal enterprise, and that contributed to its consolidation, was key to achieving official recognition through a Presidential Resolution in 1991 (See Figure 1 for a map of the location of the communal land).



Source: Velázquez et al., 2003.

Figure 2. Communal land of San Juan Nuevo located on the Northwest of Michoacan in the central region of Mexico.

At the community level the comuneros of Nuevo San Juan are organized based on the requirements established in the Agrarian Law, which is based on Article 27 of the Mexican constitution. The Law regulates matters such as land use and ownership, local institutions, and rural development in general. See Figure 1 for a diagram of institutions

[6] Communal enterprise is understood as the process by which the communeros started to *collectively* use and manage the forest resources from their communal land. The communal enterprise comprises many productive areas to take advantage of timber and non-timber forest products.

from Nuevo San Juan. The institutions[7] heading the consultation and decision-making processes of the comuneros from San Juan are:

- The General Assembly. Formed by the community members enlisted during the communal census carried as part of the process of acquisition of government recognition of the land tenure rights. The official list of members of the General Assembly is included in the Presidential Resolution of 1991. The General Assembly acts as the prime consultative body. Among its main functions are the election of the members of all the other communal institutions; making the major decisions on internal rules, land distribution, legal agreements and contracts; and evaluating the financial reports of the various areas of the communal enterprise;
- The Commissariat, which is formed by a president, a secretary and a treasurer with their respective deputies, is in charge of the execution of the decisions taken in the General Assembly and of the representation before authorities and other entities of the group of comuneros. The Commissariat also enforces the local rules among comuneros and coordinates administrative procedures related to the General Assembly. Moreover, administration and finance reports of the communal enterprise are presented to the General Assembly thorough the Commissariat.
- The Monitoring Council is constituted by a president and two secretaries with their respective deputies. It is in charge of monitoring the actions of the Commissariat and reporting them to the General Assembly; it also assumes the administrative responsibility of the Commissariat whenever it is unable to do it. In the case of San Juan the Monitoring council has as one of its primary functions the field monitoring of the communal forest.
- A Communal Council, which is formed by representatives of the different neighborhoods of San Juan that are elected or reelected by the Commissariat. It is the institution added by the comuneros to make the consultation and decision-making processes more time-efficient. The Communal Council filters all the information coming from the enterprise, the Commissariat, and the Monitoring Council to the General Assembly.
- Management, which is formed by a Manager and its deputy. The manager is in charge of the enterprise. All the coordinators of the different productive areas report to the manager.

[7] The term institutions is being used to define the local bodies in charge the administration and representation of the comuneros of San Juan and the communal enterprise. The description of the institutions' functions is based on the parameters established in the Mexican Agrarian Law.

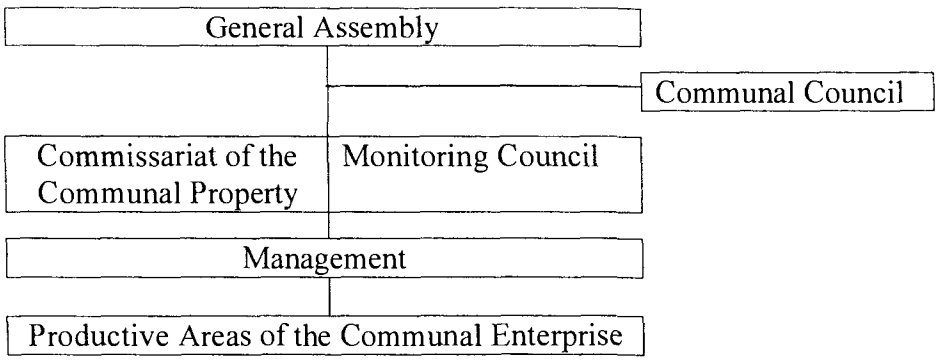
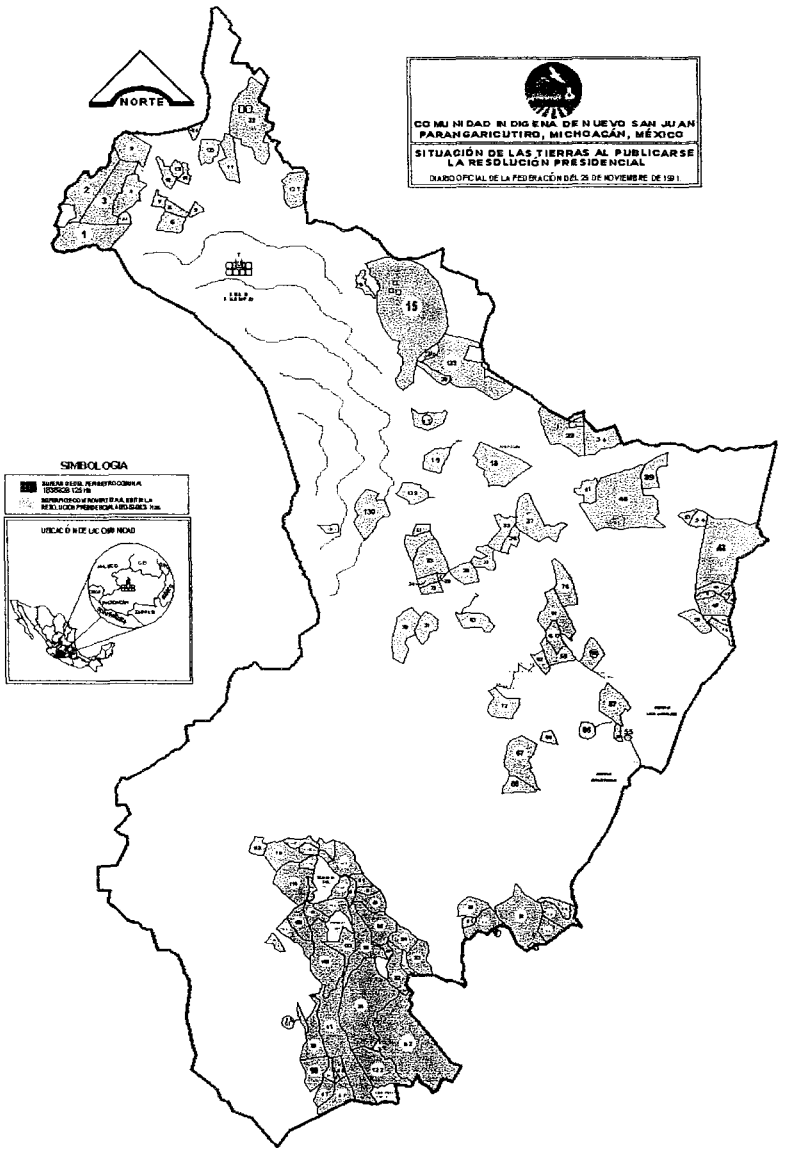


Figure 1. Organigram of Communal Institutions of Nuevo San Juan.

The Presidential Resolution of 1991 for Nuevo San Juan recognized an area of 18,138 ha. of communal land belonging to 1,229 comuneros. Of this land, 4,354 ha. were identified, in the same document, as private property (See Figure 2 for a map depicting the private property in the communal land). Under these circumstances, the Presidential Resolution bestowed communal land rights, but also left to the comuneros to solve differences with the families opposed to communal ownership of their land. Most of the families belonging to the private property sector are avocado farmers who at times developed strong political ties at the state level. The comuneros, in the interest of recovering the entitled communal land, have engaged themselves in a search for agreements with the families owning private land, but appealing, whenever necessary, to judiciary processes to recover parcels of land.

Currently the comuneros of San Juan have been able to recover something more than 1000 ha. of land through legal and direct agreements; through judiciary sentences they have reacquired 834 ha. and also through judiciary sentences they have lost about 562 ha. The remaining land is in the process of restitution. In recovering the communal property, the comuneros have searched for expert advise from local and foreign lawyers.



Source: Communal Enterprise of Nuevo San Juan. 2005.

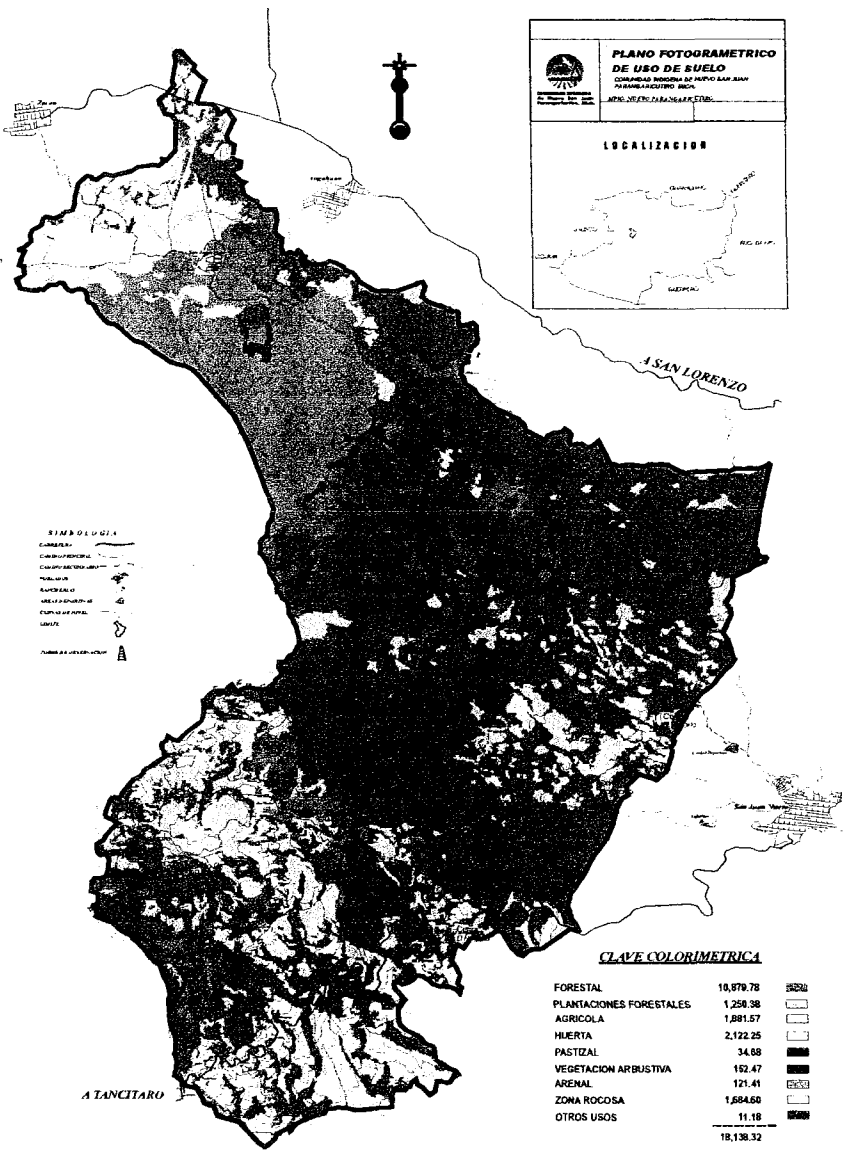
Figure 2. Private property polygons in the communal land at the time of publication of the Presidential Resolution in 1991.

2.5 *The Nuevo San Juan enterprise*

The enterprise of the comuneros of Nuevo San Juan, Michoacán is a community-based organization established in the early 1980s with the aim of promoting development through the use and management of forest and non-forest resources. When the enterprise began it gave employment to approximately 100 comuneros. Presently it has approximately 600 direct employees who are receiving the social benefits established in the Mexican legislation. There are also approximately 89 persons in the non-timber related adjunct areas of the enterprise, and approximately 700 indirect employees and thousands of beneficiaries. The current annual sales are over US$10 million dollars for an exploitation of about 70,000 m^3 of wood per year. The communal forest management

system in Nuevo San Juan has received national and international recognition for its vertical integration of forest production (use of product and byproducts), scale of operations, innovative management system and use of profits, among others.

As part of the land use strategy, the comuneros, with the help of researchers from different institutions, but especially from the Autonomous University of Mexico, have classified the communal land based on landscape and vegetation features (See Figure 3 for a map representing land use). Based on their Forest Management Plan, there are 11,695 ha. of forested land and 6,443 ha. without forest cover. The management plan, which is fully science-based, allows them to make systematic extractions of timber and manage for future availability of tree stands. It also allows them to diversify productive activities.



Source: Communal Enterprise of Nuevo San Juan. 2005.

Figure 3. Land use in the communal land of Nuevo San Juan.

Chapter 3: Research Findings

3.1 Community organization

3.1.a Origins of the project

The intensive timber extraction during the 1800s and the first half of the 1900s undertaken by private companies without tangible benefits for most community members, as well as the consciousness of the need to be drivers of their own development, impelled the comuneros of Nuevo San Juan to start an organizational process that eventually gave birth to a communal enterprise. There has been an unequal distribution of wealth, and unequal socio-economic development taking place in rural communities in Mexico because of factors such as the following: changing paradigms in the different government administrations, which at different points in time have established contradicting land tenure and resource management policies; the lack of support to communities to manage and exploit their natural resources; and the excessive power given to the private sector and to the private property sector to appropriate and exploit communal resources. These factors have also been some of the key triggers of the awakening of the comuneros and the strengthening of their communal institutions for resource management.

Particularly in San Juan, the eruption of the Paricutin volcano that took place in 1943 triggered the interest of the comuneros in protecting their communal land. To this interest was added the emerging leadership among some of the highly literate comuneros who tired of adopting a passive attitude towards the individually owned enterprises that were unsustainably exploiting their forest resources. These leaders decided to organize the comuneros to oppose the "mining" of resources that was taking place. In this manner, in 1982 after less than successful attempts to team up with other ejidos and communities to exploit the forest resources, the community took action, extracting and selling wood at a small scale. The initiative thrived so much and the commitment was so strong, that soon after their productive activities started with the help of key partners, the comuneros acquired an industrial sawmill and started developing large-scale forest exploitation.

The communal enterprise, whose leaders developed linkages with some key individuals in the private sector and other important individuals in the state government, acquired some capital through the selling of dead wood (wood left by illegal cutting and from infected trees, mainly), with permission granted by the federal government. In the middle of 1983 the enterprise acquired what would become the heart of its operations – the industrial sawmill, and at the same time received permission from the government to extract timber. Currently, the enterprise comprises more than 20 productive areas, many of them using non-timber forest products, and it is the only communally owned enterprise in the State of Michoacán that has its own Department of Technical Forest Services, which ensures that the enterprise is able to develop forest use and management plans in agreement with the Mexican Forest Law. (See Table 1 for details on the productive areas of the communal enterprise).

Table 1. Productive areas of the communal enterprise through time

Productive Areas of the Communal Enterprise / Period of Creation		During the 80s	During the 90s	After 2000
Areas	**Sub-areas**			
Sawmill				
Chipper				
Molding and Furniture factory	Finger joint dept			
Maintenance	Automotive dept.			
	Industrial dept			
	Welding workshop			
Drying stoves	Drying patios			
	Stoves			
Supplying Area				
Spare parts depot				
Secondary timber products				
Industrial and forest monitoring				
Resin plant				
Charcoal (from Oak)				
Broom and mop factory				
Board of directors				
Legal representatives office				
Marketing office				
Accounts office				
Accounts receivable				
Human resources office				
Documentation				
Inventory				
Cash				
Computers office				
Management office				
Tech. Forest Services Dept. (DTF)				
Storage and distribution of Fertilizers				
Communal store				
Productive projects	Farming program			
	Orchards			
Water purification				
Fruit packaging				
Ecotourism				
Training				
Cable Tv				

3.1.b Leadership and key people

i. Individuals

At the local level, leadership has played a unique role in the formation and consolidation of the enterprise. Particularly, the vision of some individuals gave life and shape to the enterprise. Among the most important leaders have been the Communal Representative elected at the end of the '70s and the community Commissioner for the Forest Exploitation from about the same time, who together were able to create the vision, organize dispersed comuneros and attract the local stakeholders – organized by cooperatives[8] of family-enterprises such as family-owned sawmills, cooperative of truck owners, cooperative of light track owners, etc. – to work together to form the communal

[8] The cooperatives are the local interest groups organized based on type of family businesses. These groups have a high level of organization directed to obtaining increasing benefits from the communal enterprise.

enterprise. These leaders also made the most important steps in the process that brought the official recognition of the comuneros and their communal land in 1991.

Subsequent administrators of the enterprise and communal representatives during the first decade contributed also to the cohesion of the comuneros and to the diversification of economic activities in the enterprise and in the community. The administrations and representatives during the second and third decade of the enterprise have played varied roles that have ranged from being passive in terms of innovation, expenditure and reinvestment of profits to being very bold, from being passive in finding partners at different scales to being quite proactive and from managing profits well to managing profits in a doubtful way.

The younger generations among the comuneros and some of their family members have taken over the administration and management of most areas of the enterprise since its second decade. However, the communal representation continues to be primarily in the hands of the senior comuneros.

At the state level, one of the key persons was an entrepreneur that gave support to the comuneros by paying them for their timber before it was delivered and by vouching for them to a sawmill manufacturer to get the sawmill constructed in the community.

Another important role was the one played by Cuauhtehmoc Cardenas, who as Forest Subsecretary and later, as governor of the state of Michoacán, gave open support to communities to exploit their resources by providing the required legal permissions to do so. Also, some other persons in the forest secretariat facilitated the process of getting permission by giving basic information and being flexible in the process of providing permissions. During this period, bureaucratic obstacles for communities to get permission to exploit resources were minimized.

ii. Key organizations:

Among the organizations that made key contributions to the communal enterprise in its initial stage were:

- Servicio de Extracciones Forestales SEF (Timber Extraction Company), a private company founded by the engineer Salvador Mendez and one of his colleagues. This company, based on the comuneros' request, was part of a partnership with the General Assembly (the principal institution of the comuneros established by the Agrarian Law) to start extracting timber and dead wood in 1981 when the community's forest was being exploited by the UECIFOMET. This partnership helped the comuneros to acquire basic road infrastructure and equipment to do the extractions; SEF also vouched for SJN before other organizations and enterprises whose support – in the provision of services without payments in advance – contributed in part to the construction of the sawmill and helped in the capitalization the enterprise to carry out the necessary activities to deliver forest products.

- Celulosa y Papel de Michoacán – Cepamisa (Paper Company of Michoacan): Based on the recommendation given by SEF, the activities of extraction of cellulose materials of the enterprise were financed. This financial support helped the enterprise to invest in infrastructure and equipment.
- Santander Serfin Bank: The bank provided the first credit to SJN, which was used to invest in road equipment, infrastructure and to operate the enterprise.

Researchers played important roles mostly during the second decade of the enterprise. In some important cases, such as the link the community has with the Autonomous University of Mexico (UNAM), such roles have been decisive in the self-organization and adaptive management of the enterprise to deal with exogenous drivers of change (market economy, rationalization of management processes, competitiveness, etc).

The affiliation of the comuneros to the Institutional Revolutionary Party also contributed to the establishment of other strategic partnerships, to the formation of alliances to overcame pressure from private land owner, and to facilitate some flow of government funding to the enterprise, the comuneros and the community.

3.1.c Funding and other resources

i. If there was funding for initial community organization, who provided the funding?

The process of community organization that led to the creation of the communal enterprise was carried out without the use of external funding. Between 1976 and 1979 some of the comuneros together with leaders from other communities and ejidos took the first steps to organize themselves and form the UECIFOMET. At the end of the 1970s, during the process of deterioration of the Union, due to mismanagement, the comuneros of San Juan that had participated in the process of formation of the union as well as others who got involved after, all of them represented in the General Assembly, elected a new Communal Representative and decided to leave the Union. The Communal Representative then made contacts with the Timber Extraction Company SEF knowing that its director was a native of NSJ, to invite him to work with the community. Both of them, the Communal Representative and the director of the company, consequently lead the community organization process that gave life to the communal enterprise. The resources the comuneros generated between June 1981 and July 1982 through the sale of dead wood brought 1,006,000 pesos. These funds, in combination with the resources generated from the first timber extraction and the support of SEF between 1982 and 1983, made possible the acquisition of the industrial sawmill. In addition, a small amount of money provided by the corn farmers from the community, together with active participation of key interest groups in communal labor, contributed to the development of facilities and the starting of operations. Similarly, with part of the resources mentioned above and advances of funds provided by Cepamisa, other costs such as electrification for the enterprise and the chipper machine were covered.

ii. If there was capacity building, including training workshops, who funded it?

SEF provided basic training in the management of timber to start the enterprise's operations as part of the partnership with the comuneros. However, because of the long-term experience in timber management of a large number of families among the comuneros, many of them were already prepared to perform their tasks.

The manufacturers of the sawmill also provided basic training to the comuneros. In addition, some of the allies in government offices such as the Forest Subsecretariat and the Rural Development Department provided technical support and information on application procedures for forest exploitation permits and required general documentation.

iii. If there were initial investments, who funded them?

Among the initial investors were SEF and Cepamisa. SEF provided a lot of in-kind support and Cepamisa provided monetary advances for the enterprise to start operations. Later on, some banks and the government became important investors in the enterprise.

iv. If there was funding for offices, office personnel, vehicles, etc., who funded them?

SEF provided key personnel together with the comuneros. The road construction machinery and other heavy equipment were acquired with the help of SEF. The land for the construction of the headquarters of the enterprise was given for free by an ejido, after the comuneros manifested their interest of using it for their plans. Some of the equipment such as chainsaws were provided by families owning sawmills (small scale machinery). Similarly, trucks to transport the timber were provided by some families belonging to the trucks cooperative of the community. Some months after the enterprise started operations, flows of money became available to buy trucks and other equipment for the enterprise.

v. Human resources for initial organization (in-kind work as opposed to money)

Most of the key interest groups among the comuneros, organized by cooperatives, participated actively in the establishment of the enterprise. These cooperatives, especially the sawmill owners and truck owners gave a lot of in-kind work. SEF also provided personnel to start operations. Some people at the Forest Subsecretariat also gave basic information on documentation to apply for forest exploitation permits.

A large number of the outsiders that provided some help to the community – on required documentation, etc. – developed contacts with Nuevo San Juan through the active role it played when affiliated to the UECIFOMET. Other contacts, such as the one with SEF, happened because of the link of one of the founders of SEF with the community's key leaders. Subsequent support came as a consequence of the numerous successes of the community in acquiring legal status and in managing the communal forest.

3.1.d Knowledge

i. Sources of knowledge: local/TEK and/or outside knowledge

The main body of knowledge used to put the enterprise in place and make it function was science-based. The processes to handle timber, in agreement with the legislation and the market, required specialized technical knowledge. On the other hand, local knowledge had a role to play in aspects such as the direct management of tree stands, in dealing with communal issues and the comuneros, law enforcement agencies and outsiders in general.

ii. If there is local knowledge and if relevant, who holds this knowledge?

Since the comuneros from Nuevo San Juan have been interacting with the forest and its resources for many generations, there is local knowledge on natural processes of the forest, its management and environmental conditions in general. Moreover, the comuneros have had in place for many generations particular farming systems and resin tapping activities; therefore, there is also a body of knowledge on this area. In addition, there is local knowledge on institution building processes, particularly, in the form of local multistakeholder bodies, which seems to be closely linked with traditional religious practices/festivities and customs. The knowledge on institution building, farming systems and forest management is held by both males and females; however, it seems that such knowledge is being applied mostly by males. In the communal enterprise, all of these areas of the local knowledge have been applied in varied levels through time. In particular, the area of institution building made strong contributions to the successful formation and first ten years of strengthening of the communal enterprise.

iii. If there is outside knowledge used in the project, was there capacity building (education, training, knowledge exchange)? Who was involved in providing capacity (e.g., other communities, NGOs, Gov't, universities, researchers)?

Because of the need of satisfying the requirements of the market, of the scale and type of forest extraction and of being highly productive in a competitive environment, the comuneros appealed to scientific knowledge. The professional knowledge held by some of the local leaders was also key to methodically proceed in the process of community organization and in the search for official recognition of the communal property.

Most knowledge used to put the productive processes in motion came from the professionals provided by/or through SEF to train comuneros to rationalize the forest exploitation process. The professionals at the Forest Subsecretariat also provided key technical information and training.

It was during the second decade of the enterprise that well-built linkages and interactions developed between the enterprise and academic institutions, NGOs and government agencies at higher levels.

3.2 Cross-scale linkages

3.2.a Identification of main stakeholders

i. Regional administrative level: municipality, district, etc. as appropriate

The main stakeholders at the municipal level are comuneros or family members of the comuneros. These local stakeholders are grouped based on economic activities. Most of these groups, also identified as the community interest groups, are highly organized and some of them existed even before the creation of the enterprise. As can be expected, some interest groups hold more power than others, for a given period, in decision-making processes, depending on the elected members of the communal institutions and the administrator of the enterprise. Among these groups we find:

- Family-owned sawmills cooperative: Many member of this group of family-enterprises existed before the creation of the enterprise. This is one of the cooperatives with increasing membership. This increment in membership is due to the compensation system from San Juan for ex- members of communal institutions. The compensation system consists of conceding preferential provision of wood in small sizes to the ex-members that wish to have their own sawmills. This group holds the strongest political power and also strong economic power.
- Trucks owners cooperative: This group also existed before the creation of the enterprise, and it also holds some political power.
- Light truck owners cooperative: As with the above-mentioned cooperative, some were there before the enterprise was formed. They also hold some political and economic power.
- Ranchers Cooperative: Even though the practice of having some cattle in combination with a farm has been there for a long time, this interest group is relatively new among the Nuevo San Juan enterprise stakeholders.
- Avocado farmers cooperative: This is the group holding the strongest economic power due to the large national and international avocado market.
- Peach farmers cooperative: A relatively new interest group increasing its economic power.

Among other local stakeholders we find the Municipal Presidency and other government agencies. These government stakeholders have intermittent linkages with the communal enterprise depending on the elected political party, because the communal institutions of Nuevo San Juan are also the branch of the Institutional Revolution Party (PRI) at the local level. Currently the Democratic Revolution Party (PRD) is in power, which makes the links between the enterprise and the administration very weak to nonexistent. Another important group of local stakeholders is comprised of landowners. Some of the families in this category have been engaged in legal battles with the lawyers of the communal enterprise to gain the right to keep their property as private and exploit it for themselves. Most of the legal processes have been resolved in favor to the comuneros rather than the landownders; however, since the radical political changes that have taken place at the

federal, state, and community levels, the comuneros have lost a few large extensions of communal land. These most radical changes relate to the passing of power from the 70 year old hegemony of the PRI to diverse administrations that have included the National Action Party (PAN) at the federal level and the PRD at the state and local levels.

ii. State/provincial level, national, including national NGOs and international, including international development agencies

Some of the important stakeholders at higher levels are represented in Table 2.

3.2.b Institutional linkages related to the project

i. Key horizontal institutional linkages (i.e., linkages across space and sectors, such as networking with other community groups, NGOs, development agencies, etc.)

The communal institutions of Nuevo San Juan act as the branch of PRI at the local level. This political identification has allowed the comuneros to have strong linkages with the local government administration since its foundation until recently. Most if not all of the PRI candidates to the Municipal Presidency are nominated by the communal leaders and have been people in important positions in the enterprise. Once they are elected, government economic support to some of the enterprise's productive processes often becomes stronger. Currently, however, the PRD is in power, which makes the links between the enterprise and the administration very weak to nonexistent.

Linkages developed with other national and international rural communities are facilitated by federal agencies, organizations such as the Rigoberta Menchu Foundation and the World Bank. The function of these linkages is mainly capacity building for visiting communities, who use the Nuevo San Juan enterprise as a model to imitate (See Figure 4 and Tables 2 and 3 for details on linkages).

ii. Key vertical institutional linkages

Vertical linkages of the enterprise became stronger after the comuneros' land ownership rights were recognized by the Presidential Resolution in 1991. Key linkages that existed when the enterprise started were primarily with individuals at the state level rather than with organizations and agencies per se (See Figure 4 and Table 3 for details on cross-scale linkages of the communal enterprise). Currently, Nuevo San Juan has many linkages, and the flow of resources resulting from these linkages has contributed to the diversification of productive activities in the enterprise. Just a few of these linkages are indicated in Figure 1. Most are with government agencies and are mainly related to fundraising.

Because the enterprise is used as a model, some comuneros have been given the opportunity to work with government agencies and NGOs. These opportunities have been used by the enterprise's directive body to create and establish linkages with the

organizations where these comuneros work. Therefore, having key linking persons is one of the strategies of the enterprise to keep strong vertical linkages.

San Juan has also used the help of consultants from some of the organizations linked to for developing proposal to raise funds, receiving training and adopting new technology into productive activities. In this way, the enterprise is also developing strong linkages with individuals in key organizations.

Table 2. Some stakeholders at the state, national and international levels and the level at which they actively interact with the enterprise. Please note that the order of the organizations in this list has nothing to do with the strength of the linkage.

Organizations/Agencies	Municipal	State	Federal	International
WB (World Bank)			X	X
RM (Rigoberta Menchu Foundation)			X	
CNC (National Peasant Confederation)	X	X	X	
SRA (Agrarian Reform Secretariat)	X	X	X	
CDI (National Commision for the Development of Indigenous Peoples)		X	X	
Fonaes (National Fund of Enterprises in Solidarity)			X	
Semarnat (Environment and Natural Resources Secretariat)		X	X	
Conafor (National Forest Commission)		X	X	
Procymaf (Forest Resource Conservation and Management Project)		X	X	
Coinbio (Biodiversity Conservation Project)		X	X	
SEDESOL (Social Development Secretariat)		X		
SEF (Timber Extraction Company)		X		
Cepamisa (Paper Company of Michoacán)		X	X	
Sedragro (Agricultural and Livestock Development Secretariat)		X	X	
Sagarpa (Rural Development Subsecretariat)	X	X	X	
CFEM (Forestry Commission of the State of Michoacan)		X		
UNAM – CIECO (Centro de Investigaciones en Ecosystemas)		X	X	
AG Municipal Government Agencies				
PM (Municipal Presidency)	X			
CL Local Cooperatives	X			

X Level at which institution is based

Level at which institution is actively linked to the NSJ enterprise

Table 3. Key organizations and functions of their linkages with the Nuevo San Juan communal enterprise.

Organizations	Aim of the Organization[9]	Linkage over time	Functions of linkages
WB (Banco Mundial) World Bank	To provide financial and technical assistance to poverty reduction and development projects in developing countries mostly through government agencies.	Started in the mid 1990s. Provides support through gov't agencies	• Innovation and knowledge transfer. • Training and research. • Fundraising • Access to markets
FSC (Consejo de Manejo Forestal) Forest Stewardship Council	Provides certification of forest management plans throughout the world	Started in the mid 1990s. Regular, important linkage	• Certification
SRA (Secretaria de la Reforma Agraria) Agrarian Reform Secretariat	To provide land tenure security by facilitating territorial planning and by regulating rural property. To design public policies to foment integral agrarian development.	Very strong and old linkage.	• Regulating. • Fundraising. • Legal Support.
CDI (Comision Nacional para el Desarrollo de los Pueblos Indigenas) National Commission for the Development of Indigenous Peoples	To coordinate, promote, support and evaluate programs, projects and strategies oriented to achieve the integrated development of indigenous peoples and the protection of their rights.	Old and important linkage	• Fundraising.
CNC (Confederacion Nacional Campesina) National Peasant Confederation	One of main representatives at the national level of the Institutional Revolution Party, who is in charge of promoting political ideologies and ensuring voters' support	Very old and strong linkage	• Political Networking. • Business Networking: access to capital
RM (Fundacion Rigoberta Menchu) Rigoberta Menchu Foundation	To promote indigenous rights. The organization works as a link between indigenous communities and resources (financial, technical, etc.)	Linkage started after 2000. Currently very strong.	• Innovation and knowledge transfer. • Institution building. • Training and research.
Semarnat (Secretaria del Medio Ambiente y Recursos Naturales) Environment and Natural Resources Secretariat. *Part of Semarnat	To facilitate the protection, restoration and conservation of ecosystems, and environmental goods and services to support their sustainable use and development.	Very old and strong linkage.	• Resource monitoring. • Forest exploitation permits provider • Fundraising • Technical Support
*Conafor (Comision Nacional Forestal) National Forest Commission	To develop and promote initiatives to conserve and restore forest resources. It is also the agency in charge of the application of the policy on sustainable forest development.	5 year old important linkage.	• Technical Support. • Fundraising. • Access to markets
*Coinbio (Proyecto de Conservacion de la Biodiversidad por Comunidades Indigenas. Mexico). Indigenous and Community Biodiversity Conservation Project in Mexico	To conserve areas of high biodiversity by strengthening and promoting community conservation initiatives on communally owned lands.	Relatively new program and linkage. Key linking person facilitates interactions	• Fundraising.
*Procymaf (Proyecto para la Conservacion y Manejo Sustentable del Recurso Forestal en Mexico) Forest Resource Conservation and Sustainable Mangement Project	To assist ejidos and communities in priority regions to generate local development by improving the management of forest resources.	Relatively new linkage. Key linking person facilitates interactions.	• Fundraising. • Training. • Technical Support.
SEDESOL (Secretaria de Desarrollo Social) Social Development Secretariat	To design and coordinate the Mexican social subsidiary development policy.	Intermitent, old linkage.	• Fundraising
Fonaes (Fondo Nacional de Empresas en Solidaridad) National Fund of Enterprises in Solidarity	To support indigenous, communities and urban producers efforts on productive projects and employment-	One-time linkage, facilitated by key linking person	• Fundraising.

[9] Source: Published documents on the Organizations.

	generating social enterprises.		
SEF (Servicio de Extracciones Forestales) Forest Extraction Company	Private company created to provide forest exploitation services to ejidos and communities with approved forest resource use plans.	Key linkage in the formation of the enterprise	• Technical Support • Business Networking: Access to markets
Cepamisa (Celulosa y Papel de Michoacán) Paper Company of Michoacán	State owned enterprise dedicated to the production of paper.	Key and very old linkage	• Business Networking: Access to markets; access to capital.
El Palacio de Hierro (The Iron Palace company)	Department store dedicated to the sale of varied goods ranging from perfumes to furniture and home facilities.	Old and very strong linkage	• Business Networking: Access to markets.
Sedragro (Secretaria de Desarrollo Agropecuario) Agricultural and Livestock Development Secretariat	To promote the integrated and sustainable development of the forest, agriculture, and livestock sectors.	Old, Intermittent linkage.	• Fundraising.
Sagarpa (Subsecretaria de Desarrollo Rural) Rural Development Subsecretariat	To promote the capitalization and economic strengthening of primary production units through the investment in capital goods and the use of professional services for rural development.	Old, Intermittent linkage.	• Fundraising.
CFEM (Comision Forestal del Estado de Michoacán) Forestry Commission of the State of Michoacan	To promote the sustainable use and conservation of forest resources by providing technical and financial support, monitoring of management programs, etc.	Old and regular linkage	• Technical Support. • Resource Monitoring.
Red estatal de Ecoturismo comunitario (State Network of Community Ecotourism)	A community-based organization aiming at building channels of financial help between the government and communities and ejidos to promote environmentally sustainable ecotourism activities.	New organization where the enterprise is a founding member	• Fundraising. • Business Networking: access to capital.
UNAM-CIECO (Centro de Investigaciones en Ecosystemas) Center for the Study of Ecosystems	To develop human resources, promote scientific research and disseminate knowledge.	Intermittent linkage started in the mid 90s.	• Training and Research. • Technical Support
Universidad Michoacana de San Nicolas de Hidalgo (San Nicolas de Hidalgo University of Michoacan)	Academic institution aiming at the development of human resources and the dissemination of knowledge	Intermittent, relatively new linkage	• Research.
AG (Agencias del Gobierno) Municipal Government Agencies	Varied objectives on biodiversity protection, forest management, water bodies management, etc.	Very old and Intermittent linkage	• Fundraising. • Political Networking.
PM (Presidencia Municipal) Municipal Presidency	Ensure well being of Municipality, including the promotion of economic growth, education, health, etc.	Very old and intermittent linkage	• Fundraising. • Political Networking.
CL (Cooperativas Locales) Local Cooperatives	Generation of profits for owners and their families	Very old, intermittent and permanent linkage depending on cooperative's type	• Bussiness Networking: Access to market and capital.

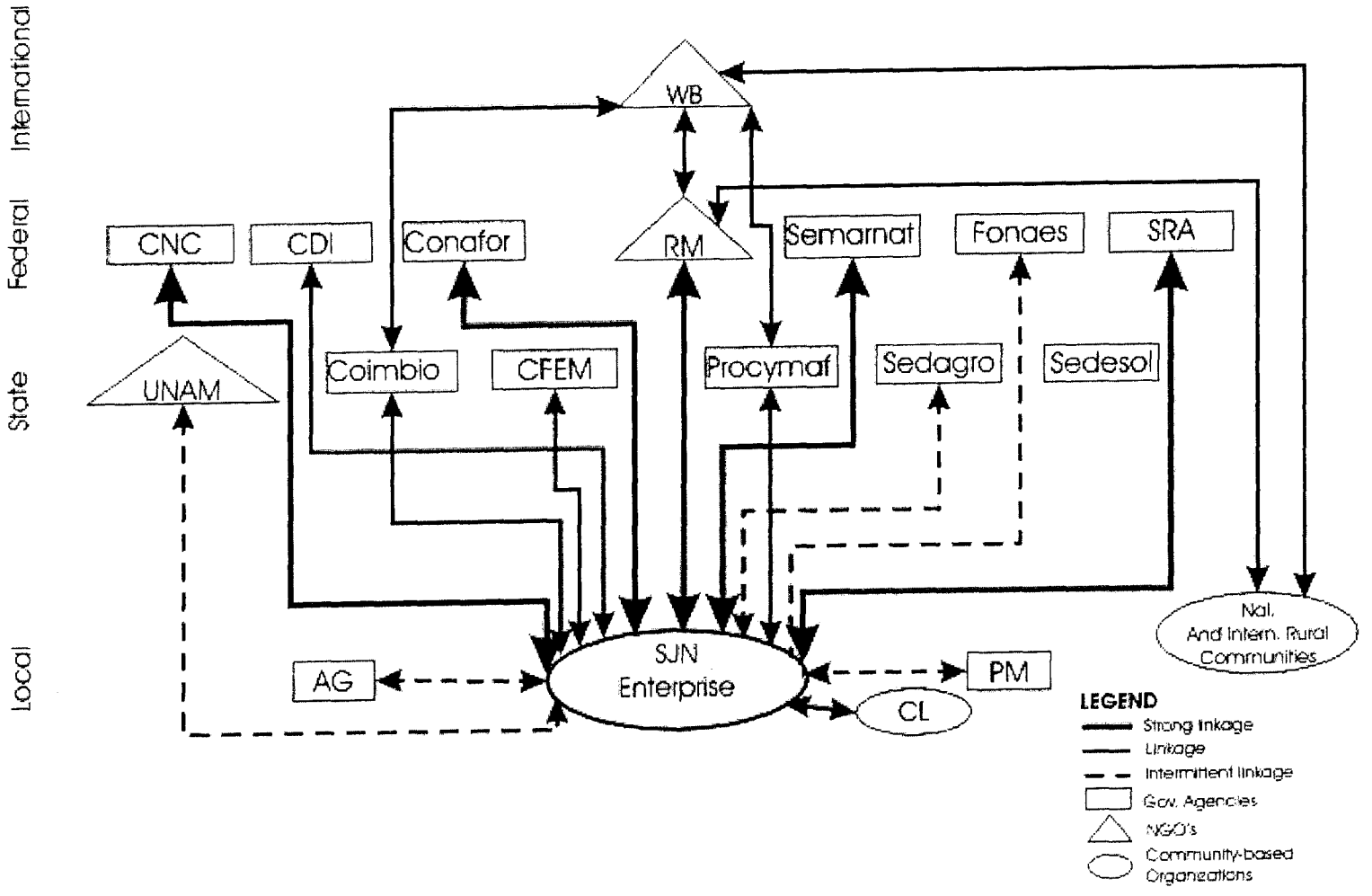


Figure 4. Representation of some of the cross-scale linkages in the Community-Based Resource Management System in Nuevo San Juan. For acronyms see Table 2 and 3.

iii. How do the policy environment and market conditions impact the project? (e.g., policies, legislation, political space for experimentation)

The Nuevo San Juan communal enterprise built strong foundations during its first decade. However, the changes that have been taking place since the '90s have forced the enterprise to change its strategies to survive. One of the most important aspects in the changing political environment was the establishment of the Free Trade Agreement in 1994. The abrupt invasion of cheaper wood products brought by this agreement, together with the competition with highly mechanized private enterprises and timber coming from forest plantations, caused a reduction in the enterprise's profits of almost 20% in the years subsequent to the agreement. The response of the enterprise to this challenge was the search for partnerships to receive training to systematically diversify and mechanize productive activities. In this respect UNAM through CIECO made large contributions, helping the enterprise to train human resources in GIS and to identify and map, using satellite data, the geography and resources on the communal land. CIECO also supported the comuneros' efforts to create new productive activities such as ecotourism.

Between 2001 and 2002 Mexico had a fiscal reformation through which changes to taxes on profit were made. The new legislation has located communal and indigenous enterprises under the same taxation conditions as private enterprises. This redefinition of communal enterprises, which aim at the common well being, unlike the maximization of profit of the private sector, has created a large debt for the enterprise that increases each year. As a response to this new challenge, the enterprise has reorganized its productive activities in such a way that the areas related to primary processes are divided from the areas where industrial transformation of resources takes place. This reorganization caused the reclassification of activities related to primary processes as "integrated development" (which is tax exempt) and those related to secondary or industrial processes as "forest exploitation", for which the enterprise needs to pay taxes. The reorganization has not saved Nuevo San Juan from paying taxes, but has significantly reduced its annual taxes. This response to the fiscal reformations have been influenced and supported by professional consultants from the community and from outside.

In addition to the fiscal reforms that took place during the present administration, new programs such as the Programa de Atencion a Focos Rojos (Attention to Conflict Zones Program), which began in 2003 and, which has been coordinated by the Agrarian Reform Secretariat (SRA) in partnership with other secretariats, have been important. This program oversees areas of the country where land tenure conflicts have exploded or have the potential to explode. Due to the long-term legal battles that the comuneros from San Juan have had, since the official recognition of their communal land in 1991, with small landowners interested in keeping the land as private property, the comuneros appealed to SRA to recover some of the communal land that is still in private hands. With the help of this program, the comuneros have been able recover some of the land that was recognized and conferred through legal battles, but could not be exploited due to the animosity of the private property owners.

The comuneros and the enterprise have been able to attract support because of the large and successful productive process being undertaken by the enterprise. However, changes in which political parties have been dominant at the federal, state and municipal level have hindered some of the potential support that Nuevo San Juan could appeal to. The comuneros' success has happened in the face of political stagnation at the community level, because they continue identifying themselves with the Revolutionary Institutional Party (PRI).

In general, some individuals from partner organizations and the consultants hired by the enterprise, some of them comuneros, have identified both positive and negative aspects of legislative changes and have been able to help the enterprise to adapt and often become stronger. However, the persistence of many of the communal leaders of Nuevo San Juan in identifying themselves as members of a political party have set the masses of comuneros on a fixed, non-adaptive position on relation to politics.

iv. What change (if any) did the project trigger in government legislation or policy?

The emancipation of the comuneros from San Juan to lead their own development has inspired, and even supported through training, the development of local initiatives from indigenous and non-indigenous forest communities from Mexico and Central America.

3.2.c Unusual interactions among organizations and agencies

i. Are there any unusual interactions among gov't agencies, NGOs, development agencies, etc., that impact the project positively or negatively (e.g., competition over gov't department jurisdiction, or NGOs competing over funding)? What motivates these linkages? What are the drivers of positive or negative interactions?

The political stand of the comuneros as the branch of the PRI at the local level has made other groups such as the private property sector to identify themselves with the opposition party PRD as a way of gathering support to prevent the comuneros from achieving their objectives. The PRD won the last elections in the Municipality, thereby causing a rupture between the local administration and the enterprise. Because of this separation between the local government and the comuneros, the current administrators and representatives of the comuneros appeal directly to the state and federal government whenever they identify programs of interest or potential support. This particular situation, which has happened just a couple of times since the creation of the enterprise, brings about a tense environment between the comuneros and non-comuneros in the Municipality and between the local government agencies and the enterprise, with each side trying to find legal ways of defeating or stopping the other.

3.3 Biodiversity conservation and environmental improvements

3.3.a Conservation or improvement of target resources

The main objective of the community-based resource management system of San Juan is the preservation of the forest as a common good whose adequate management can generate income for the comuneros and their families. To achieve that objective the enterprise has in place management/preservation programs targeting tree stands, hydrological resources and some particular mammal species.

As the foundation of the enterprise, the comuneros have developed a Forest Management Plan that aims at the preservation of the forest through natural regeneration and reforestation. During the rainy season the comuneros involved directly and indirectly with the enterprise and their families engage themselves in reforestation activities in addition to the facilitation of natural generation. The reforested areas are the ones where *timber extractions have taken place – without a successful natural regeneration – and the* areas cleared by the eruption of the Paricutin Volcano in the '40s. They also have a preservation program for riverbanks. The forest areas around riverbanks are exempt of the annual plans of timber extraction.

Culturally, the comuneros of San Juan and other communities have performed hunting activities of white-tailed deer at various times including during the celebration of some of their local traditional festivities. Such uncontrolled and regular hunting has caused the depletion of the species' population. After 1994 when the community started a partnership with the UNAM, scientists identified the problem and proposed a conservation project to protect the species, which started in 1996. The conservation project consists mainly of breeding the species in semi-captivity to increase the population, to support the ecotourism activities, and to sell some individual animals to other communities. In addition to the conservation activities previously mentioned, occasionally one or more of the management areas of the enterprise engage themselves in some conservation activities for other resources, based on the availability of government resources to support the activities.

3.3.b Changes in resource state

Even though the forest has been classified as a Pine-Oak forest, the comuneros only reforest using pine. So, reforestation is visible in many areas but some patches of the communal land seem to be changing to a monocrop of pine.

The forest exploitation, as has been documented by researchers from UNAM during the last decade, is affecting the overall biodiversity of the forest notwithstanding the reforestation activities. The reasons identified are basically related to the management of tree stands to increase productivity (basing cutting on tree age and condition; clearing branches to increase the probabilities of having prime quality wood; promoting the matching on age of tree stands, etc.).

Vegetation patches around riverbanks may be the most biodiverse on the communal land because of the way these riparian areas are protected from any forest use and management activities. The white-tailed deer species have been reproducing in semi-

captivity. Every time the population rises in number, some individuals are sold or provided for different events.

3.4 Poverty reduction

3.4.a Indicators of poverty reduction

Currently the enterprise provides direct employment to about 600 persons, all of them receiving the social benefits established in the Mexican legislation. There are also approximately 89 persons in the enterprise's non-timber related adjunct areas, not less than 700 indirect employees (these mostly composed of the cooperatives of trucks and of light trucks, cooperative of sawmills, resin collectors, etc., which are all family-enterprises owned by comuneros) and thousands of beneficiaries.

The communal enterprise buys resin from San Juan and surrounding communities, giving also a source of income to comuneros from other places. The immigrants to the community benefit through the boost to commercial activity at the local level, which accompanies the increase in family income. In the Municipality of Nuevo San Juan street kids and beggars are very uncommon – everyone seems to have at least a minimum income to survive. It is also true that some particular families of comuneros, depending on the economic activity they are engaged in, for example owners of sawmills, avocado farmers, etc., are wealthier than others. Apparently, without reaching extremes, there is a clear social stratification among the comuneros, ranging from the most wealthy comuneros having some or many family members occupying important positions in the enterprise to the most humble comuneros, whose income consists basically of the sale of the small quantities of resin they are able to collect and/or the money they receive per cubic meter of wood from the exploitation of the piece of communal land they take care of/hold.

3.4.b Improvements in community well-being

There has been a large and evident impact on the social, economic and physical development of the comuneros, their families and the settled foreigners. The community has passed from being a place without basic road infrastructure, schools, primary health care or other services, to being a municipality with around 16,000 inhabitants, almost a third of them immigrant settlers, with primary and high schools, basic road infrastructure, water and sanitation systems, proper housing, active commercial and other economic activities, among other things. Most of these positive changes have been seriously influenced by the partnerships between the local administrations and the enterprise and by the income generated through the enterprise, whose rate of direct and indirect employment has increased from approximately one hundred persons in 1982 to more than 1000 person in the present time. The enterprise moreover, has occasionally subsidized some of the comuneros to get higher education at the state level and also occasionally

works as a guarantor for women's groups, avocado and peach farmers, etc. applying for government subsidies, economic and financial help.

3.5 *Detailed analysis of community-based conservation (CBC)*

3.5.a Mechanisms, dynamics, drivers

i. Analysis of catalytic element that made the initiative work

The strong leadership of some few empowered comuneros, whose level of education helped them to identify the relevant tasks to promote community development and whose group initiative gave life to management institutions able to foster development and promote common well-being were key to achieving community organization and empowerment. Through the discussions with founders of the enterprise it was easy to see the vision of such local leaders and the way they inspired the formation of institutions by sharing time and information, building trust and by allowing to the assembled comuneros to guide and lead key decision-making processes. This initial community organization becomes even more significant when one considers the challenge of a policy environment not very supportive of communal resource management initiatives. Furthermore, the identification of key partners contributed greatly to the success of the communal enterprise and the establishment of its strong foundation. Last but not least important was the mindset of the comuneros in establishing a communal enterprise with a growing rate of employment and profits. That is to say, they were searching for the common well-being but with the mentality of private entrepreneurs. Their outlook and careful planning allowed them to have their own Technical Forest Services Department to design the forest exploitation and management plans – required by the Forest Law – in the fifth year after starting their timber extractions. This very important step, together with the partnerships they developed to pay in-kind for the construction of the first areas of the enterprise, helped in the capitalization of the communal enterprise. Prior to the establishment of the Technical Services Department, the comuneros had to hire consultants to design their management plans, as all other forest indigenous communities in the state still do.

ii. Decision-making process (e.g., participatory, transparent, responsible)

The community organization process in Nuevo San Juan started through the leadership demonstrated by some key individuals. Among the most important contributions these individuals made was the building of institutions able to foster successful decision making processes. Initially, some leaders were able to gather some of the scattered comuneros through the forest product extraction activities carried out during the time the community was part of the Union of Ejidos and Indigenous Communities Luis Echeverria Alvarez (UECIFOMET). However, it was not until after the election of the Communal Representative and the Commissioner for the Forest Exploitation – during the withdrawal of the community from the UECIFOMET – that the comuneros assembled in increasing numbers as a consultative body. These increasing assembled comuneros were the ones who, with the help of the leaders, took the important decisions that gave birth to the

enterprise and subsequently consolidated its foundation. Even though there were challenges in gathering and creating the vision of a communal enterprise, the leaders' systematic efforts finally yielded fruits. Since then, during the early '80s and until the early '90s, the institutions driving the decision-making process have been the General Assembly with the support of the Communal Council. Since the middle of the '90s, at times the decision-making processes seem to be have been strongly driven by some of the elected individuals in the administration and the representative, who use the interaction with the highest institution– the General Assembly – as a way of legitimizing decisions already taken. In general, the current feeling among many comuneros is that their role during the General Assemblies is no longer to contribute directly in consultation and taking decisions, but rather now is merely to approve the decisions previously taken.

Another important aspect of the consultation and decision-making processes taking place at the institutional level in Nuevo San Juan relates to the roles played by the different institutions. At the beginning of the enterprise, the elected heads of the administration and representative differentiated their roles and agreed to not interfere but to consult or make suggestions to each other. Such an arrangement allowed each head to carry out activities efficiently and make steady progress in their common objectives. This arrangement among local institutions is another of the characteristics which some comuneros feel has been diluted since the mid '90s.

iii. Conflict-management mechanisms

Unlike Ejidos, in communities ideally there is no private property but rather individual/family landholders who carry out their subsistence activities on the land but being aware that the land belongs to the community as a whole. The Mexican legislation in the early twentieth century allowed comuneros to register pieces of communal land as private property after inhabiting it peacefully for no less than ten years. Because of this contradictory policy environment, which recognized communal land ownership rights at the same time as allowing individuals to privatize the land, a large number of people, among them comuneros from Nuevo San Juan, registered pieces of the communal land as private property. In most instances the transformation of communal land to private property took place because of the need of demonstrating ownership to authorities in order to be entitled to use and manage the forest resources in such lands. At the time of enactment of the Presidential Resolution in 1991, there were 133 pieces of land registered as private property, comprising something more than 4,000 ha. of the 18,138,323 ha. identified as communal land. (See Figure 2 for a map depicting the private property inside the communal land).

In this context, one and perhaps the most important mechanism the comuneros of Nuevo San Juan used to try to placate conflict was the establishment of a verbal agreement between the communal enterprise and the comuneros holding/taking care of the communal land on one hand, and some private property owners on the other. This agreement includes the recognition of the land holding rights that families possess and the land holding inheritance rights of the descendents of the families, under the condition that the families will abide by the local rules, respect the decisions of the local

institutions, and allow the enterprise and only the enterprise to exploit the forest present on the land, with the families receiving in return a payment per cubic meter of timber. This agreement was well accepted by all comuneros landholders, but rejected by some families owning private property, whose members have opted for legal battles, which in most cases have been resolved in favor of the communal enterprise and the comuneros.

Another conflict situation that Nuevo San Juan and many other communities that still have forests left have faced is clandestine timber extraction. This is a particularly important issue in San Juan since the surrounding communities have depleted most or all of their forest resources. In the past, the comuneros dealt with it by apprehending the violators and presenting them to the authorities, committing them to stop or be arrested; they have also patrolled and used guns to scare violators, resulting in some deaths.

At the end of the '70s and beginning of the '80s during the process of organization of the community, some of the most important conflicts the comuneros had to manage were with private enterprises and some government agencies. As with many other communities, the private sector was exploiting patches of forest in San Juan in partnership with private property owners, who used their land titles to get permits to exploit the forest. The comuneros tired of not receiving benefits from their forest and decided to stop the companies' activities. Among the most important actions they led were the taking control of roads to stop loaded trucks. Most warnings given by the comuneros successfully scared those in the private sector traditionally linked to extraction of forest resources. These actions increased the tense and often-conflictual interactions the comuneros have had with private property owners.

In a similar manner, the comuneros on some occasions have appealed to force to ensure they are heard and receive from the government what they are entitled to by the legislation. Their actions have included, but have not been limited to, the surrounding of a government office and mass mobilization to advocate for specific petitions.

iv. Conflict resolution and enforcement

The differences that the comuneros have with most landowning families still continue to this day. The comuneros have been able to recover some of their communal land through judiciary processes, but also have lost some of it through these legal battles. In some cases, the comuneros have been unable to enforce legal decisions and take control of land that has been granted to them. With some other families, the enterprise has been able to establish its verbal agreement, because, in most of these cases, the families don't want to engage in legal processes to expend large amounts of money and time.

The clandestine extraction of timber is another problematic situation that the comuneros have been able to reduce but not stop. They constructed a tower to monitor part of the boundary with the most conflictive surrounding communities. They also patrol constantly and have a communication system and good means of transportation to be able to come together to prevent extractions or capture violators. These recurring situations, such as the

tense relations the comuneros have with private property owners, do not seem to have an immediate solution.

As for the exploitation of the forest, since the early '80s the comuneros received approval to exploit their communal land, and now the communal enterprise has full approval from the government. With respect to the families owning private property, even though some of them have received permits to exploit the forest, because all road infrastructure inside the communal land is controlled by and belongs to the comuneros, it is too difficult for these families to use and manage the forest resources on their lands. Therefore, the only timber extractions taking place in the communal land are the ones coordinated by the communal enterprise.

3.5.b Learning and Adaptive Management

i. How did previous observations lead to project formation and development?

The experience acquired by the communal representative and the commissioner for forest exploitation through their previous interactions and work with other indigenous communities served to shed light on the legal process communities have to undergo to get official land ownership recognition and on the steps to guide a communal effort of use and management of forest resources. This experience guided the process of community organization at the end of the '70s and beginning of the '80s. Unlike most comuneros in San Juan – who had only basic education and experience mostly through local interactions – these leaders were professionals and already engaged in community work in other parts of the State. In summary, the vision of the leaders of an organized community did not come from the initial steps of the community organization process, but from their previous experiences and their professional skills.

ii. How was experience incorporated into subsequent steps of the project?

The experience of the community leaders allowed them to identify the role and importance of local institutions, to take action to obtain official recognition of the comuneros' land tenure rights, and to take the necessary steps to carry out the resource use and management process. Ongoing experience has also served to improve productive processes, to increase the number of productive areas of the enterprise, to appeal to government and other funding, to identify key partnerships, to adapt to market challenges, to mechanize some resource management processes and many other things.

iii. How monitoring (e.g., rare species) informs the project

The Technical Services Department of the communal enterprise oversees, through feedbacks from landholders, through the monitoring activities of some sub-areas such as the disease control, and through field workers in general, the state of the forest and healthy conditions of tree stands. These same mechanisms, together with feedback from scientists, inform various management practices applied to the forest. Monitoring

processes are directed to maintaining timber yields and reducing clandestine timber extractions and forest fires.

iv. Barriers to CBC, and how the barriers were overcome

More than a community-based *conservation* project, Nuevo San Juan represents a community-based *management* project. There were no barriers to the management process per se, but rather to the community organization and communal forest exploitation in general. As has been mentioned above, the main barriers to community organization and forest exploitation came from private property owners, whose members did not want to give up their land titles and their total freedom to use and manage their land. The comuneros then took the necessary steps to obtain official recognition of their land tenure rights from the government to finish with that problem. However, even though the Presidential Resolution from 1991 did recognize the communal land tenure rights, it also left intact the rights of the small landowners with titled lands (private property) inside the communal property. Legal battles and particular arrangement with families owning land privately have helped to ease interactions; however, the problem has not been fully overcome.

v. Combining knowledge systems to solve problems

Problems in interactions with other interest groups, such as private property owners, government agencies and surrounding communities, necessitated the combination of knowledge on Law and general legislation together with local wisdom. The comuneros also made use of local and Western knowledge and TEK to deal with challenges at the institutional and managerial levels.

vi. Was there adaptive management (learning-by-doing) with the organization structure and/or with ecosystem management?

The silvicultural methods applied by the Nuevo San Juan enterprise, which are the same one established since 1984, aim at the regularization of the age of tree biomass to increase the productivity and timber yields over time. Even though maintaining timber yields through the regularization of ages of tree stands, and the reforestation of only pine species have both been identified – by scientists – as a dangerous practice that can lead to the loss of resilience and the serious reduction of biodiversity, the community has continued their management strategy in this area. In most other components of the forest management strategy, such as protection of water bodies, disease control, etc., there have been changes over time, which can be considered as adaptation of previous management practices.

The organizational structure of the comuneros of Nuevo San Juan has changed little during the more than 20 years since creation of the enterprise, even though it is currently a lot larger. For example, the enterprise's manager still carries the key management decisions of all the productive areas of the enterprise, maintaining a centralized

managerial strategy as it was at the beginning of the enterprise. Moreover, in other aspects, such as the political affiliation of the comuneros, few changes have taken place. The communal leaders continue directing the comuneros to identify themselves with the PRI and to remain faithful to the selected PRI candidates at the local, state and federal levels. In general, there is a reluctance to make modifications to institutional arrangements previously established but a willingness to make necessary changes to management processes based on what is requested by law or as a product of adoption of new technologies.

3.5.c Community benefits from biodiversity conservation and environmental improvements

The environmental benefits brought about by the communal enterprise's forest use and management strategy relate mainly to the preservation of forested areas over time. However, the forest is more homogeneous than before because of the reforestation with only pine species and the suppression of natural fires. Even though fauna and flora species, and biodiversity in general, are threatened by the silvicultural methods applied by the comuneros, still their systematic reforestation, water body and riverbanks protection, and fire management programs, among other activities, make large contributions to the preservation of the communal forest. This is clearly demonstrated by the clandestine timber extractions led by surrounding communities which have already depleted their forests.

The comuneros have received national and international recognition for their forest use and management strategies including: the Equator Initiative Prize from the United Nations for the reduction of poverty by properly using and managing natural resources; the Alcan Prize from the Alcan Group, for their sustainable natural resource management; the Ecological Merit Prize from the Mexican government, for their sustainable resource use and management; and the Prize for Successful Natural Resource Management Experiences from the Mexican government, for their innovative and diversified use and management of natural resources. The comuneros have also received state recognition for their forest use and management.

3.5.d Livelihood strategies, coping and adapting

i. How did involvement in the project affect other livelihood pursuits, negatively (e.g., time, resources) or positively (e.g., synergies, increased capital)?

The blooming of the productive activities in the communal enterprise has positively influenced the regional economy by generating wealth. This is clearly seen in the expansion of the commercial activity at the local level, the settlement of large numbers of immigrants that find job opportunities in the timber industry in the community, and the increase in capital of most comuneros and their families.

ii. How did the project affect the ability of households and the community to adapt to changes (e.g., markets)?

The community-based enterprise has helped some of the cooperatives to reach national and international markets. However, because many of these cooperatives existed before the creation of the enterprise, the enterprise has just made their ability to deal with national markets stronger. The state of Michoacán is characterized by its exports of avocado and other agricultural and forest products to international markets. Therefore, there is a culture of dealing with markets from which Nuevo San Juan also benefited. Other social characteristics at the local level such as alcohol drinking, during religious and traditional festivities have increased because of the rise in family income, but did not emerge because of the establishment of the enterprise; most of these practices have been in the community for a very long time.

3.5.e Resilience of communities, livelihoods and management systems

i. Did the project add options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?

The communal enterprise has been the engine of socio-economic growth at the municipal level. These improvements in the socio-economic conditions have contributed in a large way to the adaptations the comuneros and the Municipality have undergone because of a restrictive and often negative policy environment for forest exploitation and rural communities. Sources of livelihoods have increased as a consequence of the economic activity in the community. These alternative livelihood endeavors, in which many comuneros are engaged together with outsiders, are driven by their process of adaptation to satisfy new demands of the local and national markets; by their pursuing new programs of government support for women and rural development; and by their increased consciousness that there is a need for diversifying economic activities to avoid exploiting the forest unsustainably. This resilient character of the comuneros of Nuevo San Juan emerges as one of the most important products of their collective efforts to exploit their forest resources.

ii. Did the project create learning opportunities?

The experience of Nuevo San Juan in forest resources management has offered many learning opportunities for national and international rural communities. Through some government agencies and organizations such as Rigoberta Menchu Foundation rural communities in Mexico have had the opportunity to learn, through visits to the enterprise, about some of the key elements contributing to success. Similarly, with funding from the World Bank, academic institutions such as the UNAM have organized, together with the comuneros, training programs for some rural communities from Central America.

iii. Did the project create self-organization opportunities?

The communal enterprise has inspired other organizational effort at the local level. Some of these efforts include women's self-help groups, farmers groups, etc. Moreover, the enterprise has served to vouch for some of these local initiatives to government agencies and NGOs providing funding for development. There are certainly other self-organization efforts of rural communities at the national and international level that have been inspired by the Nuevo San Juan case.

3.5.f Transferability of the lessons from this EI case

There are a number of lessons from the community-based resource management system of Nuevo San Juan that could be transferable to other rural communities.

i. Leadership

Local committed individuals can make a difference to change the socio-economic situation of impoverished communities. In the face of economic constraints and weak institutions, the leaders of the comuneros of Nuevo San Juan were able to pilot a community organization process that gave life to the communal enterprise and its guiding institutions. Although the level of education of these leaders had a large role to play, it was their open and transparent actions that led to the trust and cohesion of the majority of comuneros. Prior to the establishment of strong institutions, the comuneros had in place a very weak system of communal representation where the elected heads used their positions to improve their own financial situation more than the community's economic condition. The founding of trustworthy institutions with clear roles highlights as one of the key achievements of these leaders whose actions and attitudes brought together the powerful (people already organized with family owned businesses) and powerless (people without permanent means of subsistence) to work on a common goal. Neither money nor power, but rather inspiring actions were the forces leading the community organization process in Nuevo San Juan.

ii. Role of partnerships

A second and very important lesson from the Nuevo San Juan case relates to the strong and key linkages developed with individual and organizations. These linkages were the ones that permitted to put in place the first building blocks of the communal enterprise, to receive government required approval to start an ambitious forest exploitation venture and finally to establish regular channels for inflows of governmental and non-governmental funds for the comuneros and the enterprise.

Of particular interest is the strategy the communal enterprise and its institutions have used of keeping constant contact with comuneros working for governmental and non-governmental organizations, to develop strong relations with the organizations and to

access available funds for rural development, environmental protection and poverty reduction.

iii. Diversification of economic activities

The mindset of the comuneros regarding the need for diversifying productive activities is another aspect of the success and strength of the communal enterprise which could be reproduced elsewhere. Before the creation of the enterprise, resin collection, agriculture and intermittent timber extractions where among the main economic activities at the local level. While the enterprise had and still has timber extraction as the heart of its productive activities, it still focuses on diversifying economic activities. It has gone from relying almost exclusively on the use of timber and its subproducts, to managing a diverse range of activities: transforming raw materials, exploiting the potential of water resources, exploiting the potential of landscape features and some flora and fauna species, providing technical and other services, giving training to individuals and communities, serving as a channel for organized local groups (women, farmers, etc.) to receive government funding for productive projects, and others. Such diversification of productive projects is another fundamental factor that has allowed the Nuevo San Juan communal enterprise to broaden the possibilities of getting support and of surviving over time.

iv. Political affiliations

The comuneros of San Juan have had a long-standing linkage with the Revolutionary Institutional Party (PRI), whose hegemony lasted for about 70 years, since well before the creation of the communal enterprise. The communal institutions constitute the branch of the PRI at the local level. At the time of the creation of the enterprise such political identification opened some doors for the community to advance in their efforts to get approval from the government to exploit their forest. In the subsequent years, such affiliations produced a particular link between the local government administrations and the enterprise, where flows of money in both directions allowed improvements on the community's physical infrastructure and the enterprise's strengthening of some productive areas. At the present time, however, the current leaders of the comuneros maintain their position of belonging to the PRI under a political environment dominated by other political parties at all the levels of government, including the local.

v. Institution building

According to the elders an enterprise such as the one envisioned and put in place by the comuneros of Nuevo San Juan would have failed if the community institutions were not strengthened parallel to the productive processes. After the mid '70s communal leaders guided the comuneros to participate in the creation of the UECIFOMET. After almost 5 years of attempting to organize themselves together with other communities, Nuevo San Juan was ready to stand on its own and started leading the exploitation of its own resources. Although individuals more than institutions were the ones guiding most processes, their initiative to strengthen the local institutions was the means to achieve collective action and a long-lasting communal enterprise.

vi. Capacity building

The heads of the Communal Representatives and Management drew on the local skills – from the members of the cooperatives – to start the operations of the communal enterprise. They also directed efforts to train the comuneros on the basic skill to run the different productive areas. So, although in the enterprise at some points in time there were outsiders leading some aspects of the productive processes, their primary mission – based on the local leaders' vision – was to train the comuneros under their command to eventually take over. Because of this set objective, the communal enterprise has become one of the experiences in Mexico – and maybe in the world – where a large-scale timber extraction takes place with a 98% of labor from the community. This is another important lesson from this initiative.

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Lessons from the Equator Initiative: Common Property Perspectives for Community-Based Conservation in Southern Africa and Namibia

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Introduction

Global biodiversity is seriously threatened by widespread habitat loss, over-exploitation of species, invasive species, pollution and climate change. The loss of biodiversity is especially acute in the equatorial belt, where the world's greatest biodiversity is concentrated (Western & Pearl 1989). Protected area networks, notably national parks with strict protection regimes, are widely considered a principal means for conserving global biodiversity. However, there is growing recognition that protected areas, as islands in seas of multiple land use and resource extraction, cannot effectively achieve the needed conservation of biodiversity at broader landscape levels beyond the protected areas.

This paper examines community-based conservation in Southern Africa, with particular attention to Namibia's community-based natural resource management (CBNRM) program and common property resource institutions called conservancies recently established in Namibia and growing exponentially since 1998. A premise of this research is that community-based conservation institutions might effectively complement or serve as alternatives to state established protected areas to conserve biodiversity. This has been largely unacknowledged as a need and opportunity in Southern Africa to date, notwithstanding that a shift has been described in protected areas management that increasingly recognizes needed conservation partnerships and cooperation between local and indigenous communities and protected areas (Borrini-Feyerabend *et.al.* 2004; Phillips 2003).

Protected areas have been established and managed in Southern Africa with little or no regard for local community resource access and use. In fact, local and indigenous communities have been displaced and disenfranchised from traditional areas of occupancy and resource use, with severe consequences for community livelihoods and socio-cultural survival (Owen-Smith 1987; Timberlake 1991; Western 2002). A fortress approach to conservation in national parks has excluded local and indigenous use and management of water, wildlife, forests and grasslands (Adams & Hulme 2004). Such 'fences and fines' measures have produced adversarial relationships between local and indigenous communities, wildlife and protected areas. This polarization, it has been shown, can contribute to further loss of biodiversity (Western 2002).

Scholars have recently postulated a new paradigm that increasingly acknowledges systems approaches in natural resources management and conservation, and humans as integral parts of ecosystems (Berkes 2004). The de-coupling of long established local and indigenous social-ecological systems in and surrounding Namibian national parks, and needs and prospects for re-coupling these systems to better conserve biodiversity is the subject of a broader doctoral research study.

Initial fieldwork was completed in Namibia in 2006 comprising a Rapid Rural Appraisal and participatory action research (Chambers 1997) in a case study area of the Kunene region of northern Namibia. Key informant, semi-structured interviews were conducted with government officials, conservation NGO representatives, community conservancy members and Namibian scholars to learn about the institutional development of Namibia's CBNRM program. The remote study area was travelled extensively by 4x4

truck to understand the ecological and social characteristics of the Torra Conservancy, other adjacent conservancies and protected areas. Conservancy quarterly planning workshops were attended in the study area to participate in discussions with community members and learn about current conservancy plans and conservation activities. The findings from this fieldwork form the basis for those parts of this paper dealing with Namibia's Torra Conservancy and the CBNRM program.

The purpose of this paper is to consider institutional arrangements for community-based conservation by local and indigenous communities in Southern Africa, particularly for Namibia, through the lens of common property principles. The robustness of Namibia's conservancy model is important to assess in terms of the premise that such institutions can be positively linked and complement protected areas management for biodiversity conservation.

Community-based conservation is based on the idea that if conservation and development are simultaneously achieved, the interests of both can be served (Berkes 2004). In the African context, community conservation has been defined as principles and practices stressing conservation goals that emphasize natural resource decision-making by local residents (Adams & Hulme 2001). In fact, community-based conservation has been practiced in many forms, but in the broadest sense includes natural resources or biodiversity conservation by, for, and with the local community. The co-existence of people and nature, as distinct from protectionism and the segregation of people and nature, is its central characteristic (Western & Wright 1994). Community-based conservation is employed here as an overarching concept, inclusive of and interchangeable with community-based natural resource management or CBNRM (Adams & Hulme 2001). The conservancy model and CBNRM in Namibia is given particular attention, as a potential institutional opportunity for social-ecological linkages with Namibian protected areas management.

There are several other noteworthy terms and concepts from common property and related scholarship that are applied in this research. Common property resources are considered to possess two defining characteristics: excludability or the control of access, and subtractability, wherein each user can subtract from the welfare of others (Feeny *et.al.* 1990). In fact, common property resources are defined as resources for which exclusion is difficult and collective use involves subtractability (Ostrom 1990; Feeny *et.al.* 1990).

The community-based conservation cases dealt with all occur on communal lands in Southern Africa. Communal property involves resources that are held by an identifiable community of interdependent users. These users exclude outsiders and regulate their own use for collective benefits. In rural Africa, communal land tenure is the dominant property regime, featuring a variety of local and traditional institutional arrangements, but complicated by communal property being considered as state property by both colonial and succeeding black majority-rule governments. State property vests rights to land and resources exclusively in governments or states, which set the rules of access to resources and the levels and types of use. National parks in Southern Africa are classic examples of state property regimes.

The consideration of national parks and local indigenous community relationships invokes both state property and communal property regimes, further complicated by private property-like situations such a leased safari lands and de facto open access, such as unregulated wildlife, grasslands and forest use. Open access is akin to Hardin's tragedy of the commons, which postulated that individuals act in their own self-interest and in so doing, destroy the commons and the resources upon which they ultimately depend (Hardin 1968). Property rights in open access situations are not well defined and resource access is unregulated, free and open to all.

Institutional interplay involving cross-level linkages will be shown to be an important feature of community-based conservation in Namibia. Horizontal linkages are those operating across space, and vertical linkages are those operating across levels of organization (Young 2002). Both are relevant and evident in the governance arrangements for Namibian community-based conservation.

Resilience is a characteristic of both social and ecological systems. The roles of institutions or norms, rules and behaviours, learning and knowledge (eg. local and traditional knowledge), and the capacity to recognize and respond to both environmental and social feedbacks are critical for social resilience (Berkes & Folke 1998; Levin 1999). For ecological systems, the capabilities and capacities to absorb disturbance and stress such as drought, fire, grazing, and predation, adapting to new functional states represents resilience (Walker *et.al.* 2004). Social-ecological systems are highly complex and the interface between these systems especially so. They possess features and processes that are non-linear, inherently uncertain and full of surprises. They operate at various scales and are self-organizing (Berkes *et.al.* 2003).

Two further properties or characteristics of resource systems are relevant in this research. Stationarity refers to whether a resource is mobile and storage refers to the extent to which it is possible to collect and hold resources. Resources like wildlife are mobile and cannot be stored (Agrawal 2002).

Counter Arguments for Community-Based Conservation and Protected Areas

While it is a premise that community-based conservation institutions such as Namibia's conservancies present opportunities to complement and bolster the biodiversity conservation agenda associated with protected areas, this is somewhat controversial. There has been some backlash in bringing indigenous peoples and protected areas together in conservation programs. There is growing concern among some conservationists that the accelerating rates of biodiversity loss require a reinforcement of strictly controlled protected areas by national and international conservation authorities (Chapin 2004; Terborgh 2000; Wilshusen *et.al.* 2002). Questions have been posed about communities and their abilities to conserve biodiversity. What is an acceptable loss of biodiversity? At what point do local communities cease to contribute to conservation and become net exploiters? Will local people, even if empowered, be able to manage their own resources? Who should define the overall goals of a community and who should manage its affairs to meet these goals (Robinson & Redford 1994:316)? Protected area networks are viewed as a last bastion for protecting biodiversity in the face of relentless industrialization, habitat loss, pollution, and the over-exploitation of species. Community-based conservation, from this perspective, has often been regarded as a failed experiment in voluntary compliance with conservation imperatives. Rather, a scientific and authority-based approach to biodiversity protection is called for.

Counter arguments suggest that the needs and complexities of politics, history and the social and biophysical landscapes in and surrounding protected areas must be accounted for, to successfully sustain protected area conservation and broaden the constituencies to support and achieve biodiversity conservation. This school of thought calls for strengthened institutional and organizational arrangements, such as those developing under community-based conservation, and wide area landscape conservation and sustainable livelihood programs in and surrounding protected areas. Such approaches can better address the complexities of politics, history, culture and rights that are inherent in the trajectories of protected areas (Wilshusen *et.al.* 2002). Failures in integrated conservation and development programs are not because they are inherently wrong, but are more related to how these programs have conceptualised community, participation, empowerment and sustainability. Attention is drawn to the need to consider multiple interests and actors within and among communities, in terms of how they influence decision-making, and what internal and external institutions shape decision-making processes. It should not be assumed that conservation norms and ethics are inherently absolute in indigenous communities, or even if they are, that they have not been overtaken by decision-making and politics at other organizational levels (Agrawal & Gibson 1999). Such factors are institutional in focus and cross-scale in effect (Berkes 2004). The meaning of community can vary with the context, just as perceptions of nature vary around the world (Western & Wright 1994). Rights, responsibilities and capabilities which were once internalized within traditional communities or imposed by resource limitations may be blurred or broken down once communities enter the constellation of other communities and nation states (Western & Wright 1994). The institutionalization of conservation as a discrete set of concerns and actions is a product of governments, interest groups and scholarship. However, community perspectives on

conservation are usually more holistic and integrative and more likely to view conservation as a means rather than an end (Murphree 1994:404). Community-based conservation can be viable if communities themselves set the priorities. Communities can use external institutional actors for their own integrated conservation and community economic development ends, rather than as means for an external institution's ends (Murphree 1994:405).

Community complexity necessitates identifying key actors and adopting an analytical approach featuring attention to stakeholder interests and impacts, and employing participatory rural appraisal techniques to confirm different priorities for decision-making, building consensus for conservation action (Brown 2002). New institutions and restructuring of decision-making processes are called for that promote partnerships between and among organizations, from local to national, "if we believe that the dual objectives of conserving biological diversity and enhancing human welfare can be complimentary rather than in conflict" (Brown 2002:16). Community-based conservation programs have typically focussed on economic benefits and livelihoods. Cultural relationships and access to resources, such as community access and use of culturally or spiritually significant vegetation and wildlife in protected areas have been largely ignored (Infield 2001). Sensitivity for and local access to cultural values could foster more positive conservation relationships between local communities and protected areas.

Community-Based Conservation in Southern Africa

Centrally and internationally conceived approaches in community-based conservation of wildlife emerged in the 1980s in Southern Africa to further protect national parks as wildlife reservoirs, and better conserve wildlife as an economic development alternative to dry land agriculture (Adams & Hulme 2001). These have typically been termed CBNRM. CBNRM has featured devolution of bundles of certain rights in the use of wildlife to local communities, premised on making wildlife pay, with the intent of attaining local benefits that exceed the costs of living with wildlife. The central notion is that economic incentives will promote wildlife conservation by local and indigenous peoples. These approaches, while achieving some conservation, have often been more co-opting than empowering. There are few examples where local access, use or empowerment in the management of wildlife, water, forests and grasslands within national parks has resulted. Equally scarce has been the recognition and support for traditional and indigenous resource management institutions or an indigenous conservation ethic (Callicott 1994).

CBNRM was led by Zimbabwe and Namibia in Southern Africa and was a direct outgrowth of wildlife management on private land estates in both countries preceding independence (Jones & Murphree 2004). In the 1970s, Zimbabwean legislation was passed that conferred strong proprietor rights over wildlife to private, white landowners. This same type of legislation was passed in Namibia in 1975 under South African administration.

There was political demand at independence in both Zimbabwe and Namibia to transfer the economic success of wildlife management and proprietorship of wildlife on

private lands to communal lands. Another factor was the inability of national wildlife agencies to cope with the growing problems of poaching and an international illicit trade in wildlife parts and products.

Two cases of CBNRM in Southern Africa are now elaborated because they were reportedly influential in the design of Namibia's CBNRM program (Jones & Murphree 2001) to which the balance of the paper is devoted.

Zimbabwe's Communal Areas Program for Indigenous Resources

Zimbabwe's *National Parks and Wildlife Act (1975)* was amended in 1982 to give "appropriate authority" over wildlife to Rural District Councils for communal areas (Murombedzi 2001). This lay the groundwork for The Communal Areas Program for Indigenous Resources (CAMPFIRE). The program was a direct outgrowth of Zimbabwe's new found independence from Great Britain in 1980 and had the intent of extending to communal lands what was considered successful wildlife conservation on private lands. Most of the productive districts for wildlife in Zimbabwe coincide with drought prone, marginal agricultural lands, bordering on state protected wildlife areas and featuring lower densities of human population (Bond 2001).

Central to CAMPFIRE, and what became commonplace in wildlife management projects in Southern Africa, were economic incentives for institutional change to conserve wildlife (Bond 2001). CAMPFIRE was ultimately diffused to many Rural District Councils. Varying accounts have been made of its successes and failures (Bond 2001; Jones & Murphree 2001; Murombedzi 2001; Sangarwe 1998). Strong tenurial communal property regimes were not acceptable to district councils. They did not want communal lands removed from their authority, along with the wildlife revenue potentials of these lands. A compromise was reached for sharing of some revenue to the ward and village levels. The rejection of *de jure* tenure status for wildlife production in communal lands became an enduring feature and shortcoming of CAMPFIRE. It created a persistent uncertainty for local communities regarding security of investments in wildlife management and undermined a conceptual pillar of the program; that communal residents would have access rights to wildlife similar to those of private commercial farmers. Wide variation in CAMPFIRE's operation and performance arose from the wide discretion for regional devolution assigned to the Rural District Councils. As the assigned legal proprietors of wildlife, they signed private lease arrangements for wildlife sales and received revenues from safari hunting concessionaires. The Government of Zimbabwe set guidelines that permitted the Rural District Councils to retain up to 50 percent of the revenue in district levies and management costs, allocating the balance to producer communities. Wildlife revenue devolved to sub-district ward and village levels was intended as incentive for individuals to participate in the conservation of wildlife (Bond 2001).

Challenges were noted with community complexities and the fact that rural district ward boundaries in Zimbabwe were used to define areas for collective action, when in fact there were differing and competing community groups and interests in such bounded areas (Jones & Murphree 2004). The institutional forms adopted in CAMPFIRE

tended to be outgrowths of higher-level government agencies and did not originate within or reflect traditional, customary and less formal institutions at the community level. This has been suggested as a significant problem for CAMPFIRE (Murombedzi 2001). The "hard" boundaries created by formal park designations, land use, and zoning plans are at odds with the "soft" boundaries that communities use to enable overlapping and negotiated rights of access.

CAMPFIRE drew international donor attention and participation, especially from USAID. This has been noted as a mixed blessing. Donor funding promoted the rapid spread of the program and capacity building in the Rural District Councils and NGO community. On the other hand, there was some sacrifice of the self-direction and self-sufficiency that CAMPFIRE had originally envisioned (Jones & Murphree 2001). CAMPFIRE produced significant revenues for Rural District Councils and led to institutional changes for wildlife conservation at this level. However, below this level, and especially at the individual household level, financial benefits were more modest to non-existent (Bond 2001). In the exceptional cases where wildlife income matched or exceeded gross agricultural income, there was institutional change to manage wildlife and wildlife habitat, define community membership, invest in monitoring wildlife abundance, hunting and illegal activities, apply graduated sanctions for violations, and increase organizational capacity. More commonly, the absence of well-defined property rights and rights to manage wildlife at community level resulted in limited incentive to conserve. Bond (2001) concluded that the legislation for CBNRM programs must aim to achieve a much higher level of proprietorship at the community level. Another researcher echoes this theme, noting that communities did not have the right to use wildlife, only to share some of the benefits from its use by others (Murombedzi 2001). There was little use of local and traditional institutions for land and resource management. It was also observed that CAMPFIRE needed to support the participation of communities in the management of protected areas that they were located next to and more directly benefit from these areas (Murombezi 2001).

CAMPFIRE's intent to produce wildlife benefits for the rural community in the same way that benefits had accrued to private landowners was laudable in terms of social justice and sustainable livelihoods. Community benefits were realized in many Rural District Councils. While economic incentives proved important, so too did other benefits such meat supply, and social projects like schools, clinics and grinding mills (Sangwarwe 1998). However, limited wildlife revenues found their way to individual households. The costs of living with wildlife represented by crop damage, loss of livestock, destruction of built property like granaries or personal injury and death were rarely offset at household level by benefits flowing from wildlife conservation. Wildlife revenues rarely exceeded agricultural returns and gained most significance as supplementary income at ward and village levels (Sangarwe 1998).

CAMPFIRE has been a top-down program that has not effectively devolved authority to manage wildlife below the district level. It did not uphold the subsidiary principle that postulates as much local solution as possible and only so much government regulation as necessary (Berkes 2004). There has been little empowerment of local communities to apply their cultural and traditional practices for using wildlife. There have been weak to non-existent linkages to national parks and protected areas

management, notwithstanding that most Rural District Councils participating in CAMPFIRE share wildlife ranges with protected areas. There have been no rights of access assigned to local communities to resume any use of or relationships with wildlife that may have prevailed prior to national park designation. Therefore, there has been limited to no institutional change to conserve wildlife at community level. To the contrary, local communities have tended to ignore centrally imposed rules for access and use of wildlife in protected areas, especially as local people have observed most benefits accruing to safari operators and tourist elites from beyond their country, while they continue to bear the costs in terms of crop damage, loss of livestock and threats to life and limb.

Zambia's Administrative Management Design for Game Management Areas Program

The Administrative Management Design for Game Management Areas program (ADMADE) in Zambia's Luangwa Valley was initiated by Zambia's National Parks and Wildlife Service in 1987, with financial assistance from World Wildlife Fund (US) and USAID (Gibson 1999). ADMADE explicitly tried to create a shift from the 'command and control' style of colonial administration to a more community-based approach to wildlife management. Revenue from safari concession fees, hunting licenses, donor contributions and profits from activities like wildlife culls were to be shared at community level, to promote wildlife conservation and curtail poaching. The Zambian government held revenues in a revolving fund, with 35 percent going to communities for community development. ADMADE employed over 300 village scouts by 1990 and had strong ties to chiefs, identifying the chiefs as the key link to the rural communities (Gibson & Marks 1995).

ADMADE was initiated by the Zambia National Parks and Wildlife Service, mainly as an offset to the perceived conservation program power being concentrated under another Zambian CBNRM initiative, the Luangwa Integrated Rural Development Project (LIRDP), funded by another international donor (Gibson 1999). Both projects were implemented in a region shared with the South Luangwa National Park and North Luangwa National Park. Zambian hunters had decimated wildlife in the 1970s and 1980s. The costs of living with wildlife had greatly exceeded the benefits for local communities. ADMADE and LIRDP aimed to transform would-be poachers and create a sense of local proprietorship in wildlife.

ADMADE ended up adding another layer of bureaucracy onto local communities, alienating them with increased enforcement (Gibson & Marks 1995). ADMADE attempted to change individual behaviour by offering incentives that mimicked public goods, such as schools and clinics. However, the program did not fully appreciate the social significance of hunting and hunters continued to poach. Increased enforcement simply altered tactics and prey selection. The pay and jobs for game scouts were positive incentives to enforce, but the public goods nature of incentives to hunters led to free-riding (Gibson 1999). Game scouts were also under considerable social resistance from neighbours who were often their friends and relatives. Chiefs oversaw the community projects resulting from the communities' share of wildlife revenue, and they selected the

individuals to be trained and employed as village game scouts. These features produced predictable problems of benefits distribution, nepotism and the alienation of the game scouts from their communities (Gibson & Marks 2005).

ADMADE tried to replace direct community access to wildlife for survival in marginal environments with limited access to community-level infrastructure and minimal participation in wildlife management. Rural residents found this exchange unappealing (Gibson & Marks 1995:952). The ADMADE program was carried out in designated Game Management Areas on communal lands. It did not provide direct access and voice to communities in managing wildlife on the communal lands and in adjacent national parks. The conservation agenda was defined and driven, top down. There was little to no recognition of local institutions for collective action related to wildlife conservation or local participation in defining objectives. Incentives flowed through committee structures of the central bureaucracy and centred upon the chiefs, village game scouts and enforcement activity. The rules of access to wildlife were centrally imposed; the framework of what constituted legal and illegal use of wildlife remained unchanged. The boundaries of the ADMADE program reflected nationally defined Game Management Areas, not any locally negotiated boundaries of access and use reflecting local traditions and cultural practices. The distribution of benefits reinforced the power of chiefs and enforcement by game scouts, recruited from local communities. The complexities of community cultural norms and values, especially regarding wildlife use, living with wildlife and the role and status of community hunters were overlooked in program design. ADMADE was community-based in name only. It did not uphold the subsidiary principle and it achieved only limited success in curtailing some poaching, with no evident overall conservation of biodiversity.

Torra Conservancy and CBNRM in Namibia

The Torra Conservancy in NW Namibia and Namibia's CBNRM program have received international recognition as a successful approach to CBC (World Resources Institute 2005; UNDP 2004a) and are given particular attention here on the premise that this model may offer prospects for cooperative linkages and partnerships in biodiversity conservation with neighbouring protected areas. The NW Namibia region has been selected as the case study area for the aforementioned doctoral work (Figure 1).

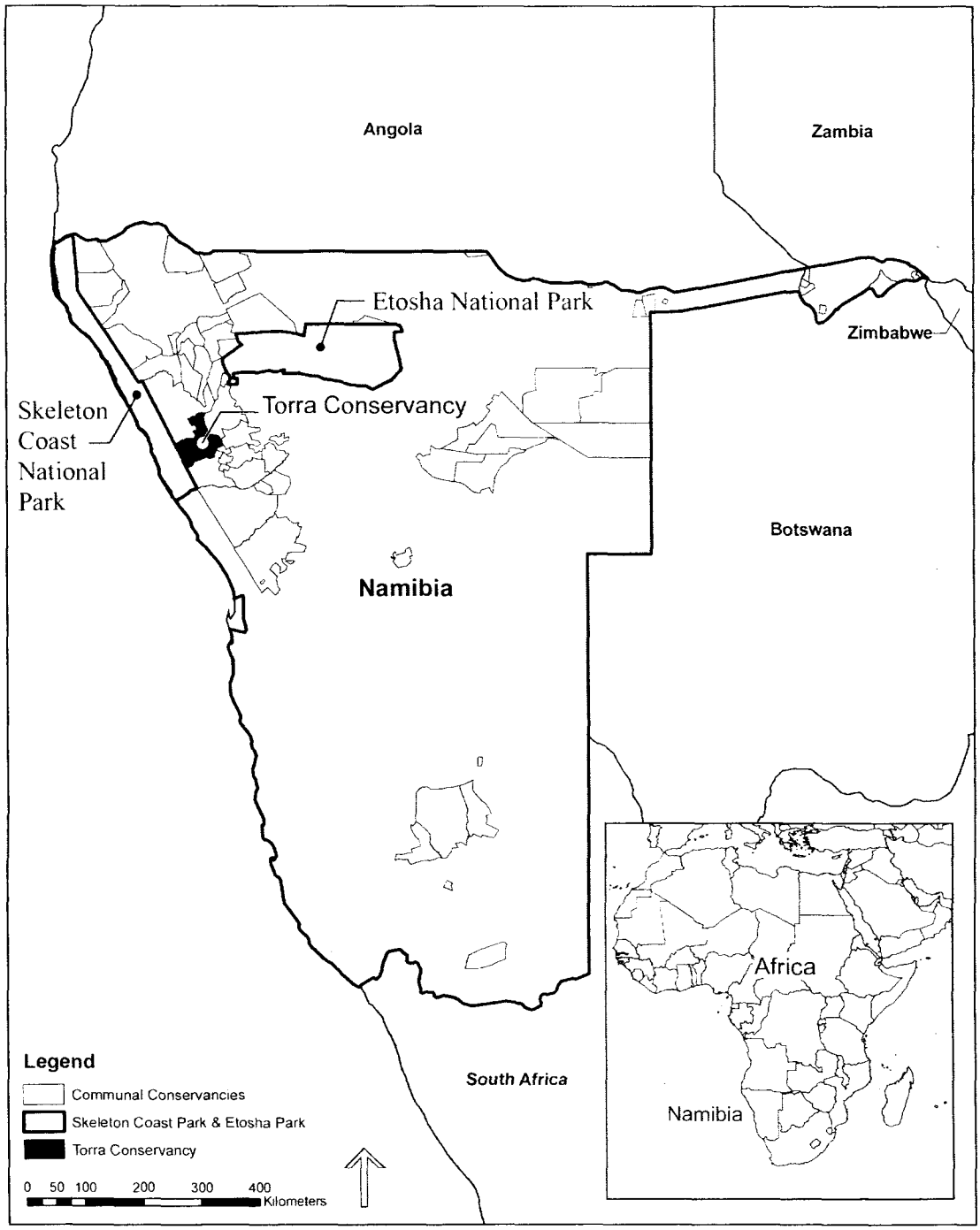


Figure 1: Study area in northern Namibia

The United Nations Development Program (UNDP) Equator Initiative (EI) champions and supports community-level projects that link community economic improvement with the conservation and sustainable use of biodiversity (UNDP 2004a:1). An Equator Prize is awarded biennially to recognize outstanding communities from developing countries in the tropics demonstrating practical efforts to conserve biodiversity and reduce poverty. The Torra Conservancy is a 2004 UNDP Equator Prize winner (UNDP 2004b) and is located on communal lands in the Kunene region of NW Namibia. It encompasses 352,200 hectares of semi-desert and sparse savanna, with an annual rainfall of less 100mm/year. The small population of 1200 includes Damara and Riemvasmaaker tribal groups, with fewer Herero and Ovambo people, dispersed in small pastoral villages. Principal livelihood activities include small and large stock farming (goats, sheep, cattle) small-scale vegetable gardens, wage labour, and some absentee wage earners. The conservancy is premised on conserving an impressive wildlife assemblage endemic to the spectacular and remote arid wildlands of the Kunene region. The wildlife includes elephant, black rhino, springbok, mountain zebra, giraffe, oryx, kudu, black-face impala, lion, cheetah and leopard and other endemic species. Many of these species move seasonally through the wider Kunene region that Torra Conservancy occupies with other established conservancies and two large protected areas, the Skelton Coast Park and the Etosha National Park.

Major declines in the wildlife of this region occurred in the 1970s due to proliferation of firearms in a liberation war for Namibia, commercial demand for ivory, rhino horn, cheetah, leopard and zebra skins, and subsistence meat during a period of severe drought. Poaching was widespread and originated from South African Defence Forces, refugees from Angola and local residents acting as middlemen, or hunting for the pot. By 1982, the elephant population had been reduced to 250 from an estimated 1200 in 1970 and Black Rhino from 300 in 1970 to 65. Other populations were estimated to have been reduced by 60 percent to 90 percent (Jones 2001). Today, the elephant, rhino, giraffe, zebra and other species have recovered impressively (Gibson 2001). For instance, the region now boasts the largest black rhino population in the world (Nott *et.al.* 2004).

Torra Conservancy has 450 registered adult members (UNDP 2004b) and was established as one of Namibia's first communal land conservancies in June 1998, following promulgation of the Nature Conservation Amendment Act of 1996. This legislation enabled a national Community-Based Natural Resource Management Program (CBNRM) that devolved certain rights of use and management of wildlife to communal area communities. Torra Conservancy is a part of the national CBNRM program and is one of 44 registered communal conservancies today. It is recognized as one of the most successful, achieving operational self-sufficiency in 2002, following initial support from international donors and national ngos. Torra Conservancy has a management committee of five men and one woman and employs five (5) community game guards, a field officer, community activist and receptionist operating out of a conservancy office. It conducts annual wildlife counts and monitoring and earns wildlife-based revenues from a joint venture lodge, trophy hunting, live sales of springbok, as well as providing for own use hunting of conservancy community members. The joint venture ecotourism lodge, the Damaraland Camp, operated by Wilderness Safaris, a South African tour company, under a partnership agreement with Torra Conservancy, is the dominant revenue-generating enterprise, providing annual land rent revenue, monthly bed levy revenue and twenty-two

(22) full-time jobs for Torra Conservancy members (Long 2004; Manager, Damaraland Camp, July 2006, Torra Conservancy). A key feature of the joint venture is the land tenure arrangement for the ecotourism lodge. The Torra Conservancy received authority from central government to issue a Permission to Occupy (PTO) with the private company. Thus, the private enterprise receives the right to occupy its land base from the Torra Conservancy and pays an annual land rent to the conservancy. The partnership in the ecotourism enterprise is the principal reason for the self-sufficiency of the Torra Conservancy (NACSO 2005). The partnership with an international tour company provides the Torra Conservancy with access to an international, upscale tourist market that it would otherwise not have the capacity to attract to the Damaraland Camp.

Beyond direct employment and cash benefits from tourism enterprises, other benefits are recognized as part of Torra's success. These include livelihood benefits such as fencing to protect livestock and crops from wildlife predation and foraging. Secure community water boreholes, supply of diesel fuel for community water pumps, secure access to grazing areas and water for livestock are all funded by the conservancy. Other community benefits include the ability to live and work in one's home area and keep families together, the ability to continue to raise livestock for livelihood security and cultural purposes, and the receipt of highly valued wild meat from community hunts (Long 2002). There are opportunity costs of living with tourism enterprises like Damaraland Camp, such as tourist traffic through communities and grazing areas. However, the benefits are reported to have offset such costs (Long 2002). Indirect benefits arising from the development and operations of the conservancy such as capacity building in natural resources and financial management have also been realized by the Torra Conservancy membership (Long 2002; Senior Manager, WWF (US), August 2006, Windhoek).

Early History of Namibia's CBNRM Program

In 1982, a national NGO, the Namibian Wildlife Trust, acting out of concern for severely depleted elephant, black rhino and other wildlife in NW Namibia due to drought, armed conflict and poaching, appointed a conservator, Garth Owen-Smith, with long experience in the region. He engaged local headmen, who shared concern about the loss of wildlife. The headmen appointed their own auxiliary game guards, later to be known as community game guards. These men were all respected hunters from local communities. The aim was to stop poaching (Director, IRDNC, July 2006,Wereldsend) and the game guards monitored wildlife, reporting suspicious activities and poaching incidents to the headmen, who in turn informed government wildlife enforcement personnel. By the late 1980s, regional wildlife populations had noticeably recovered. The cessation of military operations and improved rainfalls are recognized as contributing factors to wildlife recoveries in this period. However, the community game program was a major factor in stopping poaching and allowing wildlife to recover. Increasing demands for the programme led to the formation of a new Namibian NGO, Integrated Rural Development and Nature Conservation (IRDNC) which has facilitated and supported further development of CBNRM in the Kunene and Caprivi regions of northern Namibia to the present day.

Namibia gained independence in 1990 and the black majority government extended rights in wildlife to communal area residents that had previously only been granted to white farmers on private lands by the South African administration. During this same period, senior officials in the Ministry of Wildlife, Conservation, and Tourism were formulating proposed national policy and program responses to the United Nations Conference on Environment and Development (UNCED) 1992, the signing of the Convention on Biodiversity in 1992 (UNEP 1992) and an emerging sustainable development discourse in Namibia (Jones 2000; Senior Manager, Namibian Nature Foundation, June 2006, Windhoek). IRDNC Directors Garth Owen-Smith and Dr. Margaret Jacobsohn, based on their knowledge and experience in conservation and social science gained from successful experiences working with local communities in the community game guard program, were requested by ministry officials (now the Ministry of Environment and Tourism) to help design and conduct community surveys that eventually led to drafting the policies and legislation for a national CBNRM program (Jones 1996; Consulting Environmental Specialist, July 2006, Windhoek; Director, IRDNC, July 2006, Wereldsend). USAID provided donor assistance under its 'Living in a Finite Environment (LIFE) Program,' through an executing agency, the World Wildlife Fund WWF (US). USAID and WWF (US) have remained main international donor agents in Namibian CBNRM, although other international donors have come in. The resultant legislation, the *Nature Conservation Amendment Act 1996,* provided for the devolution of certain rights and uses of wildlife to communal area residents. These included rights to hunt, capture, cull and sale 'huntable game" such as springbok, oryx, and kudu under quotas established by the Ministry of Environment and Tourism (MET), as well as the right to use quotas of protected game such as elephant for trophy hunting (World Resources Institute 2005). Communal area residents are required to form a common property resource institution called a conservancy to participate in the CBNRM program and enjoy the rights in wildlife and related tourism development devolved under the legislation. Conservancies must be approved by and registered with the Ministry of Environment and Tourism. Registration requires a defined conservancy boundary, a defined membership, a representative conservancy committee, a constitution recognized by government and a commitment to producing a benefits distribution plan (Long 2004; World Resources Institute 2005). Common property resource design principles including external recognition, defined boundaries and membership were explicitly considered in the formulation of conservancy registration requirements. Torra Conservancy was one of the first to meet these registration criteria and was established with substantial technical assistance from IRDNC. The wildlife conservation and tourism development activity of Torra Conservancy was focussed especially upon the partnership with Wilderness Safaris to develop and operate the Damaraland Camp ecotourism enterprise (Salole 2003).

Key linkages and partnerships have evolved in Namibian CBNRM, from a few simple ones between local communities, a national conservation NGO and the national government wildlife agency during the initial community game guard program of the 1980s, to multiple cross-level linkages, involving several international donors, multiple national NGO's, the University of Namibia, private enterprises, and the Ministry of Environment and Tourism. USAID remains a major international donor, although the WWF LIFE project is in its third phase, and activities are expected to wind down with the strengthening of national and local institutions. National NGOs such as IRDNC, the Namibian Association of CBNRM Support Organizations (NACSO), the Namibia Nature

Foundation, and the Namibia Community Based Tourism Organization provide various technical support and capacity-building services to conservancies.

NACSO is an umbrella organization for some thirteen different national NGOs and the University of Namibia supporting CBNRM. Its activities are organized under three working groups: institutional development; natural resources management and; business enterprises and livelihoods (Senior Manager, NACSO Secretariat, June 2006, Windhoek). The Ministry of Environment and Tourism is as an observer on all NACSO working groups, reflecting its overarching approval and registration role for conservancies. A CBNRM unit was created in the Ministry of Environment and Tourism in 2002 to help facilitate the development of CBNRM as a national program (Long 2004). Most recently, the Global Environment Facility (GEF), through the World Bank, has funded the five year Integrated Community-Based Ecosystem Management Project (ICEMA), to help the ministry further develop its own capacities to support and broaden the application of CBNRM (Ministry of Environment and Tourism 2006). The rapid scaling up of conservancies in Namibia, from an initial four (4) registered in 1998, to forty-four (44) in 2006, the institutionalizing of legislation, government and NGO programs to support conservancies, and an evident evolution from a wildlife conservation and tourism focus to broader enterprise development and integrated resources development approaches has not yet been well researched.

Evolution of Community-Based Conservation in Namibia

Reflection on Namibia's experience with CBNRM and the Torra Conservancy reveals an evolution of community-based conservation institutions covering 25 years. Attention will now be given to identifying salient factors for success, challenges faced and lessons offered by Namibia's conservancies and CBNRM system.

Community economic benefits from ecotourism and trophy hunting based upon wildlife and wilderness attractions, backed by enabling government policy and legislation, are at the core of community-based conservation in the Torra Conservancy case. However, the precursor community game guard program was built as much on the intrinsic cultural and religious values of local communities related to wildlife (Jones 2001). For instance, one of the headmen involved in starting the community game guard program is quoted to have said, "we must keep the game because God makes rain for the animals and we humans only have rain because the animals receive rain from God" (Director, IRDNC, July 2006,Wereldsend). At that point in the evolution of Namibian CBNRM, it was very much a bottom-up approach, as opposed to a top down attitude suggesting that local people needed to be taught about conservation. The early efforts in the Kunene region recognized and built on a local ethic of wildlife conservation. Traditional leaders shared the concern about the disappearance of wildlife and wanted to do something about it (Director, IRDNC, July 2006, Wereldsend). The first local conservation actions in Kunene region in the 1980s reflect a willingness to conserve, before any economic incentives or benefits were received. Indeed, leadership and a shared vision for wildlife recovery were factors that prompted the early success of the community game guards as precursor to the national CBNRM program in Namibia. Consistent involvement of those who were there from the beginning of the game guard

program, the conduct of community surveys, development of national policy and legislation, and successive formation of supportive NGOs and private partnerships all ensued. Respectful reciprocities and partnerships have been featured throughout. Unlike the village game scouts of Zambia's ADMADE program, the community game guards in Namibia were never enforcement personnel acting on behalf of local traditional authorities or the central government. Rather, they have served as wildlife monitors, providing knowledge and information that management authorities external to the communities use to curtail poaching and support other wildlife management activities. Wildlife monitoring has evolved to include regular and systematic game counts, facilitated by donor and NGO support, as well as development of an 'Event Book System' of environmental monitoring. The Event Book System features communities deciding what needs to be monitored, deriving its name from monitoring stochastic events like veld fires, poaching incidents, problem animal incidents, and wildlife mortality (Hill *et.al.* 2005). This system is reportedly proving to be an effective catalyst for information sharing and cooperative wildlife management between the communities involved, technical support staff in NGOs providing data handling and analyses, and park management authorities in protected areas adjacent to conservancies implementing the Event Book System.

A variety of design principles for long-enduring common property institutions at local levels have been recognized (Ostrom 1990; Agrawal 2002), many of which are evident in Namibia's CBNRM program, others of which are not. Such design principles are all aspects of local institutions, or the norms and rules determining who is excluded from a particular resource use or area, and how participants deal with subtractability in ways that sustain collective agreement and mutually shared benefits. Table 1 summarizes comparative features in the CAMPFIRE, ADMADE and Namibian cases.

The design of the Namibia CBNRM program and conservancies explicitly considered and applied many of these recognized design features and principles, including defined conservancy boundaries, a defined conservancy membership and external legal recognition of conservancies and rights to organize by Government of Namibia. Experience from the CAMPFIRE and ADMADE programs reportedly informed these design decisions in Namibia. There was a deliberate effort to avoid pre-determined boundaries such as CAMPFIRE's use of rural district ward boundaries and ADMADE's use of nationally defined Game Management Area boundaries. Rather, communities were required to self-organize and negotiate their boundaries, to help ensure devolution of wildlife use rights and benefits to the community level.

Table 1: Institutional comparisons in Southern African community-based conservation

Design Principles for Enduring Common Property Resource Institutions (Ostrom 1990)	Zimbabwe's CAMPFIRE Program	Zambia's ADMADE Program	Namibia's CBNRM Program and Conservancies
Clearly Defined Boundaries for Resources Used or Managed	Wildlife are migratory and distributions do not conform to boundaries of rural district wards and protected areas	Wildlife are migratory and distributions do not conform to Game Management Areas and protected areas	Wildlife are migratory and distributions do not conform to conservancy boundaries and protected areas
Clearly Defined Boundaries for Social Groups Involved	Established rural district ward boundaries applied; no local community definition	Established Game Management Area boundaries applied; no definition by local community	Local communities negotiate and self-define conservancy boundaries
Agreed Rules for Resource Access and Use	Wildlife laws and quotas set by central government; certain wildlife management and benefits devolved to rural district councils; revenues shared between rural district councils and ward/village levels	Wildlife laws and quotas set by central government; benefits & revenues shared between central government and community chiefs	Central government assigns wildlife quotas to conservancies; all revenues & benefits accrue to conservancies
Collective Choice Arrangements	Rural district management; limited to no local community institutions for wildlife	Chiefs and headmen make decisions re. community	Conservancy committees elected to represent community members
Provisions for Monitoring Resource and Use	Central government monitors the state of wildlife and use	Central government monitors state of wildlife and use	Community game guards recruited by conservancies; report state of wildlife and violations to central government; do not enforce
Graduated Sanctions for Violations	Central government wildlife laws applied; central government penalties, enforcement & prosecution of violations	Village game scouts appointed by chiefs enforce wildlife laws on behalf of central government that sets penalties and prosecutes violations	Central government applies wildlife laws, provides enforcement and prosecutes violations
Provisions for Conflict Resolution	Central government and rural district councils	Central government; chiefs and headmen	Conservancy committees prepare management and benefits distribution plans; annual meetings of members
External Recognition of Local Institutions	Program defined top-down, with recognition of rural district council level	Top-down program; community chiefs recognized by central government	Conservancies legally recognized by central government; boundaries and members legally registered
Nested Enterprises for Appropriation and Governance	Vertical linkages dominant; NGO support, central government and rural district councils	Central government, NGO support, Chiefs recognized; vertical linkages dominate	Central government, multiple NGOs, national CBNRM organization, multiple conservancies, networks

The formal registration of conservancy members was another self-organizing feature. Formal registration and gazetting of conservancies reinforced the external recognition principle for community level institutions, again a significant departure from both CAMPFIRE and ADMADE. As well, the revenues and other benefits under conservancies accrue to the conservancy committees and are not shared with central government or regional level authorities, as they were under CAMPFIRE and ADMADE. The advantages of devolving rights to manage wildlife and benefits to the community level were learned from CAMPFIRE, but so too was a lesson to retain all revenue from wildlife at the community level (Jones, 2000).

As registered conservancies in Namibia have proliferated exponentially over the relatively short period from 1998 to 2006, there are emerging new challenges. Conservancy boundaries have been defined based on protracted consultations and negotiations with neighbouring communities. The boundaries of various conservancies, including the Torra Conservancy, took several years to achieve community agreement on and disputed territories among neighbouring conservancies remain. Boundary disputes have reflected complexities of tribal groups, resource use practices, early tendencies to favour smaller, more manageable management units, and changing power relationships with and among traditional authorities (Corbett & Jones 2000). However, the wildlife upon which conservation benefits are based range widely beyond the boundaries of individual conservancies, as animals move seasonally in response to changes in available water and range conditions. Conflicts have arisen over access to wildlife for viewing and harvesting among neighbouring conservancies, as well as among other resource uses such as cattle grazing and water access from neighbouring areas that are not controlled (Corbett & Jones, 2000). More disputes are predictable as conservancies seek to develop more wildlife-based tourism enterprises that will effectively compete with each another. This will likely necessitate new institutional arrangements in resource sharing among neighbouring conservancies and their member communities. Also, some conservancies have been established in parts of the country that are relatively devoid of wildlife, notwithstanding that the enabling legislation and CBNRM program were expressly designed for devolving rights and use of wildlife to communal residents. These are impoverished areas, which are desperate for rural economic development, but they will not realize wildlife-related community development benefits because the wildlife resource base does not exist (Research Officer, Legal Assistance Centre, July 2006, Windhoek; Program Coordinator, Ministry of Environment and Tourism, July 2006, Windhoek). Therefore, prospects appear high for the conservancy model as originally designed to be misapplied by local communities and politicians alike, leading to unrealistic and unfulfilled poverty alleviation and community development expectations (Research Officer, Legal Assistance Centre, July 2006, Windhoek; Program Coordinator, Ministry of Environment and Tourism, July 2006, Windhoek). CBNRM and conservancies have been the only programs since Namibian independence that have given legal recognition to local access and use of communal land resources. The wider need for land tenure reform in Namibia that addresses inequities in land distribution and use between private lands and communal lands is evidently creating unrealistic economic development and poverty alleviation expectations for the conservancies that the originating legislation and its focus on wildlife rights and benefits is not well suited to address (World Resources Institute 2005). As well, the constitutions that conservancies are required to draw up as part of their registration process are a standard template that

have not been understood by some conservancy committees, including provisions for annual general meeting and quorum requirements that some conservancies have not had the capacity to achieve (Research Officer, Legal Assistance Centre, July 2006, Windhoek).

The recognition of local rights to organize by institutions and authorities beyond the local level implies that there are needed relationships with other institutions at different scales, beyond local institutions. Nested enterprises mean different levels or scales of collective action that are mutually reinforcing (Ostrom 1990). Clearly, external recognition of conservancies as provided for in Namibia's legislation, the omnipresence of international donor assistance, the evolution of multiple national NGOs facilitating and supporting community-based conservation, and conservancy partnerships with private enterprises are all evidence of such principles. Cross-level linkages among international, national and local agents are all evident. Several key informants stressed that international donors came into support the program only after it had been 'made in Namibia' and the donors received program design direction, rather than the reverse.

The evolution of cross-scale linkages, both horizontal and vertical, in Namibian community-based conservation is summarized in Figure 2. This is not a literal representation of all the institutions at the different levels of organization (for example, there are 44 registered conservancies in 2006, at least 13 national NGOs active in CBNRM and several other international donors funding different national ngos). What is evident, even at this schematic level, is the evolution of institutions and networks. As well, there is an evident emergence of networks of knowledge sharing among maturing conservancies. This is depicted in Figure 2 by suggesting a clustering effect of stronger linkages among the first established conservancies, while new conservancies are being quickly registered that are still individual entities, with nascent institutional capacities. Other noteworthy features are: the prominence of IDRNC as the longest serving and only NGO dedicated entirely to facilitating CBNRM; a central and consistent role played to date by USAID as an international donor; the presence of other international donors supporting single NGOs; the regionalization of NGO support for conservancies, with lead NGOs working with groups of conservancies on a regional basis and; the central place of the Government of Namibia, through its Ministry of Environment and Tourism, in the legal recognition of conservancies and devolution of rights in wildlife use and management.

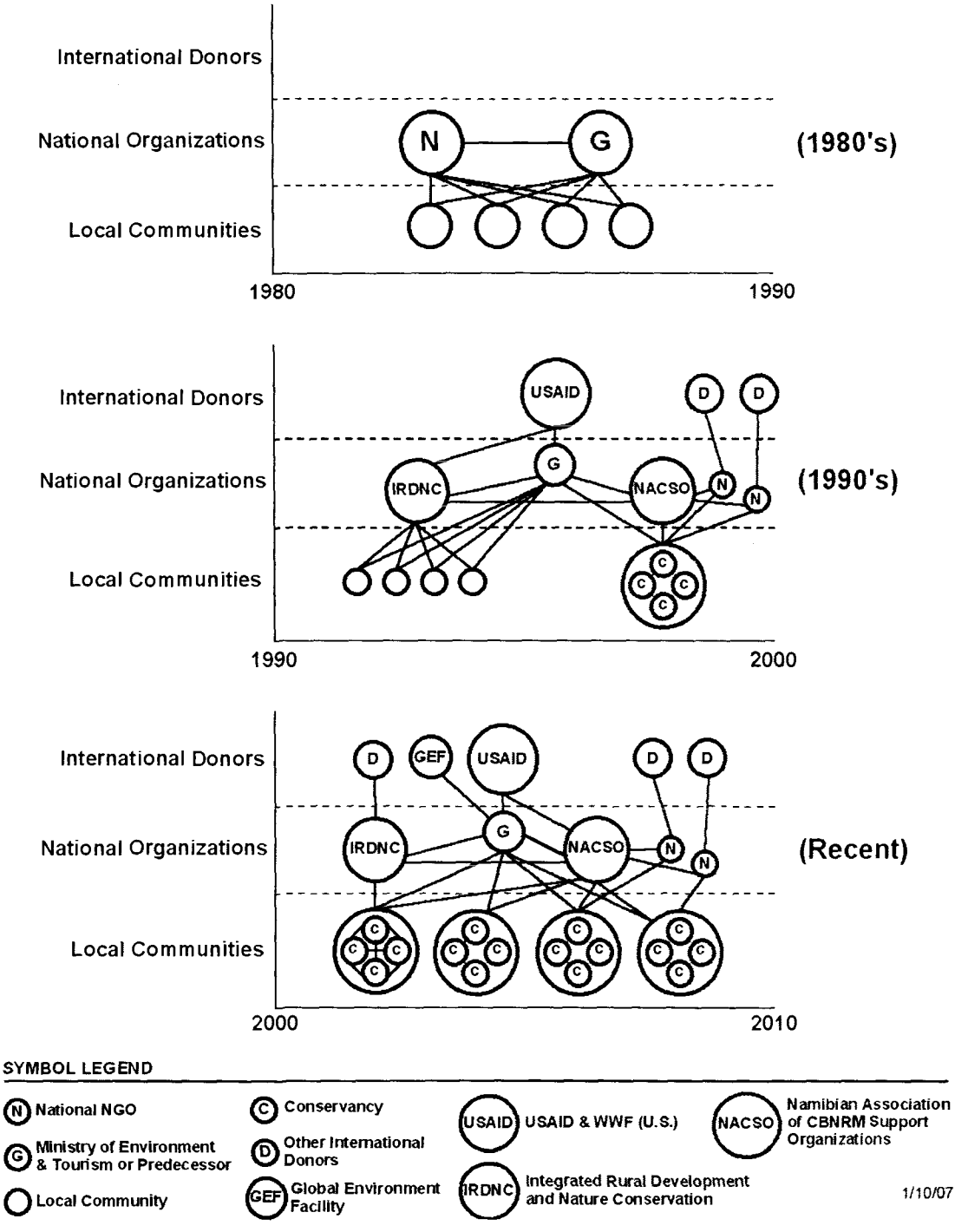


Figure 2: Evolution of community-based conservation in Namibia

Small group size, the location of users close to the resource, homogeneity among group members, and past experiences of social cooperation have been suggested as other features of enduring common property resources (Ostrom 1990; Agrawal 2002). These conditions are not as well represented in the Namibia conservancies like Torra. Participating group sizes, while relatively small, are widely dispersed. The aridity and wide ranging wildlife combine to demand large-scale ecological units for management as noted. Distinct and varying tribal groups comprise conservancy membership and some community members are not registered conservancy members. Moreover, there is a national history of social upheaval and segregation under intertribal and colonial conflicts and apartheid-imposed homelands that has militated against long histories of social cooperation. Hence, the resilience and adaptability of conservancies to emerging expectations being placed on them following their exponential growth is uncertain. Some research has argued that conservancies are a very limiting model, reflecting male-dominated traditions of power and decision-making, focussed solely on managing charismatic mega-fauna for tourism benefits (Sullivan 2001). These biases are argued to have denied the recognition and use of traditional ecological knowledge of both men and women for the diverse resources that form traditional cultural uses and practices: eg. the use of smaller animals, medicinal plants, wild fruits and vegetables, graze and water for cattle. While this is valid critique, its does not preclude the potential adaptability of the conservancy model to accommodate participation by both women and men and the application of deeper bodies of traditional knowledge. For instance, it was observed during participation of this researcher at quarterly planning workshops for conservancy programs in 2006 that both IRDNC and the conservancies it facilitates are engaging women as community activists, conservancy committee members and program spokespersons. Women are clearly taking up leadership functions in conservancy decision-making, notwithstanding their reported exclusion in earlier days of conservancy formation (Sullivan 2001). The Torra Conservancy, through its partnership with Wilderness Safaris, has secured jobs for both men and women from its community membership. Indeed, the manager of the Damaraland Camp is a woman from the local community. As well, conservancies are now being employed as local institutions to provide HIV/AIDS awareness and education critical to sustaining life, livelihoods and natural resource management in the face of the HIV/AIDS pandemic in Namibia. During a recent polio outbreak in 2006, conservancies were being used as functional and effective local institutions to promote and support an immunization program in rural Namibia. Such activities are critical for community health and livelihoods and suggest that conservancies can evolve and adapt successfully to emerging conservation and community development challenges, as well as provide for wider community participation and more open, inclusive governance, evidenced by the growing opportunities for women.

Researchers, donors, NGOs and government have expressed several other concerns about the achievements of conservancies in conservation and community development. Only a few of the conservancies beyond Torra have produced enough income from wildlife to be self-sufficient (Program Coordinator, Ministry of Environment and Tourism, July 2006, Windhoek; NACSO 2004). Their viability as sustainable community institutions when donor funding ceases has been questioned. Distribution of wildlife benefits beyond the community level to the poorest households

has also been limited (Long 2004; World Resources Institute 2005). The situation of both registered members and non-members living within the conservancies is related to the benefits distribution issue. Benefits are to be distributed only to members, yet different conservancies have handled this differently, some distributing benefits like meat from community hunts or dividends from tourism revenues to all member households, while other conservancies confine benefits distribution to member households only. Equitable distribution of benefits to farming households who do not share in employment income from conservancy tourism enterprises yet bear the costs of living with predation of livestock by wildlife, damage to water points, crop damage, and injury and death from wildlife has yet to be achieved (Long 2004; World Resources Institute 2005). This situation is exacerbated by increasing human-wildlife conflicts in conservancies like Torra where wildlife population increases from conservation effort have resulted in increased losses and damage caused by wildlife. Moreover, the transparency and accountability of conservancy committees in their management of revenue received from wildlife and tourism projects, the representativeness of conservancy committees, and the participation and voice of community members in conservancy governance are all emerging issues over the short period that conservancies have been established (Senior Manager, NACSO Secretariat, June 2006, Windhoek; Research Officer, Legal Assistance Centre, July 2006, Windhoek; Program Coordinator, Ministry of Environment and Tourism, July 2006, Windhoek).

The importance of scale is underscored by the fugitive nature of wildlife. Issues such as matching scales in biogeographical systems or institutional fit, evaluating and avoiding scale discordance in management, and evaluating the place and role of mediating institutions between actors operating at different scales, or so-called boundary organizations (Cash & Moser 2000), are all relevant to evaluating the robustness of Namibia's conservancy model to broader ecosystems-based management for biodiversity conservation, including potential linkages to protected areas management. The Kunene region in NW Namibia, with its multiple conservancies and ephemeral river corridors used by wildlife moving all the way from Etosha National Park to the Atlantic coast in the Skeleton Coast Park (Ministry of Environment and Tourism 1997) presents ecological and social characteristics invoking the need for varying scale perspectives in conservation and natural resources management. The wildlife that are the basis of community conservation and benefits move well beyond the boundaries of individual conservancies in search of graze, browse or prey. Opportunities for tourist viewing of wildlife, for example, may be confined to a sub-area within one conservancy. However, the animals that are being viewed are dependent on much larger areas of habitat for survival. Thus, the management scale for sustainable habitat management is regional, while the management scale for tourist use and enjoyment may be much more localized within a conservancy area.

Conclusions

Several conclusions may be drawn concerning features for enduring community-based conservation institutions that may contribute to the overall conservation of biodiversity. As well, some insights are offered for the robustness of Namibia's conservancy model and its application in biodiversity conservation related to protected areas management. These will be explored further in the wider doctoral research investigation of protected areas and community-based conservation linkages in NW Namibia.

Namibia's experience with CBNRM and the formation of conservancies as exemplified by Torra Conservancy represents an evolution in institutional development and change spanning over 25 years. This dimension of time in the institutional development of community-based conservation is noteworthy. It takes time for self-organization to occur, for enabling policies and legislation to be formulated and for institutional networks of governance to be formed. Noteworthy too are what might be termed critical convergences of events, persons and visions that evidently trigger collective action at the local levels and across levels of organization. Such critical convergences in the Namibia case included:

1. NW Namibia community headmen and Garth-Owen Smith having a common vision to restore wildlife populations and then acting to create the auxiliary game guards in the 1980s;

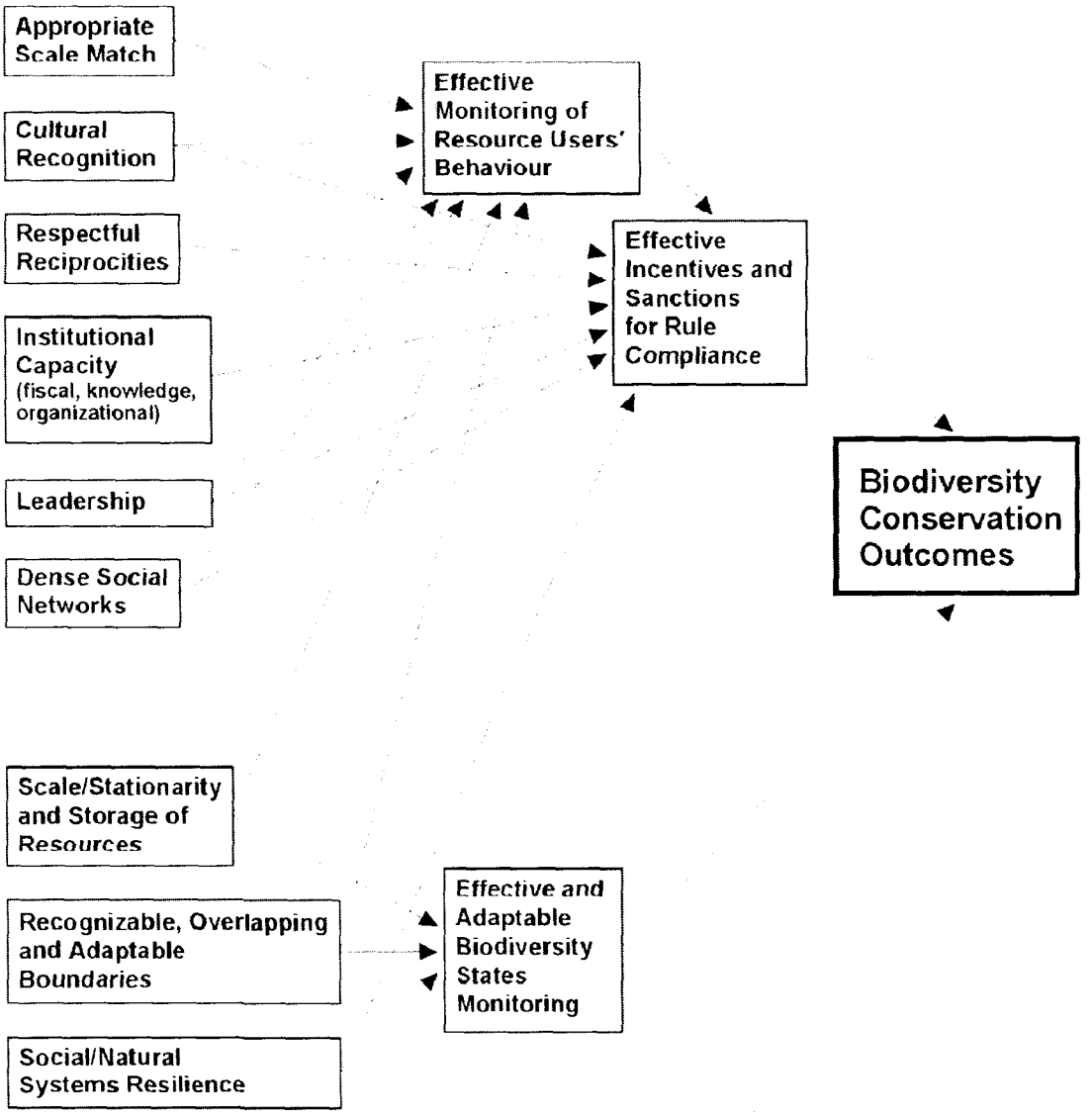
2. The gaining of independence by Namibia in 1990 and the critical convergence of this event with policy thinking of senior officials in government contemplating emerging global discourses in sustainable development and conservation;

3. The convergence of USAID and other international donor support with CBNRM policy and program thinking originating in Namibia, leading to national legislation for CBNRM in 1996, registration of the first conservancies in 1998, and the formation of NACSO in 1999.

Both bottom-up and top-down development of community-based conservation has been featured in Namibia. Bottom-up dimensions include the initial development of the community game guard program with local headmen, self-organization by communities to form conservancy boundaries, registered memberships and constitutions and the preparation of wildlife benefits distribution and management plans by conservancies. Notable top-down features include promulgation and administration of national law and policies for conservancy registration and legal gazetting, as well as the setting of wildlife use quotas by central government. The flow of donor funding is also a very top-down feature and pervasive influence. Perhaps the dominant characteristic of Namibia's CBNRM program is the institutionalizing of facilitation and support for CBNRM by the national NGO community. Namibian NGOs have evolved as boundary organizations (Cash & Moser 2000) mediating the contributions of international donors and legal requirements of central government with local conservancies, and facilitating capacity-building at conservancy level to meet conservancy registration requirements and manage donor funds and revenues from wildlife conservation and related tourism enterprises. A

strong and quite well coordinated network of CBNRM support organizations has developed that has facilitated capacity-building at the local level and partnerships with private enterprises. This density of supportive networks bodes well for the robustness of the conservancy model for wildlife conservation.

A recent and useful model of causal processes for resource outcomes (Ostrom 2004) has been modified and adapted based on this review of Southern African and Namibian experience in community-base conservation. The model suggests the attributes of resource users and resources that may effect the achievement of biodiversity conservation (Figure 3). Certain resource user attributes from Ostrom's model, including dense social networks and reciprocity are retained. Other attributes have been added or elaborated, including appropriate scale match, cultural recognition, respectful reciprocities, institutional capacity and leadership. It may be postulated that biodiversity conservation necessitates positive cross-scale linkages, both horizontal across biodiversity space and vertical across local, national and international levels of organization, while sustaining the subsidiary principle. Leadership by key persons is required at all levels, to build and sustain coalitions for collective action and nested collaborations, and to take advantage of or create what have been termed here as critical convergences. The monitoring of resource use and users remains pivotal, and offers promise as a key process for building partnerships between western science practitioners and local and traditional knowledge holders. Effective incentives and sanctions for rules compliance are pivotal as well. In Namibian CBNRM and the Torra Conservancy case, benefits from wildlife have promoted conservation, but evident challenges remain in benefits distribution and governance. Managing power relations to retain the place and voice of the 'community' remain big challenges. Partnerships between conservancies and private enterprises pose issues in power relations. So too does the involvement of multiple donors and NGOs who have supported and facilitated capacity-building and institutional strengthening of conservancies and CBNRM on the one hand, but who can also push or control communities in certain directions or decisions, through how they may allocate or withhold funds and technical support (Jones & Mosimane 2000).



Adapted from: Ostrom, 2004.

Figure 3: Causal factors for cross-cultural/ cross-institutional conservation of biodiversity

Resource attributes in this adapted model recognize the necessity of scale considerations for biodiversity conservation, in addition to stationarity and storage (Agrawal 2002; Ostrom 2004; Berkes 2006). Boundaries will not always be clear, but they must be recognizable, will necessarily overlap in terms of different bundles of resource rights and traditions and must be adaptable to monitoring results, new knowledge and changing participants. This appears especially relevant in Namibia as further land reform emerges and tenure arrangements may change.

Properties of social and ecological resilience are also causal for effective monitoring and application of incentives and sanctions for compliance in biodiversity conservation. The acknowledgement of complexity and a cross-cultural conservation ethic (Berkes 2004) are threads coursing through the chains of the adapted Ostrom model.

It is concluded that Namibia's conservancies might serve as effective complements or alternatives to biodiversity conservation within national parks. They will likely require adaptation from their original purpose and design, to accommodate greater pluralities of traditional knowledge, wider community participation and more transparent governance. Observers have noted, some ten years after Namibia gained independence, that the country still suffered from the legacy of South African colonial rule and imposition of apartheid policies (Jones & Mosimane 2000). This observation remains true today. While there are recent indications of changing attitudes, policies and legislation concerning protected areas management in Namibia, the national parks remain very much under a command - and - control model (Holling & Meffe 1996) developed throughout the German and South African colonial periods and reinforced by the South African administration under the *Nature Conservation Ordinance No. 4 of 1975*. There have been few if any linkages between wildlife management in the national parks and that emerging under Namibia's conservancies. A draft policy was prepared in 1997 for linking local communities and protected areas, but this was never acted upon (Jones 1997). No serious attempt has been made to include conservancies in deliberations for new parks being contemplated under a currently proposed expansion of the protected areas network, although this situation is reportedly changing. Yet, 27 of 44 conservancies are immediately adjacent to or situated between national parks (Senior Manager, WWF (US), August 2006, Windhoek). Current initiatives for Namibian national parks include newly drafted statutory legislation, a draft tourism concessions policy and a Global Environment Facility (GEF) project to strengthen the protected areas network (Ministry of Environment and Tourism 2006a). All contain features that might promote stronger linkages and networks between local conservancies and protected areas for biodiversity conservation within and beyond protected areas. The wider doctoral research to which this paper contributes will further examine the history of protected areas in and bordering the Kunene region, social and ecological systems within this region, and the potential institutional linkages between conservancies and national parks management.

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Lessons from Community Self-Organization and Cross-Scale Linkages in Four Equator Initiative Projects

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and the

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Community-Based Conservation

If conservation and development can be simultaneously achieved, then the interests of both could be served. But to do so is not easy because these two goals (conservation and development) are not necessarily congruent in a given situation (Berkes 2004). More common are situations in which one objective or the other dominates. For example, involving local communities in conservation is often used as a means, a way of making conservation measures more acceptable and less likely to meet local resistance (Brown 2002). But the ultimate objective is one of conservation. Conversely, protecting the productivity of a resource may be used as a means to protect local livelihoods and development options. As the local economy may depend on the ability of the environment to produce ecosystem services such as clean water or forest products, it makes sense to take measures to protect the local ecosystem. But the main objective is local development and livelihoods. Management approaches, sometimes called integrated responses, that explicitly have more than one objective are less common than those that have one primary objective.

The issue is a fundamental one for many areas of natural resource and environmental management. The conventional approach has been to address one objective at a time; however, this approach is no longer sufficient to deal with many of the larger issues of our time. As Ludwig (2001) might put it, the era of management using simple objectives is over. Rather, many of the larger environmental problems of our time, such as climate change, tend to be "wicked problems" or problems of post-normal science. Basically, they are complex problems.

Some large international interdisciplinary team projects, such as the Millennium Ecosystem Assessment (MA 2003), have been working on developing new approaches to deal with these complex problems. The necessity to address two or more management objectives simultaneously is one of the crucial challenges. As dealt by Chapter 15 of the Responses Assessment volume of MA (2005), "integrated responses" are those responses that explicitly and purposely state that their objectives address more than one ecosystem service(s) and human well-being simultaneously. Integrated responses discussed in MA (2005) include sustainable forest management, integrated coastal zone management, river basin and watershed management, and integrated conservation and development projects (ICDP). What these four areas have in common is that they explicitly address both issues of ecosystem services and human well-being.

Integrated responses occur at different scales and across scales. They tend to use a range of instruments, including multi-stakeholder processes, decentralization and devolution policies, partnerships and networks, and multiple institutions and actors, including various levels of government, private sector and civil society. The MA (2005) report highlights integrated responses in these areas, but it is also critical of the experience thus far. In each of these areas, including ICDP, management results have been mixed. Clear-cut examples of successful management have been few and scale-dependent; "success"

often depends on the viewpoint of the observer and the scale of the analysis. Integrated responses may be the future of resource and environmental management, but there is a great deal to be learned.

The issue of scale is one of the critical aspects of integrated responses flagged for further research. Attention to scale is important, and cross-scale approaches are often necessary to deal with complex problems (Cash and Moser 2000). This is because successful responses at one scale tend to encounter constraints at other, often higher, levels. The issue becomes critical in many of the countries of the tropical belt, such as parts of Africa, where institutions at all levels are generally weak (Barrett et al. 2001). Even where community-based institutions are relatively strong, the success of the local system ultimately depends on government institutions and the legal and policy environments in which they operate. These considerations are important for the question of "scaling-up" to bring more benefits to more people over a wider geographic area (Hooper et al. 2004).

However, others have pointed out that success at the community-level can rarely be scaled-up to regional and global levels (Young 2002). That is, there is a major problem if scaling-up is really referring to moving across levels of social and political organization. Hence, the analysis of cross-scale interactions of the kind we discuss here are crucially important. A cross-scale institutions approach may be better able to deal with higher level constraints by taking into account the different nature of each level, and by building on the experience at one level to tackle the problems of the next. Examples of successful cross-scale responses include co-management cases that show feedback learning, that is, adaptive co-management (Olsson et al. 2004).

In general, integrated responses such as ICDP may be seen as a way of moving from problem-solving in simple systems to problem-solving in complex adaptive systems (Berkes et al. 2003). Many of the cases of the Equator Initiative programme are ICDPs. The objective of the Equator Initiative, to address biodiversity conservation and poverty alleviation simultaneously, is clearly an integrated response in the MA sense.

The Equator Initiative

The Equator Initiative is designed to reduce poverty through the conservation and sustainable use of biodiversity in the equatorial belt by fostering, supporting and strengthening community partnerships (EI 2004). The EI is a partnership that brings together the United Nations Development Programme (UNDP) and a number of international and national agencies concerned with conservation and development. Through the cases it fosters, the EI also brings together UNDP and its partners with a diversity of civil society, business, and local groups to help build capacity and raise the profile of grassroots efforts that promote sustainable communities in developing countries.

At the heart of the EI programme is the observation that the world's greatest concentration of biodiversity is found in the tropics, mainly in countries with rural areas

of acute poverty. Livelihood needs of these people create a threat for biodiversity conservation. However, many "experiments" are underway toward sustainable futures, using local biological resources in creative ways for food, medicine, shelter and improved livelihoods. The EI strives to identify these experiments, reward them, and learn from them. The EI has seven activities. Its flagship activity is the Equator Prize, which has been awarded twice so far, in 2002 and 2004, from hundreds of nominations from various countries.

Research and Learning is one of the seven EI activities. Research and Learning are fostered by enlisting networks of experts and practitioners to use community "best practices", from the list of Equator Prize winners and nominees, to inform policy and development priorities. Over 400 projects were nominated for each of the 2002 and 2004 Equator Prize competitions. Data on the diverse experiences of Equator Prize nominees is a rich source of information that may be used to understand the factors for successful initiatives. The EI nominees, and especially the projects that are short-listed, provide a set of cases that may be considered successful. In an area such as ICDP in which successes are few, the EI examples provide a particularly promising set of data to explore conditions of success.

There are a number of ways in which EI cases may be analyzed to provide insights. One analysis has used open-ended interviews with representatives for the 24 finalists of the 2004 competition attending the awards ceremony in February 2004 (Seixas et al., submitted). Others have used nomination documentation to search for factors of success (Jonas 2003), to explore possibilities of scaling-up (Hooper et al. 2004), and to develop indicators of conservation and poverty reduction (Rubian and Crowley 2003). Yet others have focused on entrepreneurship as central to understanding the effectiveness of innovations in conservation and development (Juma and Timmer 2003) and analyzed the ecoagriculture set of cases (Isely and Scherr 2003).

Objectives and Study Methods

This report contributes to the Research and Learning component of the EI program by synthesizing the findings of four field studies based on EI cases. Each study addressed the overall purpose of the EI (biodiversity conservation and poverty alleviation) and each addressed the goal of researching lessons from EI cases. Since the number of potential research questions that can be asked is very large (Agrawal 2002), it is necessary to use a targeted approach to narrow research down to a small number of questions. Hence, each study focused on two major common objectives:

1) What were the important factors in community self-organization?
What precipitated the project, in terms of trigger events and catalytic elements? How was the project funded and organized? How was capacity developed? What were the sources of information and the role of technical and local/traditional knowledge? What was the role of leadership in the evolution of the project?

2) How can the cross-scale institutional linkages be characterized?
How is the case connected to the various levels of government, to NGOs, and to development agencies through cross-scale linkages? What were the main horizontal (across space) and vertical (across levels of organization) institutional linkages? What cross-scale linkages were important in funding and in knowledge transfer? Which linkages were important for political support and which created institutional barriers?

These two objectives are based on both theoretical and empirical considerations. They emerge out of the theory of complex adaptive systems. A complex system has a number of attributes not observed in simple systems, including nonlinearity, uncertainty, emergence, scale and self-organization (Berkes et al. 2003). Early empirical findings on EI projects (Jonas 2003; Seixas et al., submitted) indicated that scale was important and that many EI projects were characterized by large numbers of cross-scale linkages. Similarly, the genesis of the case and aspects of community self-organization often showed intriguing patterns and variations. A number of meetings were held, involving University of Manitoba researchers experienced in community-based management systems, common property analysis and multi-stakeholder processes, and personnel from the International Development Research Centre (IDRC), Environment Canada and the International Institute for Sustainable Development (IISD). Based on the discussions of these meetings, the analysis of community self-organization and cross-scale linkages were chosen as the focus of the four studies.

Thus, the two common objectives were used in each of the studies, three of them undertaken toward a Masters thesis and one of them a PhD. A common checklist of questions was developed by Seixas and Berkes, in collaboration with the research students, covering the major headings under the two objectives and other important items to characterize the EI case. The four studies covered EI cases in Brazil (BR), Guyana (GY), India (IN) and Kenya (KE); all were from the 2002 Equator Prize competition. Three of the four were from the list of prize finalists; only the Guyana case was not. Each case was studied over a period of three and half to five months in the field, using a mix of quantitative and qualitative methods, including short questionnaires, participant observation, semi-directed interviews, key informants, focus groups and other small group interviews. A description of cases may be found in the next section of this report.

2. Case study descriptions

The Cananéia Oyster Producers' Cooperative (Cooperostra), Brazil (BR) (*researched by Dean Medeiros*)

Cooperostra works toward adding economic value to a natural resource (oyster) while intending to conserve the mangrove ecosystem. Cooperostra members collect oysters from the mangrove, keep them into human-made oyster rearing beds to grow to larger, more profitable sizes, and then purify the oysters in a depuration station in order to obtain health certification from the Federal Inspection Agency for commercialization. With such

certification, Cooperostra members can command higher prices for their oysters and sell them directly to high-end restaurants, instead of selling to middlemen who would claim the large portion of the profits.

The Cooperostra idea emerged from a study on the socio-economic viability of extractive reserves (protected areas that allow certain kinds of resource use) in Cananéia, conducted by two São Paulo state government agencies (the Forest Foundation and the Fisheries Institute) and a university research group (NUPAUB/USP) with support from the Federal Environmental Agency (CNPT/IBAMA). These organizations, in particular the two state agencies, have worked together to obtain funding, build local capacity, organize cooperative members, and connect the cooperative with other organizations and the regional oyster market. Cooperostra was initially created for the Mandira community, situated within an extractive reserve, which population has relied on oyster harvesting for more than 90% of their livelihood earnings. Nevertheless, due to logistical considerations regarding the construction of the depuration station, oyster collectors from other communities also became members.

Cooperostra has succeeded in improving the incomes of its members who now harvest fewer oysters and have more time to pursue other activities. Cooperostra members mentioned that they have observed an increase in oyster stocks despite the lack of oyster stock assessment and biodiversity benchmark data. They have also learnt the importance of protecting the mangrove. In addition, the establishment of the Mandira extractive reserve (pre-Cooperostra) turned an open access area into a new community-based conservation regime. Despite of such successes, Cooperostra has faced some problems including poor administration over the years (mainly by non-members) leading to debts; poor marketing strategies and transportation system (i.e., insufficient sales leading members to continually sell oysters to middlemen who compete with the Cooperostra oysters); internal conflicts between members from the Mandira community and from other communities; and uneven allocation of benefits among cooperative members.

Community-based Arapaima Conservation in the North Rupununi, Guyana (GY)
(researched by Damian Fernandes)

The fish, Arapaima (*Arapaima gigas*) is a large, high-value species of the Amazon basin. The North Rupununi District Development Board (NRDDB) is a regional NGO that facilitates the management and development of its 14 member communities. NRDDB manages a number of projects including the Arapaima Management Plan. NRDDB works closely with Iwokrama International Centre (a national NGO) responsible for managing a rainforest reserve. Iwokrama has facilitated NRDDB projects by providing training, capacity building, and technical and institutional support, by creating links between NRDDB and government or other organizations, and by providing funding or helping NRDDB to search funding for their projects.

The Arapaima fishery is legally prohibited in Guyana, but due to lack of government enforcement, Arapaima populations have been over-harvested in some areas. In 1998, the

North Rupununi communities identified Arapaima management as a local priority. Iwokrama facilitated then the link between NRDDB and the Mamirauá Sustainable Development Reserve in Brazil – a project that was successfully conducting adaptive co-management of *Arapaima gigas* using local ecological knowledge to assess populations and estimate sustainable harvest levels. Scientists and fishermen from the Mamirauá Reserve helped NRDDB with the development of the Arapaima Management Plan. In 2000, a ban of Arapaima harvest was locally imposed and enforced by NRDDB members. Between 2001 and 2004, the number of adult Arapaima counted in the managed area increased three-fold. However, there has not yet been any harvesting or direct income generation from Arapaima. But high value markets have been identified for future sales of Arapaima. In addition, alternative sources of income were created including small-scale aquarium fish trade, and salaries to fishers and rental of community equipment to conduct annual Arapaima surveys.

The government supported the project initially but has not contributed much for the development of the Arapaima Management Plan or its implementation. Indeed, lack of institutional memory and political commitment at higher government levels is argued to be a major impediment for the approval of this management plan, which is based on the assumption of eventual sustainable harvests of Arapaima. Although NRDDB has begun to create links with government and funding agencies independent from Iwokrama, it still lacks strong political links needed to approve the Management Plan.

Rural Communes' Medicinal Plant Conservation Center (RCMPCC), India (IN) ***(researched by Shailesh Shukla)***

This initiative works toward *in situ* conservation and sustainable use of medicinal plants in the Maharashtra state by promoting a partnership among local communities, the Forest Department (government) and NGOs. RCMPCC facilitated the establishment of 13 Medicinal Plant Conservation Areas (MPCAs) and the creation of local organizations (local management committees and self-help groups of women) in charge of harvesting, processing, marketing and sale of medicinal plants within their designated areas. The initiative aimed to document and disseminate local knowledge of medicinal plants and help to revitalize local health traditions. Through participatory approaches, it was able to document some 50,000 medicinal plants representing more than 50 different species. The initiative was launched in December 1999 but community-based activities commenced in August 2002. Since then, it has inspired other states and the Government of India to include MPCAs in their conservation and development agendas.

The initiative emerged from the idea to expand an earlier project of the Foundation for Revitalization of Public Health Traditions (FRLHT) (a national-level NGO) with the support from Rural Commune (a regional NGO) who had previously worked with the state Forest Department. Funding availability created an opportunity to implement the project. Training and capacity building in different issues were provided by local and outside experts to community members and government agents at various stages of the project implementation.

This initiative is quite recent and has no baseline data collection; hence it is premature to assess impacts on biodiversity conservation and poverty reduction. Nevertheless, MPCAs are becoming a major gene pool of plant diversity in Maharashtra. As well, valorizing and popularizing the local low-cost alternative health products contributed to the improvement of health and nutrition of poor people. In addition, the initiative empowered women's groups to become economically self-reliant and participate in community decision-making processes.

Honey Care Africa's Beekeeping in Rural Kenya

(researched by Stephane Maurice)

Honey Care Africa (HCA) is a private company that has promoted over a dozen beekeeping projects in rural communities throughout Kenya. HCA has established partnerships with local development organizations (NGOs or community-based organizations) and rural communities, particularly with small-scale farmers (beekeepers). HCA introduced a new beehive technology in these communities and guaranteed to purchase all honey produced by individuals with cash payment at a competitive, fair price. The partnering organizations facilitated the project implementation in each area by providing training and capacity building, supervising the hives, in some cases providing loans for individuals to purchase beehives, and also by mediating the relationship between HCA and beekeepers so that the former does not exploit the latter. Government agents from the Ministry of Livestock and Fisheries Development (MLFD) are also engaged in some of the projects.

In our research, two of the HCA projects were investigated in the field: one in the Kakamega district (KE-I), a densely populated area near a rainforest; and the other in the Kwale district (KE-II), with a relatively low population density and located largely in a semi-arid region. Both HCA projects initiated in 2000.

In Kakamega, the Community Action for Rural Development (CARD – a community-based organization) supervises more than 600 HCA beehives, managed by beekeeping groups or individual beekeepers. A similar amount of hives is under the supervision of the Coastal Rural Support Program (CRSP) of the Aga Khan Foundation (a national NGO) in the Kwale district. In this area, CRSP partnered with government agents of the Ministry of Livestock and Fisheries Development, based in CRSP's office, in order to implement the beekeeping project. In Kwale, CRSP tried to organize Village Development Committees (VDC) and Village Development Organizations (VDO) to facilitate many of the AKF projects, including beekeeping. Nevertheless, many of these VDC and VDO were not functioning well due to lack of leadership and continuously technical and organizational support from CRSP.

In Kakamega, beehives are owned individually but often managed collectively, an arrangement that encourages information exchange. The existing local knowledge about bees and beekeeping using traditional technologies helped the project succeed in this

area. In Kwale, beehives are owned and managed individually, and there is poor information management and dissemination of knowledge among beekeepers from different villages. Moreover, few people had previous experience with beekeeping. These facts, in addition to weak technical support and limited flower (nectar) resources due to low precipitation in certain months of the year has constrained the project's success.

The pollination service provided by bees to both wild and cultivated species is expected to help conservation. However, in none of these two areas a study on the impact of beekeeping in the environment has been conducted, despite some people mentioned an increase in fruit crop yields and more flowers and fruits being planted. The project contribution to reduce poverty is also mixed. Those few beekeepers that paid back their loans think the project is worthwhile, but the large majority have paid off very little of their loans yet. Another important point to consider is that this project favors individuals with disposable income, or the wealthier members of the village, as the poorest villagers do not have the capital to purchase hives.

3. Community self-organization

Trigger events and catalytic elements

Even though all four projects have produced community benefits, in three (BR, IN, KE) out of the four projects, the initial idea for the initiative came from organizations (government, NGO or private sector) outside of the local communities. The Guyana project was the only one that emerged from a community demand (priority) to manage Arapaima populations and was facilitated by a national NGO (Iwokrama).

In Brazil, two government agencies at state level, working collaboratively with a University group, come together with the idea in face of a decrease in resource yields due to high extraction pressure during the implementation of an extractive reserve. The reserve guaranteed community property rights over resources. A call for project proposal to be funded by the federal government became a catalytic element in developing the project.

In India, the project borrowed its vision from earlier work by a national NGO in other states of the country on community health improvement. The expansion plan of this NGO with the readiness of a partner NGO at the regional level, backed up by funding support from the UNDP, made it happen.

In Kenya, a private company saw an opportunity to develop a high-end product to serve the domestic market in larger centers that had been served by foreign producers. At the same time, the company provided local farmers with a complementary livelihood activity with potential environmental benefits. This company held a series of public demonstrations on a new technology promoting beekeeping in rural communities.

In the Brazilian and Indian cases, government agencies worked together with NGOs and/or research groups in face of funding availability to start the projects. In Brazil, the process was driven mainly by government agencies while in India the national and regional NGOs initially drove the process. Several workshops involving outside players and community groups were critical for the implementation of the projects in all cases. In Guyana and India, the projects were inspired on similar experiences elsewhere in the country (Indian case) or in another country (Guyanese case). In Brazil, government agencies built on previous attempts to introduce aquaculture in the area. That is, in at least three of the cases, there was transfer of know-how and knowledge from other experiences.

Funding and other resources

All the projects needed initial investments. In three of the projects (BR, GY, IN) funding was mainly from international and national funding agencies, sometimes with small contributions from local organizations. In the Kenyan case, part of the money of the Honey Care Africa's local partner organizations came from national and international funding agencies as well, but community members and at least one partner organization had also to come up with their own money to invest in the project.

Funding is needed to start a project (start-up funding) and sometimes to conduct the project (operational funding). **Figure 1** shows how outside funding may be a major enabling factor and how a diversity of sources are often needed. Funding for most (perhaps all) of these projects came from at least five different sources, mainly international ones. In all cases, one of the key organizations involved in the project had previous experience in applying for funding. This knowledge was used to access funds from different sources.

In all cases, funding was used to cover capacity-building costs, including technical training by experts. In Brazil, outside funding was also used to cover costs of equipment, construction, expansion, and operational costs. In Guyana, funding was used to carry out Arapaima surveys and to promote an alternative livelihood option (aquarium fish trade). In Kenya, funding was used to buy beehives by community members and equipment by the partner organization.

It is premature to assess if any of the projects have reached a self-sustaining stage. But it is clear that funding has provided services both for the key organizations and the local communities, and such services are important. For instance, in the Kwale case in Kenya, the infrastructure and vehicle provided by the partnering NGO enabled the government agents to do their work (since they had no office space or vehicles). This helped create a reciprocal relationship, in that the NGO used the existing connections between these government agents and the local farmers to support beekeeping and other projects. In the Brazilian case, the truck bought with the project funding to transport oysters to outside markets was also used to transport goods to the community which is located 25 km away

from the urban area. In the Guyana case, outside funding was used to construct a building that became a multi-purpose meeting space used by the community.

In order to design and implement their projects, most initiatives used some voluntary help and/or free facilities and equipment provided by outside groups and government, NGO or university personnel. This included voluntary help from people paid from other sources but allowed to work in these projects during their free time. Such help included writing proposals (BR, GY, KE, IN), establishing contacts with outside organizations (BR, GY, IN), helping to register community groups and/or cooperatives within the legal system (BR, KE, IN), providing transportation for people to attend meetings (GY), helping organize training (IN), and promoting the project (KE).

In most of the cases, there were clear pre-existing relationships among some of the key groups involved in the initiative before the project started. For instance, in Brazil previous relations were built among the local community, the University group and the Forest Foundation during the implementation of the Extractive Reserve. In Guyana, strong relationship already existed between NRDDB and the national NGO (Iwokrama). In both Kenyan cases, the partnering organizations (a community-based organization in Kakamega and a NGO in Kwale) were already carrying out development work with local farmers before the Honey Care project started. The Indian case was the only one with no obvious direct pre-existing relationships among the organizations implementing the project on the ground; however, the higher-level organizations (i.e., state and national level organizations) that facilitated the project had previously worked together.

Capacity building and knowledge systems

The term, capacity building, is usually used to mean government, NGO or other technical people "educating" the local people. However, in our four cases, it is clear that such education is a two-way process: (1) government, NGO, and private sector personnel sharing technical information with community members, and (2) the latter sharing local knowledge with the former. Formal capacity building has been provided by both the major organization(s) involved in the project and many other organizations holding particular knowledge, which have been contracted by the project to carry out specific tasks.

Capacity building was a major factor in community organization and project implementation in all the cases. It was carried out through meetings, workshops, formal training programs in community organization and technical issues, and guided visits. In most, if not all, of the projects, the training that local people received has empowered them in economic terms as well as in social aspects, as in the case of women's groups in India (see below).

One interesting aspect of capacity building as a two-way process was the establishment of informal 'learning networks' in some of the cases. In the Brazilian case, a multi-level network of people from a diverse set of organizations worked together to tackle new

problems during periodic meetings. In Guyana, several meetings involving the major organizations and scientists were designed to bring together local and scientific knowledge and experiences in a collaborative, problem-solving environment, as seem to be the case in adaptive co-management elsewhere (Olsson et al. 2004).

Indeed, one characteristic of all these projects is that they provided space to combine local and scientific knowledge to either improve resource management or human well-being. In the Brazilian case, local and technical knowledge were used together to improve oyster aquaculture technology.

In Guyana, the Arapaima management currently relies almost entirely on local knowledge, and the monitoring system based on local ecological knowledge uses a technique transferred from a project in Brazil. Monitoring is done by using a visual survey method. This method seems to be scientifically reliable and has been shown to be as effective as the scientific mark-recapture method (Castello 2004). Scientists provide support in the analysis and interpretation of survey data. It is expected that scientific knowledge will be used also in future management when fishing quotas are established.

The India project focused mainly on local knowledge about medicinal plants and their uses. However, the project staff also brought some technical/scientific knowledge into the project. There were three main sources of knowledge: (1) Ayurvedic knowledge (the classical Indian traditional knowledge documented in ancient scriptures which emerges as herbal cure alternative to allopathic medicines), (2) folk or traditional, un-codified knowledge passed on through oral transmission, some of which has been documented in databases, and (3) other type of local knowledge acquired by local forest department staff, project staff and community members.

In both of the Kenyan cases, HCA introduced a new technology (modern beehive) for beekeeping. In one area (KE-I), the communities already had extensive knowledge about bees and beekeeping, using traditional technologies, and only had to make minor adaptations to new technology. In the other area (KE-II), only few community members had some knowledge about bees and beekeeping using traditional technologies, and most of the individuals purchasing the HCA beehives had much to learn about beekeeping. Indeed, the lack of pre-existing local knowledge and beekeeping know-how is one of the factors that are constraining this project's success.

Leadership and key players

The key players and their roles have changed over time in all of the projects. In Brazil, a sequence of government agents/researchers played a leadership role throughout project design and implementation (**Table 1**). The project started with a researcher who moved from a university group to a government agency, bringing the project with him to this new organization. This first leader left the organization later, but his role was filled by a second leader, who worked closely with a third leader from another government technical body. The two organizations were the major outside ones involved in the project. When

the second leader left that government organization, another person assumed his role. At the local level, a community leader took the role of organizing community members to engage in the project. However, his role in the project has diminished, and other local leaders are emerging, such as the current head of the cooperative.

In the Guyana case, two of the three persons that were involved in the initial phase of the project are still (as of 2004) very active. One is the head of the fisheries committee who has played different roles in several organizations and group actions within the North Rupununi area. He is a very articulate communicator, and for many "he is the face of the Arapaima Management". The other leader is the head of the national NGO (Iwokrama) involved in the project, and he has been key in establishing links between the NRDDB and outside organizations such as research groups, government agencies and funding agencies. The third key person was a foreign scientist from the Mamirauá project, which served as a model for this one, but that is no longer working with the NRDDB project due to lack of funding.

In the India case, the key people that started and facilitated the project implementation were people that occupied senior positions in their organizations, either in government or NGOs. Most of them are still providing their input in varying capacities to the project but their degree of involvement has been reduced. One of initial key player moved to a higher position within the state government, and was able to provide strong support to the project from a higher government level. At the local level, the key organizations are the local management committees (the heads of which shift over time) and the self-help groups of women.

In the Kenyan case, the entrepreneur who started HCA has played a special role: that of the visionary. In one of the cases, Kakamega, two persons stand out as leaders of the project. One is the head of the community-based organization partnering with HCA. The other leader is an experienced beekeeper who became a member of the partnering organization, leading to the establishment of a self-help group, and later became the HCA project officer in Kakamega. **Table 2** traces his changing roles and the connections he brings through three phases of the project. Two other people (international NGO agents) played a major role in connecting HCA with the partnering organization in the beginning of the project. In the Kwale case, no community leadership was identified, except for that provided by the partnering NGO and government agents working closely with this NGO.

In all the four cases, the role of outside agents of change, bringing new knowledge, ideas and/or technology to local people, was crucial for project success. It is interesting to note, however, that in the four cases, women play a minor role as agents of change and local leaders in formal organizations, government departments and NGOs. An exception is the Brazilian case, where the proportion of outside men and women leading the project was about the same. In all the other cases, leaders are male. At the community level in two of the cases (IN, KE-I), increasingly more women became involved in livelihood opportunities promoted by the project. Some of these women became local leaders within their own groups.

4. Cross-scale institutional linkages

Main institutional interactions

The study of cross-scale interactions is one of the two major objectives of our EI Research and Learning project. This section is concerned with cross-scale institutional linkages in the four cases, that is, horizontal linkages (those that connect the same or similar organizational levels across space or across sectors) and vertical linkages (those that connect across levels of organization).

How can the major cross-scale institutional linkages be characterized? **Figures 1 to 5** show the main interactions in the five cases: Brazil (BR), Guyana (GY), India (IN) and Kenya (KE-I and KE-II). The striking finding is that in all cases, institutional interactions cut across many levels. These projects are anything but isolated. They all operate at the local level, but tracing the important linkages with respect to funding, organization and key partnerships, one finds linkages all the way to the international level. Typically, there are five levels present. In all cases but one (GY), there is a local or community level; a regional or district level; a state or provincial level; a national level; and an international level.

The Guyana case has no state level. In the India case, the national level is not important in the main interactions but the State and protected area levels are active. Linkages are not equally important at all levels. For example, in the case of Kenya (KE-I and KE-II), there is a division level and a provincial level (**Tables 3 and 4**), but these two levels do not show up in the main linkages sketched in **Figures 4 and 5**. Thus, major links across four levels seem to be the norm, even though five or even six possible levels are present.

Linkages, networks and political support

Figures 1 to 5 distinguish between the stronger links and the weaker links among the main interactions. The striking finding here is that each EI case has certain key linkages that make the project possible. In the Brazil case, it is Forest Foundation and the Fisheries Institute, two agencies of Sao Paulo State Government acting in tandem, that connect the Cooperative with national and international funders. In the Guyana case, the supportive tandem is the national NGO, Iwokrama, and the District Board, NRDDB, which is not a government agency and which acts like an NGO. The India case is different: instead of a key supporting agencies, there is a network-like arrangement around RCMPCC at Pune. In the Kenya case, the local level is weak; some of the beekeepers are organized and some not. Again there is a supportive tandem. In KE-I, it is CARD, an NGO, acting with the HCA project officer.

The lesson from the Kenya cases is interesting in another way. Even though both KE-I and KE-II are HCA cases, the main players are different in the two. In KE-II, support

comes from CRSP, an NGO, acting with the District Office of a government department. In four of the five cases, there is one very strong horizontal linkage providing a tandem of support for the local level, and connecting it to sources of funding, information and other support. In the India case, the support has the form of a network, with the Pune Center at the middle. Of the main supporting organizations in each case, one finds both NGOs and government organizations. The key government agencies are always at state or district level, providing the extremely important function of political support.

In our four cases, they are not found at the national level; the central government seems passive or benign. It does not have much of a support function, but at least it does not create barriers either. In at least one of the cases (KE), we know that the organizers stay away from central government agencies and actively pursue partnerships with the district level government instead. One researcher characterized central agencies "as an omnipresent threat." The State level, by contrast, is a key level in political support in two (BR, IN) of the four cases. In the India case, it is the State government that created a favorable policy environment (without creating new legislation) that led to the "issuing of government notification" to empower local groups and agencies to participate in the conservation of medicinal plants.

Funding and other resources

Just how do these key organizations connect the project at the local level to sources of funding and other resources? Unraveling the sources of funding is anything but simple. The larger picture hides operational complexities. Often, different sources are needed for different stages of the local operation or different functions of it. For example, **Figure 1** (BR) shows a "black box" of financial support. **Figure 6** shows the same Brazil case, but this time focusing only on the linkages that enabled the Cooperative to obtain health certification for its oysters. The resulting organizational chart is considerably more complex than **Figure 1** and provides a realistic picture of how the group went about seeking funds and where the funds went (designing the oyster depuration station; land for the station; construction materials and so on).

The Kenya case again holds a surprise. Even though both KE-I and KE-II are HCA cases, the funding sources are different. In KE-I, funds are coming through CARD, the NGO. But in KE-II, funds are coming through the national office of the Aga Khan Foundation, an international organization of Ismaili Muslims, and its district level program office.

Capacity-building and knowledge systems

How do the key organizations connect the project at the local level to sources of know-how, technical and practical information? On this point, the experience in each case is different. In the Brazil case, technical information came from NUPAUB (University of Sao Paulo), and the two State agencies. In the Guyana case, however, there was no knowledge available within Guyana. Iwokrama and the local fishers attempted to develop

a survey methodology that yielded inconclusive results. As a result, linkages were pursued with a reserve in Brazil, leading to the subsequent transfer and adaptation of Brazilian survey methodology to assess Arapaima populations using local knowledge and expertise. (The GY project area is inland, within the Amazon basin and not far from the Brazil border.)

In the India case, sources of information are from within the country but from a different part of the country. *In situ* conservation and cultivation of medicinal plants has become a big issue in many parts of India in recent years. Much of the technical knowledge came from south India through State level agencies but perhaps more importantly from FRLHT, an NGO based in Bangalore. In the Kenya case, the sources of information are diverse: there was a great deal of capacity-building, training in the use of modern beehives, using international knowledge. In KE-I, the role of local knowledge was important in the training of new beekeepers, whereas in KE-II (not a traditional bee-keeping area) little local knowledge existed.

In all cases, demonstration effect is important. This includes the HCA project officer who taught by example (KE-I); the vertical transfer of expertise with beehives through training; the visit by NGO and fishers in the GY case to learn how the Brazilians were counting Arapaima; and the horizontal transfer of medicinal plant conservation expertise through the NGO based in Bangalore (IN).

One additional aspect of capacity-building merits mention. In each of the EI cases, one finds spin-off groups and activities. In Brazil, for example, the organizational experience with the Cooperative resulted in the transfer of skills to establish a women's seamstress group. In Guyana, the experience with Arapaima problem solving led to the application of new skills to a range of other activities. In India, the project led to an increased appreciation of women's role in the conservation of medicinal plants, it spawned a variety of women's groups, and facilitated the increased participation of women in village political structures. As well, the project contributed to the revival of interest in traditional medicines; it had cultural implications, in addition to economic and environmental ones. Such revival was an outcome but also an objective of the project. In the four projects as a group, empowerment appears to be an important outcome, even though it is rarely an explicit objective of the project at the start.

Leadership and key players

Section 3 of this report details the leadership in the four projects. Two points can be made in this section with respect to cross-scale linkages. One is that leadership roles are consistent with the kind of linkages characterizing the case. In three of the four cases, there are individual leaders. In the fourth one (IN), linkages are in the form of a spoke-and-wheel and there is no one clear leader. Instead, there is a collective leadership of four or five people.

The second point is that the key people operate at multiple levels. That is, leaders do not seem to be active at only one particular level (e.g., the community). Rather, they seem to be straddling two or more levels of social and political organization, often making the linkages and translating local concerns to the levels above and *vice versa*. This mode of operation is consistent with what Cash and Moser (2000) refer to as "boundary organizations", that is, groups (or in this case individuals) that translate findings or messages from one level of organization to another.

5. Conservation and biodiversity

The objective of the Equator Initiative is to address biodiversity conservation and poverty alleviation simultaneously. Hence, we pose two questions in this section. First, do the four cases here represent integrated conservation and development projects (ICDPs)? More specifically, do they measure up to the ideal of "integrated responses" (MA 2005) explicitly addressing more than one ecosystem service(s) and human well-being simultaneously? Second, what are the implications for conservation in this analysis of self-organization and cross-scale linkages?

On the first question, the four cases represent a range. The Guyana case has a major conservation component as well as an explicit development component, with deferred benefits (since Arapaima populations do not yet support a harvest). The India case, there is a clear conservation objective and a development objective, both visible in the field and both being addressed. In the Brazil and Kenya cases, the objectives do explicitly include both conservation and development. But in the field, it is clear that the business side of the project receives more attention, and is more documentable, than the conservation side.

Turning to the second question, we need to explore our findings a little more deeply with respect to the conservation question. One of the problems in the documentation of biodiversity conservation has to do with baseline documentation. One cannot show biodiversity conservation if one does not have the data, pre- and post-project. This problem is being addressed in the Guyana case through the development of a community-based monitoring program for Arapaima. In the India case as well, there now is the necessary set-up to obtain such baseline data. In the Brazil and Kenya cases, however, there are no conservation data and no provision to obtain such data. A complicating consideration is that environmental change is occurring through multiple drivers and not only through the (positive) impacts of the EI initiative.

One important conclusion from the GY and IN cases is the role of community-based monitoring. In both cases (1) monitoring did not exist pre-project, (2) it was developed as the project proceeded, (3) it was developed through some combination of local knowledge and outside expert knowledge, and (4) it was developed by learning and adaptive management (iterative learning-by-doing).

As direct evidence of biodiversity conservation is difficult to obtain, attention should also be paid to indirect evidence. In the four cases, such evidence includes:

- Reducing incentives for illegal forest harvest (KE, IN)
- Increased livelihood resilience through better incomes as a way of achieving conservation, through the reduction of pressure on vulnerable resources (KE)
- Conservation through threat reduction (GY, IN, KE)
- Conservation through bringing at-risk species and habitats under conservation controls (IN)
- Conservation through local people actually "looking after" the species or the habitat or both (GY, IN)
- Conservation through environmental education and increased awareness that conservation, livelihoods and community health go together (BR, GY, IN, KE).

6. Conclusions

The case studies are still being analyzed. Some tentative conclusions are offered here.

Community self-organization:

1. There were pre-existing relationships among some of the key groups involved in each initiative before the project started.
2. Three of the four projects were initiated from the outside, and only one was locally initiated. Nevertheless, all four projects developed by partnerships and feedback learning.
3. Funding is a key input; in our cases funding came from multiple sources. Fund-raising skills seem to be key to project success (except perhaps in IN case).
4. Funding may be very complex, with start-up funding and operational funding, and funding for different stages and different functions of the initiative.
5. Different parts of one EI initiative may have different funding sources (for example, KE-I and KE-II).
6. In evaluating if a project has become financially self-sustaining, it is important also to ask what services the project is delivering.
7. Mutual learning, learning networks and two-way education characterize learning in the four EI cases, rather than capacity-building in the sense of simple training.
8. There are key players in each initiative and their roles tend to change over time.
9. The role of outside agents of change, bringing new vision, knowledge and technology, is crucial.

Cross-scale institutional linkages:

10. Each initiative is multi-level, typically involving partnerships across four levels of organization.
11. There is one very strong horizontal linkage providing a tandem of support for each initiative; alternatively there is a network arrangement with the initiative in the hub of the network (IN).

12. The tandem of support is provided by NGOs and/or district or state-level government agencies.
13. Central governments are not directly involved in any of the four projects, but neither do they provide barriers.
14. The experience with horizontal and vertical linkages involved in capacity-building are different in each case.
15. Demonstration effect is important.
16. Organizational experience with a particular initiative tends to result in the transfer of skills to other areas and activities (e.g., women's groups), with spin-off effects not anticipated at the start of the initiative.
17. Leadership roles are consistent with the kind of linkages characterizing the case.
18. Leaders and key people operate at multiple levels, straddling two or more levels of organization.

Conservation and biodiversity:

19. Each of the four EI cases can properly be characterized as a conservation and development project (ICDP), each explicitly addressing more than one ecosystem service(s) and human well-being objective simultaneously (Millennium Assessment criteria for integrated responses).
20. There is a range of experience regarding the extent to which conservation objectives are visible in the field; in two cases, conservation objectives are in the forefront, in the other two they are not.
21. Community-based monitoring, now in place in two of the cases (GY, IN) is important for the documentation of conservation benefits.
22. In both cases (GY, IN) such monitoring did not exist before the project; it was developed as the project proceeded.
23. Both of these emergent monitoring systems were developed by combining local knowledge and expert knowledge and by adaptive management (learning-by-doing).
24. Attention should be paid to indirect evidence of conservation. These may include reduced incentives for illegal harvests; conservation through threat reduction; conservation through local people actually "looking after" species and habitats; and environmental education and increased awareness.

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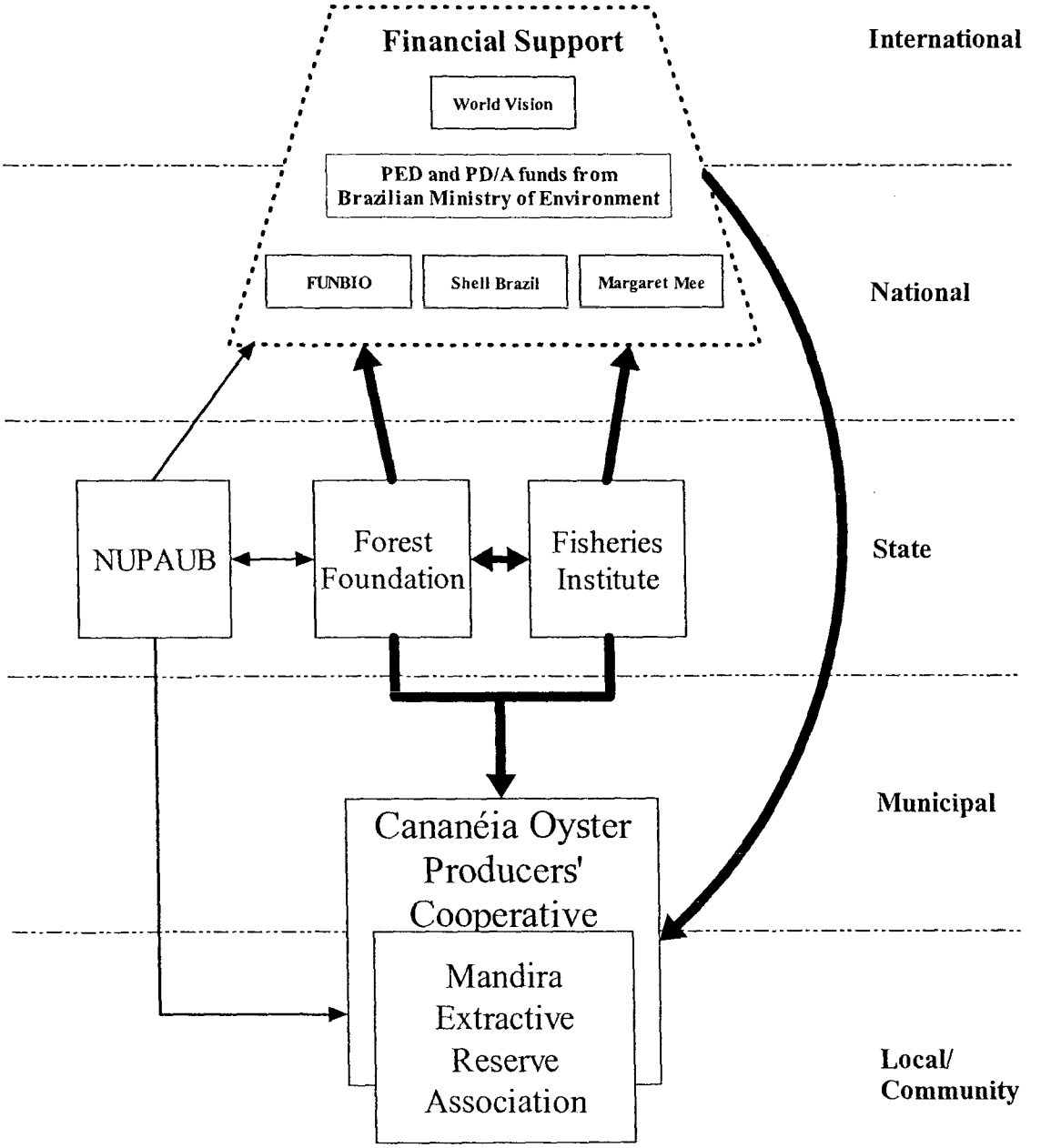

Figure 1. Key institutional cross-scale linkages that facilitated creation and development of the Cananéia Oyster Producers' Cooperative (Source: Medeiros 2004).

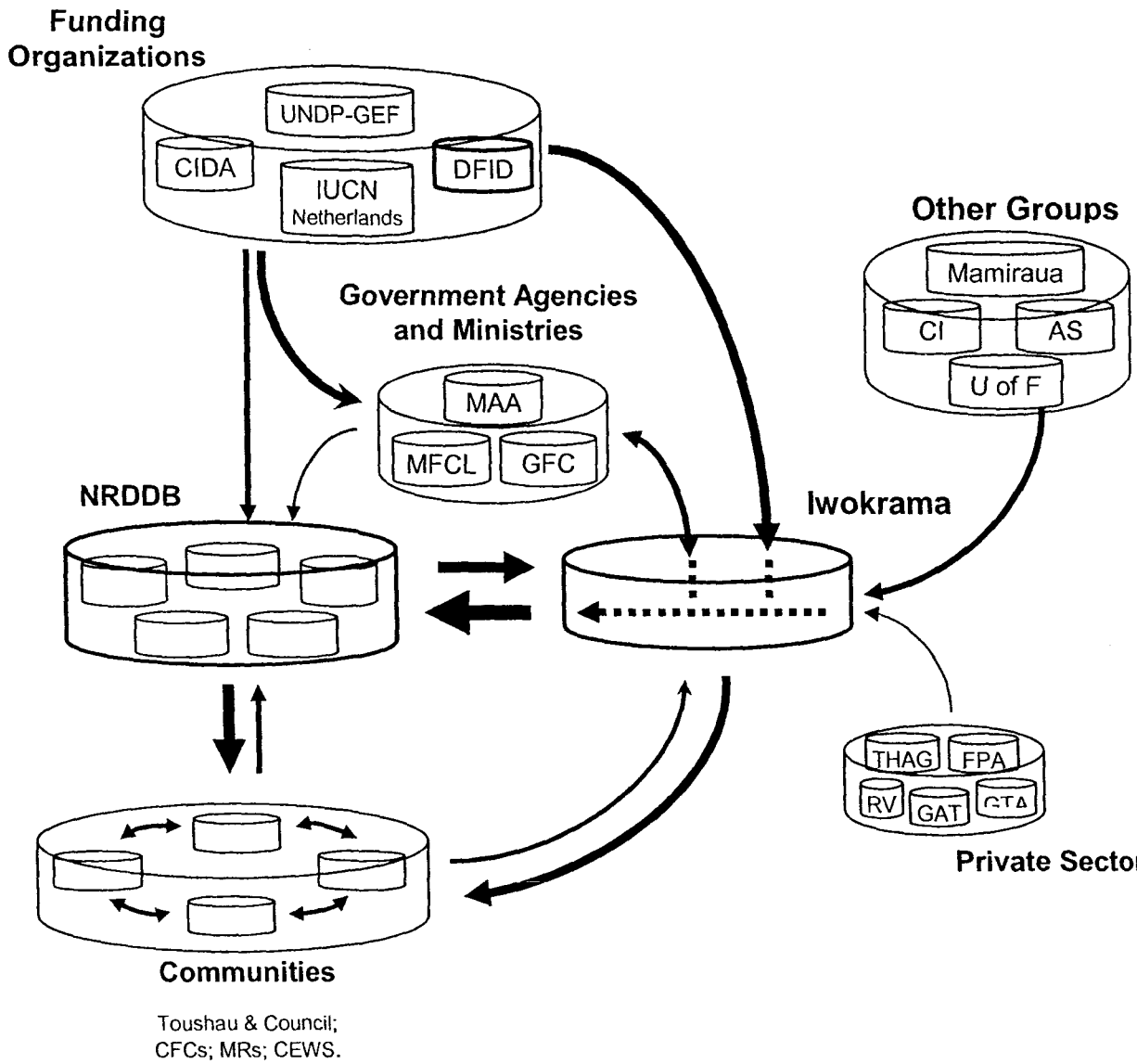

Figure 2. Key institutional linkages facilitating the activities of the North Rupununi District Development Board (NRDDB). Source: Fernandes (2004)

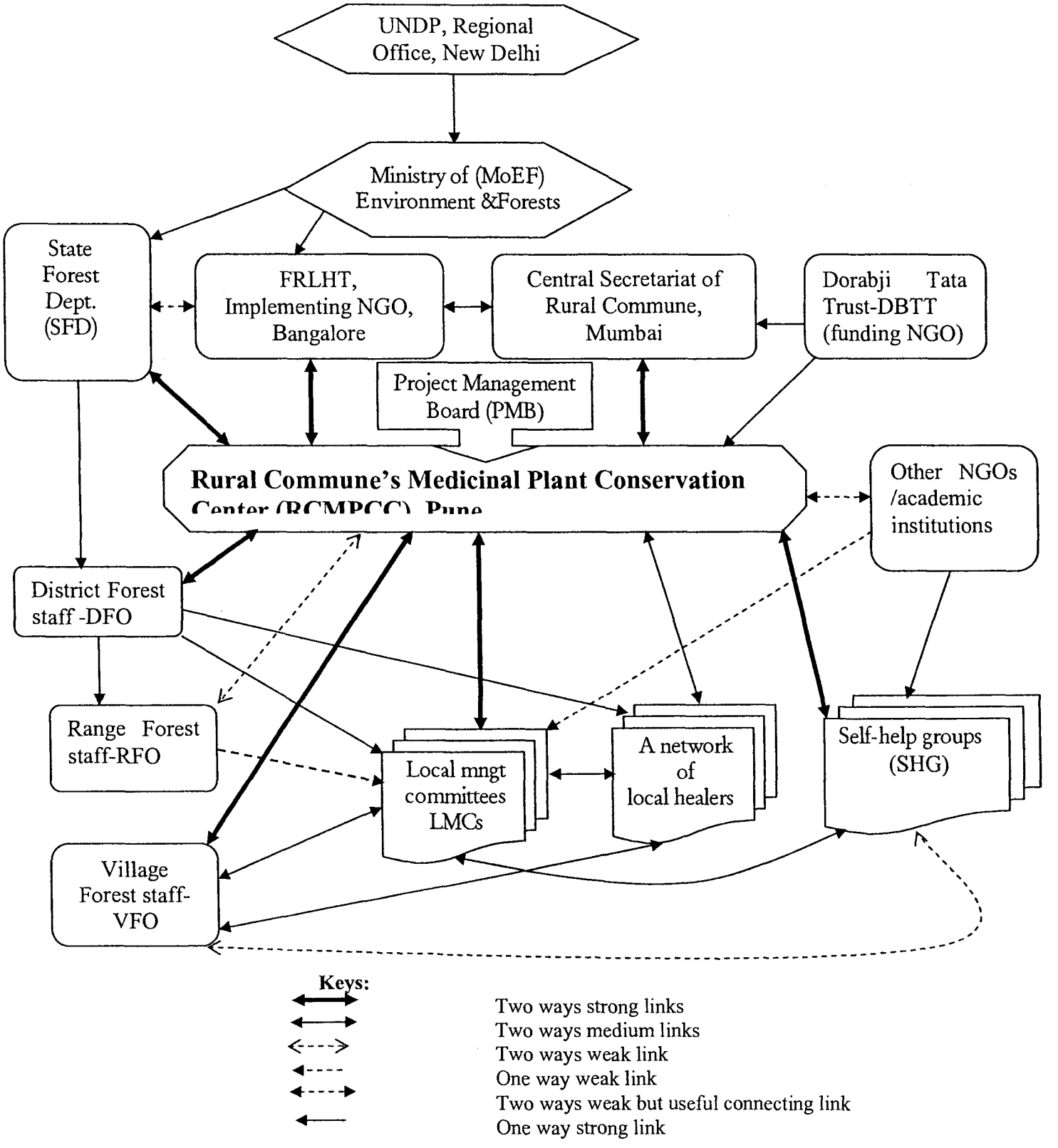

Figure 3: Enabling cross-scale linkages helped achieve project goals, Rural Communes' Medicinal Plant Conservation Center, Pune, India. Source: Shukla (2004)

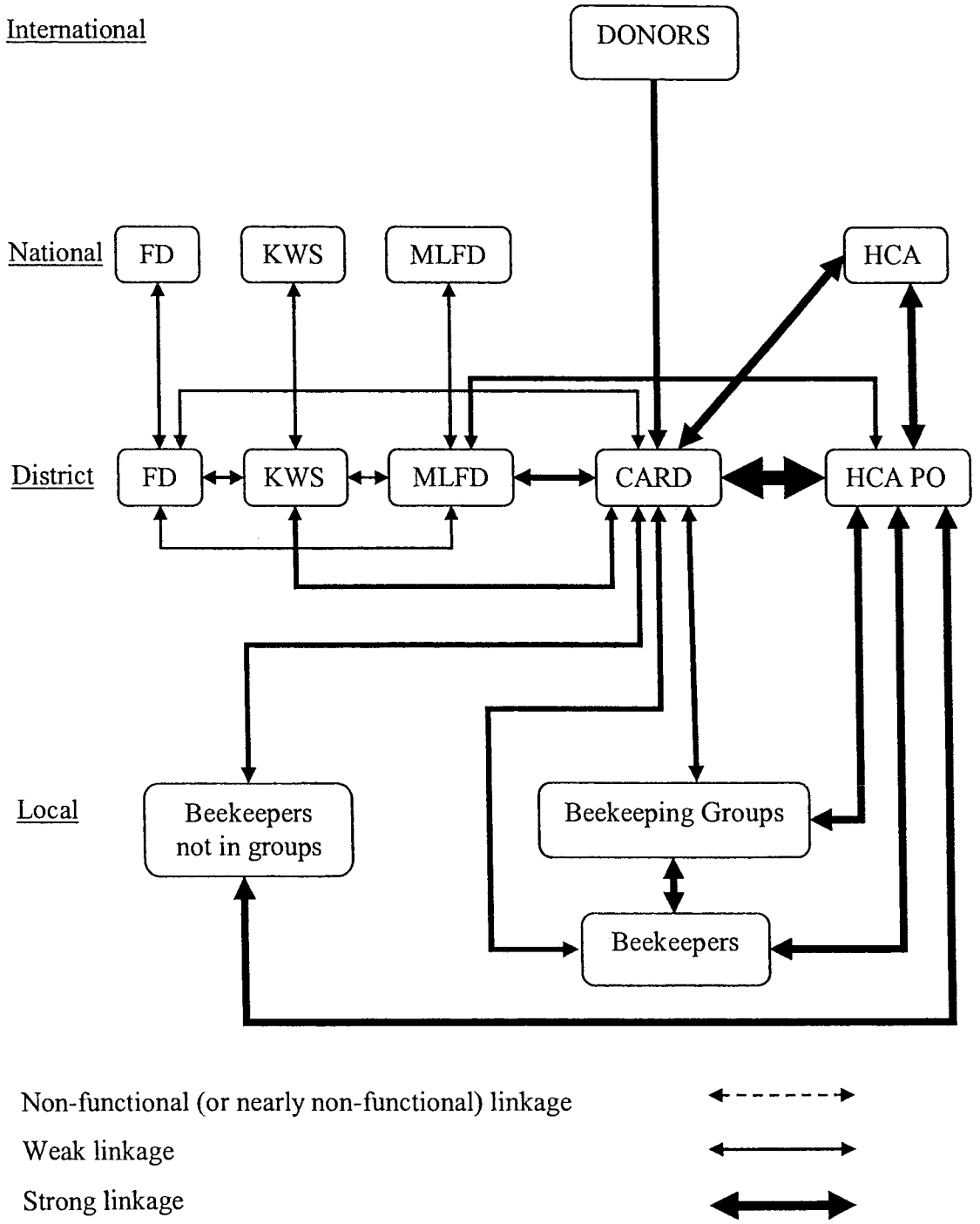

Figure 4: Cross-Scale interactions of stakeholders in Kakamega HCA project. FD: Forest Department; KWS: Kenya Wildlife Service; MLFD: Ministry of Livestock and Fisheries Development; HCA: Honey Care Africa; HCA PO: Project Officer; CARD: Community Action for Rural Development (community-based organization). Source: Maurice (2004)

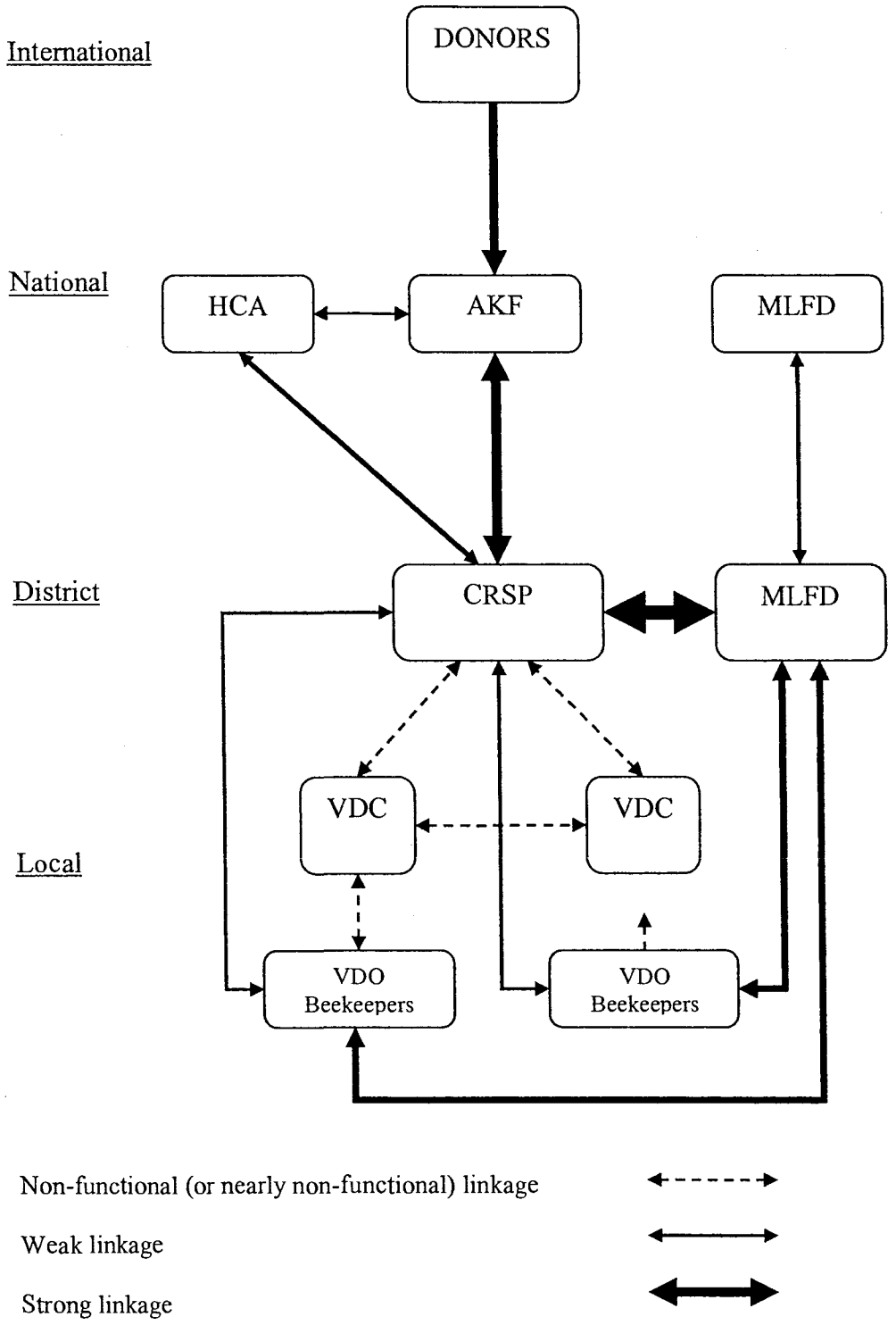

Figure 5: Cross-Scale interactions of stakeholders in Kwale HCA project. HCA: Honey Care Africa; AKF: Aga Kan Foundation (National NGO); MLFD: Ministry of Livestock and Fisheries Development; CRSP: Coastal Rural Support Program of AKF; VDC: Village Development Committee; VDO: Village Development Organization. Source: S. Maurice (2004)

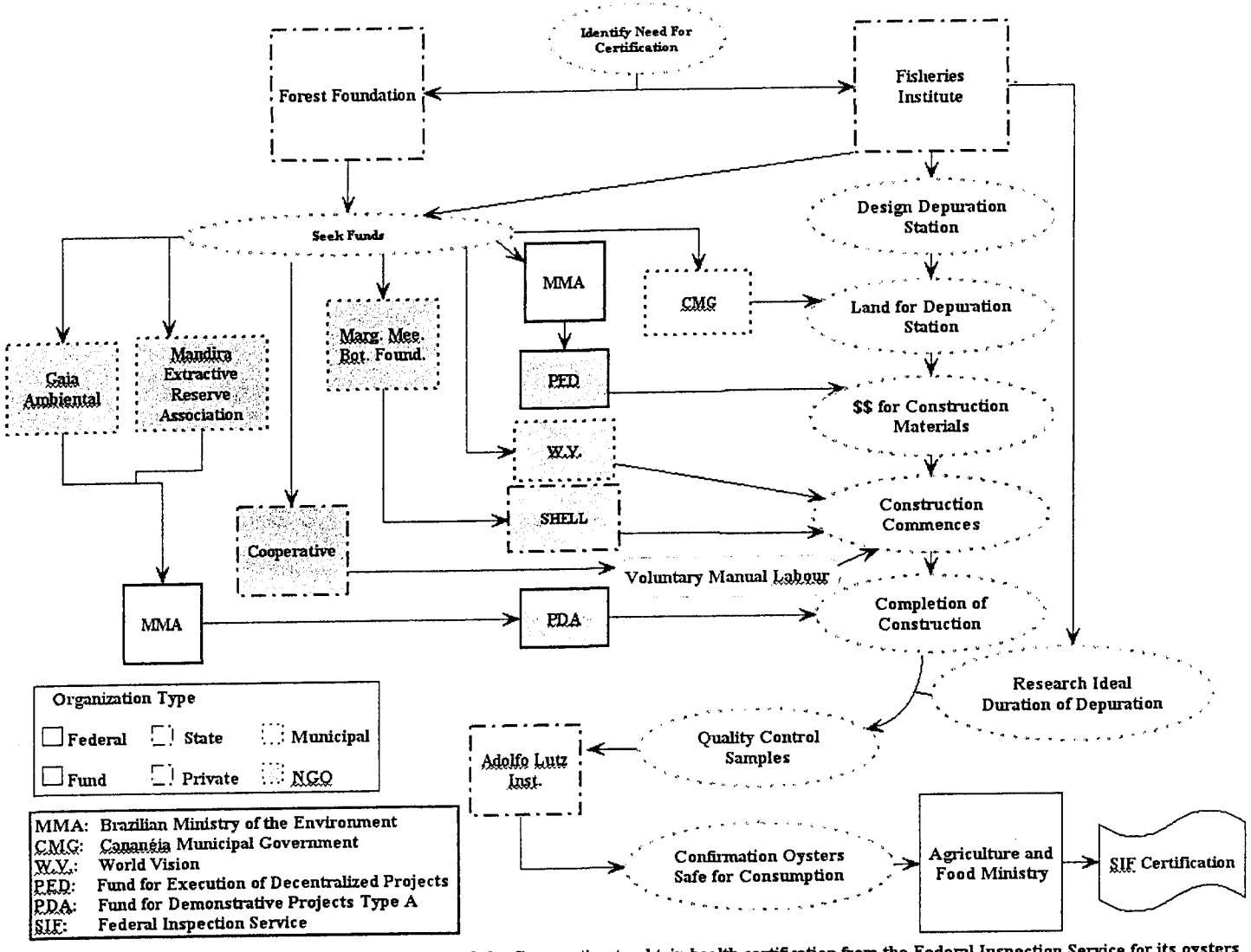

Figure 6. Organizational cross-scale linkages which enabled the Cooperative to obtain health certification from the Federal Inspection Service for its oysters (Source: Medeiros 2004).

Table 1: External leaders and their roles, affiliation and connections in the Brazilian case. Source: D. Medeiros.

	PHASE				
Phase	I	II	III	IV	V
External Leader	Leader I (1990-1996)		Leader II (1995-1999)	Leader IV (2000-mid2004)	Leader V (mid2004 – present)
			Leader III (1995 - present)		
Organization Affiliation	State University Research Institute	State Forest Foundation	State Forest Foundation	State Forest Foundation	State Forest Foundation
			State Fisheries Institute		
Role	grad student: research socio-ecological viability of extractive reserve	government researcher: start attempt to implement the extractive reserve	government researchers: contact all oyster harvesters, initiate cooperative	government researchers: capacity development of oyster harvesters, establish extractive reserve	government researchers: assist Cooperative secure a market
Connections	Environmental Ministry, State Secretariat of the Environment [which encompasses State Forest Foundation]	State University Research Institute, State Fisheries Institute, Community-Based Organization, Leader II and III,	State University Research Institute, State Health Organization, Municipal Government, Local NGO, Local Religious Organization, Leader IV	National and International Funding, State University Research Institute, State Health Organization, Local NGO, Education Agent, Economic Planning Agent, Market Development Agent, Leader V	National Funding, State Health Organization, Market Development Agent

Table 2: Role of key individuals: Honey Care Africa Project Officer, Kakamega, Kenya. Source: S. Maurice.

	Phase I (2000 - 2002)	Phase II (2002 – 2003)	Phase III (2003 – Present)
Organization Affiliation	CARD	CARD IBG	HCA CARD IBG
Role in Organization	Individual Beekeeper	CARD Beekeeping Officer; IBG Chairperson	HCA Project Officer; IBG Chairperson
Connections - Contacts		Beekeepers (Village level); MLFD Divisional Officer	Beekeepers (District level); MLFD Divisional Officer, MLFD District Officer

HCA: Honey Care
CARD: Community Action for Rural Development (Community-based organization)
IBG: Ivihiga Beehive Group
MLFD: Ministry of Livestock and Fisheries Development.

Table 3: Cross-scale representation of stakeholders in Kakamega HCA project, Kenya.
Source: S. Maurice.

	Local	Division	District	Province	National	International
Honey Care					X	
HCA PO			X			
CARD			X			
Local Groups	X					
Forest Dept					X	
KWS					X	
Livestock/Agr					X	

HCA PO: Honey Care Project Officer
CARD: Community Action for Rural Development (Community-based organization)
KWS: Kenya Wildlife Services
MLFD: Ministry of Livestock and Fisheries Development.

X Level at which institution is based
Level at which institution is active in relation to the HCA project
Level at which institution is not active in relation to the HCA project

Table 4: Cross-scale representation of stakeholders in Kwale HCA project, Kenya.
Source: S. Maurice.

	Local	Division	District	Province	National	International
Honey Care					X	
CRSP			X			
AKF					X	
VDC	X					
VDO	X					
MLFD					X	

AKF: Aga Khan Foundation (National NGO)
CRSP: Coastal Rural Support Program of AKF
VDC: Village Development Committee
VDO: Village Development Organization
MLFD: Ministry of Livestock and Fisheries Development

X Level at which institution is based
Level at which institution is active in relation to the HCA project
Level at which institution is not active in relation to the HCA project

Development and conservation: indigenous businesses and the UNDP Equator Initiative

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Abstract: Does indigenous entrepreneurship have distinctive features? We explored resources used, benefits produced and nature of partnerships in 42 indigenous cases in the UNDP Equator Initiative database, mainly involving forestry, agro-forestry, agriculture, NTFPs, ecotourism and protected areas. The cases showed a strong focus on social enterprise and cultural values, and politics of resource access. Many indigenous groups sought control over their traditional lands as essential to rebuilding their societies, and indigenous entrepreneurship was often used as a tool towards self-governance. The cases were characterised by extensive networks, with a large number of partners at the same level of social and political organisation (horizontal linkages). Vertical linkages typically involved three or four levels of political organisation. These connections went far beyond business networking and included, for example, environmental knowledge building. Partnerships for training and institution building often involved NGOs or local-level government agencies or both, but rarely (N=2) non-indigenous joint ventures.

Keywords: indigenous businesses; entrepreneurship; conservation and development; community-based management; self-determination; social enterprise; cultural values; traditional knowledge; networks.

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1 Introduction

Indigenous groups in many parts of the world are characterised by low income levels, high unemployment rates and economic marginalisation in general. Many indigenous and tribal groups live in geographically remote areas and tend to be socially and politically marginalised as well. Various kinds of marginalisation experienced by indigenous people are often rooted in conflicts over land tenure. Many see resource access and self-determination as essential steps towards rebuilding indigenous societies and improving their socio-economic status on their own terms. Entrepreneurial activity is considered a major element to achieve these objectives (Anderson, 1997).

Does indigenous entrepreneurship have distinctive features? One of the ways in which many indigenous groups are distinguishable from other rural groups is their attachment to their ancestral lands and natural resources. This feature is recognised by some (but not all) definitions of indigenous or aboriginal peoples (Anderson et al., 2005), and is a key to understanding the process of marginalisation of indigenous peoples, especially those who have lost access to their lands. As Anderson et al. (2005) point out

> "claims to their traditional lands and the right to use the resources of these lands are central to their drive to nationhood. Land is important in two respects. First, traditional lands are the 'place' of the nation and are inseparable from the people, their culture, and their identity as a nation. Second, land and resources are the foundation upon which indigenous people intend to rebuild the economies of their nations and so improve the socio-economic circumstance of their people – individuals, families, communities and nations (Anderson et al., 2005)".

Mapping programmes for traditional lands in regions as diverse as Central America (Chapin, 1998) and Indonesia (Alcorn, 2000) may be seen in this light. In both of these examples, involving the Kuna of Panama (see Dana and Anderson, 2007) and the Dayak of Borneo, respectively, political empowerment is seen as the essential first step towards social and economic development.

The 'special relationship' with the land, and access to and use of the resources of the land, should perhaps be considered a defining feature of indigenous entrepreneurship, as opposed to ethnic entrepreneurship in general (Dana and Anderson, 2007). Hence, indigenous entrepreneurship that specifically involves local land and resources is a potentially productive area of inquiry in developing a science of indigenous entrepreneurship. Some relevant literature already exists, suggesting that the alleged special relationship of indigenous peoples to their land is reflected in environmentally appropriate productive processes.

A well-known case involves the Menominee of Wisconsin and their forest-based enterprises (Huff and Pecore, 1995; Trosper, 1995). Other relevant work comes from Mexico. Castillo and Toledo (2001) point out that Mexico is (or was) world's leading exporter of shade-grown coffee, the bulk of which was produced by smallholders from some 28 indigenous groups. These people grew coffee, not in monoculture plantations but in multilayered and shaded coffee agro-forests that have been shown to harbour significantly higher levels of animal and plant diversity than do conventional plantations (Moguel and Toledo, 1999).

Case studies such as the above are important for understanding how indigenous entrepreneurship works, but they rarely provide data for more than a handful of examples at a time. As Schaper (see Dana and Anderson, 2007) points out, there is a paucity of data on indigenous enterprises. The Equator Initiative (EI) of the United Nations Development Programme (UNDP) provides one rich data set on indigenous entrepreneurship involving local land and resources. The EI programme has a searchable database (partially developed at the time of writing) involving several hundred Integrated Conservation and Development (ICDP) initiatives (e.g. Brown, 2002) nominated for the Equator Prize. Some 13% of the initiatives in the database are explicitly identified as indigenous cases, but the actual percentage may be higher.

This paper examines The EI database to elucidate lessons relevant to indigenous entrepreneurship. First, we explore the kinds and diversity of land and resource-based entrepreneurship activities initiated by these cases, with special attention to forestry, agro-forestry and agriculture. Second, we explore the range of benefits produced by these activities for the communities involved, with emphasis on poverty reduction, empowerment and sustainable use of biodiversity. We discuss community-based development and the significance of indigenous environmental knowledge in such development. Finally, we examine the partnerships in these cases, with attention to the kind and nature of linkages.

2 The EI and methods of study

The EI is designed to reduce poverty through the conservation and sustainable use of biodiversity in the equatorial belt by fostering, supporting and strengthening community partnerships (EI, 2004). It is a partnership that brings together the UNDP and a number of international and national agencies concerned with conservation and development. It involves a diversity of civil society, business and local groups to help build capacity and raise the profile of grassroots efforts that promote sustainable communities in developing countries.

At the heart of the EI programme is the observation that the world's greatest concentration of biodiversity is found in the tropics, mainly in countries with rural areas of acute poverty. Livelihood needs of these people create a threat for biodiversity conservation. However, many experiments are underway, using local land and resources to create economic opportunities while conserving biodiversity. The EI strives to identify these experiments and reward them. The Equator Prize is the main mechanism by which the successful integration of conservation and development is rewarded. It has been awarded twice so far, in 2002 and 2004, from hundreds of nominations from various countries.

There are 817 EI cases from the Equator Prize competitions of 2002 and 2004. But so far only 400 nominations from 2004 are listed in the UNDP EI database, and only 315 cases are actually available in the database at the time of writing. Forty-two of these are categorised in the database as indigenous cases, covering three major regions of the world (Table 1). This paper uses information from these 42 cases, with emphasis on 12 of these, 3 from the Asia & Pacific region, 3 from Africa and 6 from Latin America and the Caribbean (Table 2). Of these 12 examples, we have detailed case information on two: Guyana (Fernandes, 2004; Berkes et al., 2004) and Mexico (Orozco, in prep.). The availability of field data on these two cases allows a cross-checking of the EI database. Tables 3 and 4 summarise the cases by geographic scale (local, state/provincial, national and regional/international), for the full set of cases ($N = 315$) and the indigenous cases ($N = 42$), respectively.

Table 1 Total cases and indigenous cases by region

Region	*Total number of cases*	*Indigenous cases*
Asia & Pacific	56	9
Africa	113	5
Latin America & Caribbean	146	28
Total	315	42

Table 2 Profiles of selected cases from the Equator Prize 2004 nominations

Case	*Area*	*Description of case and resources*
Ngata Toro Community	Ngata Toro Village, Indonesia	Sustainable harvesting and production of NTFPs, low external impact agriculture, fish farming and ecotourism
Association de Trabajadores Autonomous San Rafael-Tres Cruces-Yurac Rumi (ASARATY)	Indigenous and Campesino Communities, in Andes, Ecuador	Raising Alpacas and creating value-added products through producing textiles and related products from Alpaca wool. Ecotourism activities, including viewing herds of Alpacas in the páramos; creating markets for textile products
Capitania del Altoy Bajo Izozog (CABI)	Izoceño-Guaraní people, along the banks of Parapeti River, Bolivia	Achieving recognition of land ownership for indigenous people in Bolivia. Creating of a protected area coadministered with the national government to halt the rapidly expanding agro-industrial frontier
Conservation Melanesia	Maisin people, Oro province, Papua New Guinea	Battle against a fraudulent land deal involving logging and oil palm plans, and return of the Maisin lands to Indigenous Maisin peoples
Comunidad Indigena de Nuevo San Juan Parangaricutiro	Purepecha people, Mexico	Forest land in a biodiversity-rich region with a multifaceted social enterprise based on sustainable forestry and forest products (furniture and resins), ecotourism, agro-forestry and wildlife management

Table 2 Profiles of selected cases from the Equator Prize 2004 nominations (continued)

Case	*Area*	*Description of case and resources*
Improving Hillside Agriculture	Sehn-wowo village, Northwest Province of Cameroon	Integrated sustainable hillside farming, biodiversity conservation and watershed protection (ecological services); encouraging the establishment of permanent agriculture through erosion control and the soil building
Ekuri Initiative	The Ekuri indigenous people of southeast Nigeria	Community forest for the harvest of timber, wild vegetables, Non-Timber Forest Products (NTFPs) such as rattan and other products used communally
Garifuna Emergency Committee of Honduras	Afro-Indigenous Garifuna people, Guaymoreto Lagoon Reserve, Honduras	Recovery from Hurricane Mitch; protection of the ancestral lands and culture from encroaching development; reduction of poverty and malnutrition through improved cultivation practices; reforestation of riverbanks and coastal areas
Mgori Village Forest Reserve	Eastern Rift Valley, Tanzania	Joint village demarcation, protection and coordination of a forest reserve for sustainable natural resource management
Community Enterprise Forum – India (CEFI)	Four talukas (counties), Tamil Nadu, India	Mostly women growing and selling organic and ethnic food and herbal medicines, using bioenergy, setting up revolving funds
AIR project	Chimaltenango, central Guatemala	Fostering the building and maintaining of tree nurseries for reforestation and community-based sustainable farming; providing economic incentives to stem slash and burn practices and to stimulate forest regrowth
The North Rupununi District Development Board (NRDDB)	Isolated and inaccessible North Rupununi Region, Guyana	Demonstration site for sustainable development. NRDDB, peoples' forum, helps communities with income-generating activities (ecotourism, fishing) that simultaneously meet conservation objectives

Table 3 Cases according to geographical scale: the full set of EI cases

Focus by scale	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Local focus	37	80	107	224
State/province focus	13	13	4	30
National focus	4	15	7	26
Regional focus	2	5	28	35
Total cases	56	113	146	315

Table 4 Cases according to geographical scale: indigenous cases

Focus by scale	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Local focus	7	5	18	29
State/province focus	2	0	2	4
National focus	0	0	0	0
Regional focus	0	0	8	8
Total cases	9	5	28	42

The EI database is organised by category. This paper uses five categories of the database, each of which includes information related to business organisation and income-generating activities. These five categories are: Productive Sector, Poverty Reduction, Community Focus, Biodiversity and Millennium Development Goals. The database also includes two other categories (Ecosystem and Ecosystem Services) that are not included in this analysis because they are not pertinent to business organisation and income-generating activities. Table 5 lists the indigenous cases by subcategory within the Productive Sector category in the database. Table 6 lists indigenous cases according to Poverty Reduction subcategories, Table 7 according to Community Focus subcategories, Table 8 according to Biodiversity subcategories, Table 9 according to Millennium Development Goals subcategories and Table 10 on partnerships and linkages, is generated out of case descriptions in the database.

Table 5 Indigenous cases according to subcategories within the Productive Sector category

Subcategories	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Forestry/agro-forestry	3	3	11	17
Agriculture	4	4	7	15
NTFPs	4	3	7	14
Ecotourism	2	3	7	12
Protected area management	3	2	7	12
Ecosystem restoration	2	3	3	8
Arts and crafts (artisanry)	4	1	3	8
Medicinal plants	2	0	5	7
Livestock	2	1	3	6
Apiculture	0	2	1	3
Aquaculture	2	0	0	2
Ecosystem services	0	1	1	2
Wildlife management	0	1	1	2
Fisheries	0	0	1	1

Table 6 Indigenous cases according to subcategories within the Poverty Reduction category

Subcategories	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Income generation	7	4	18	29
Food security	4	4	11	19
Social political security	4	0	7	11
Health improvement	2	2	6	10
Reducing vulnerability to natural disaster	1	2	2	5
Access to water	0	0	1	1

Table 7 Indigenous cases according to subcategories within the Community Focus category

Subcategories	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Indigenous	5	4	22	31
Socio-economically marginalised sector	7	4	14	25
Women	3	0	3	6
Youth	0	0	1	1
Children	0	0	0	0

Table 8 Indigenous cases according to subcategories within the Biodiversity category

Subcategories	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Conservation/protection	6	5	10	21
Sustainable use	3	2	10	15
Rehabilitation/regeneration	2	4	5	11

Table 9 Indigenous cases according to subcategories within the Millennium Development Goals*

Subcategories	*Asia & Pacific*	*Africa*	*Latin America & Caribbean*	*Total cases*
Ensure environmental sustainability	8	5	22	35
Eradicate extreme poverty and hunger	8	5	20	33
Promote gender equality & empower women	3	0	1	4

*EI is relevant to three of the eight UN Millennium Development Goals.

Table 10 Linkages and partnerships, number and kinds of cases. Total $N = 42$

Cases involving	*N*
Number of partnerships	
One to three	12
Four or more	20
Unclear/unstated	10
Linkages involving	
Local NGOs	12
National NGOs	10
Local governments (includes local educational/research organisations)	14
Regional/state governments	4
National governments	9
Financial institutions (including local/national foundations)	6
International organisations (including donor agencies)	21
Kinds of partnerships	
Business networking	33
Fund-raising	21
Training/research	18
Technical support	13
Institution building	15
Legal support	2
Innovation and knowledge transfer	24
Gender empowerment & equity	27
Unclear	17
Joint ventures[a]	4

[a]We defined joint ventures according to explicit profit-sharing provisions with other groups in case descriptions. According to this criterion, two EI cases are joint ventures with non-indigenous partners (Mesoamerican Ecotourism Alliance; the Comunidad Nativa Infierno project) and two are joint ventures with indigenous partners (CEFI; Camp Ya Kanzi).

3 Kinds of resources used: description

This section describes some of the indigenous cases in three subcategories in the Productive Sector category as outlined in Table 5. These are Forestry and agro-forestry, Agriculture and Medicinal plants subcategories. They provide a sense of the kinds of resources on which EI cases are based. The cases mentioned in the descriptions are summarised in Table 2.

3.1 Forestry and agro-forestry

The Ekuri Initiative (Nigeria) involves a community forest project begun in 1992 to harvest timber, edible wild plants used as vegetables, rattan and other products from a community forest. The Ekuri people are a small indigenous group occupying five

villages and controlling nearly 10% of the Reserve Forest outside of the National Park. Two of the villages jointly control 33,600 ha of tropical forest on their communal land, probably the largest community-managed forest remaining in Nigeria. Logging concessions (for outsiders) have been stopped, thereby eliminating middlemen, and the communities manage the forest for low-impact harvest and sale of timber and NTFPs. Eliminating timber extraction and replacing it with small-scale use of a variety of products and services from the forest ecosystem is a common theme in many other EI cases, including Comunidad Indigena de Nuevo San Juan Parangaricutiro (Mexico) and Mgori Village Forest Reserve (Tanzania). For example, the Mgori forest is not managed exclusively for timber but for the rich diversity of wild resources that it holds, wood for charcoal, timber, firewood, habitat for beekeeping and NTFPs such as medicinal plants and edible mushrooms.

Some of the cases have been able to use local resources while rehabilitating the forest environment as a whole. For example, the Garifuna Emergency Committee of Honduras, in one of their projects, conserves and utilises a wild vine used to make household and artisanal items. Enhancing the resource base of the vine helps protect riverbank vegetation, providing bank stabilisation in an erosion-prone and hurricane damaged area. Other projects undertaken by the Committee include reforesting the beaches with the wild fruit plants which used to be abundant (sea grapes, almonds, camacamas, nance, cashews and jicacos that stabilise the sands); establishing hardwood tree nurseries; protecting the reserve forest from illegal exploitation of mangrove (for charcoal), sand extraction and dumping of waste. Systematically protecting the vegetation and rehabilitating the forest cover has hydrological benefits as well as in protecting water resources.

Some of the projects have demonstrated region-wide effects, scaling-up from local successes. Conservation Melanesia (Papua New Guinea) supports nearly 3000 people living in nine villages and covering 370,000 ha of land. They are involved in the production and sale of tapa, a traditional cloth made from tree bark and processed with natural dyes from berries. The AIR Project works with rural communities of central Guatemala and northern Nicaragua. It fosters the building and maintaining of tree nurseries for reforestation, and community-based sustainable farming. The project demonstrates the use of economic incentives to stem forest degradation and to stimulate forest regrowth and recovery, and provides an outreach programme that has brought its lessons to 48 villages and 166 schools, reaching over 30,000 rural residents.

3.2 Agriculture

Many agriculture and agriculture-related projects among EI cases are integrative in nature. That is, projects seem to target not only agriculture but a range of productive activities including agro-forestry and agriculture, as well as supportive activities such as ecosystem rehabilitation and cultural revitalisation. A case in point is the Garifuna Emergency Committee of Honduras. The initiative began in 1998 to support recovery from Hurricane Mitch and grew from the ideas and needs of resident farmers. It works with the residents of 16 towns to protect the ancestral lands and culture of the Afro-Indigenous Garifuna. It seeks to reduce poverty and malnutrition through improved cultivation practices and a diversified agricultural base. It supports traditional root crops

such as taro, red grow yams, arrowroot and sweet potato; introduces disease-resistant varieties of coconuts; trains farmers in organic composting and use of organic pesticides and provides tools to lend from the communal tool bank.

The Improving Hillside Agriculture initiative carries out integrated agriculture and biodiversity conservation projects in village communities of the Northwest Province of Cameroon. It is a sustainable hillside farming and watershed protection project to encourage the cessation of slash and burn practices and the establishment of permanent, sustainable agriculture through erosion control and the building of soil health. The project uses farmer-centred participatory approaches in training. It engages in practical field demonstrations, followed by training of village-based technicians. The project is said to have resulted in the control of soil degradation and erosion; income from crops and livestock has increased and women have been empowered, as they are the main farmers and beneficiaries.

Many EI projects combine agriculture and animal husbandry. The Ngata Toro Community project (Indonesia) helps an indigenous community use their traditional lands and indigenous knowledge to manage their natural resources. The people are involved in integrated production, using low-impact methods for agriculture, fish farming and pig and duck raising. These activities have diversified the resource base for livelihoods and augmented incomes. In Ecuador, ASARATY encourages the raising of the alpaca, an indigenous animal of the Andes. The use of alpaca manure has increased soil fertility and improved soil structure, thus reducing fertiliser costs. Potato production has increased from 8 to 14 tonnes per ha.

4 Kinds of resources used: analysis

Many EI cases include more than one resource type and opportunistically combine different kinds of productive activities. Here, we pay special attention to forestry/ agro-forestry ($N = 17$ cases) and agriculture ($N = 15$). But the categories of NTFPs ($N = 14$), ecotourism ($N = 12$), protected area management ($N = 12$), ecosystem restoration ($N = 8$), arts and crafts ($N = 8$), medicinal plants ($N = 7$) and animal culture ($N = 11$ combining livestock, apiculture and aquaculture) are clearly also important. The categories in Table 5 depend to some extent on how productive activities are classified; for example, agro-forestry, NTFPs and medicinal plants are overlapping categories. The total number of cases in Table 5 (109) reflects the fact that many initiatives fit more than one category.

Two related features of land- and resource-based activities stand out: the integrated nature of productive activities and their sheer diversity. Many of the projects innovatively seek to combine different ways of making a living from a variety of products and services. For example, forests are managed for multiple products and purposes and not just for timber; agricultural lands support a diversity of crops and not monocultures. This approach is not only more environmentally sustainable than the alternative (Brown, 2002; Castillo and Toledo, 2001) but also reflects on the nature of enterprises in EI cases.

There are a large variety of community-oriented indigenous business enterprises – cultivation of medicinal plants, organic farming, ecotourism, fish farming and small enterprises organised in and around homes and communities, involving activities such as handicrafts made from bamboo, palms and rattan. This diversity

indicates the pluralistic nature of business management approaches and tools used in these indigenous cases. They are close to community needs and cultural norms, perhaps closer than one might expect to find in larger-scale, non-indigenous businesses.

Many indigenous entrepreneurial cases include sporadic income-generating projects such as small-scale cultivation of cash crops, harvesting NTFPs, undertaking small weaving and craft making ventures at the micro-scale. Many of these activities are those in which indigenous people may be said to have comparative advantage. Schaper (see Dana and Anderson, 2007) has pointed out the importance of activities in which indigenous peoples have a form of comparative advantage related to their skills and backgrounds. For example, there are some areas of business in which Torres Strait islanders have achieved success: tourism, pastoral industries (stock herding, horse handling) and the arts and crafts sector. In each of these areas, these aboriginal Australians have a unique product or service to offer, related to their skills – skills not easily obtained by non-indigenous people (see Dana and Anderson, 2007). Likewise, the list of productive activities in Table 5 represents areas in which indigenous peoples have comparative advantage because of their skills (e.g. traditional agro-forestry) or background (e.g. arts and crafts), and because of the relevance of their environmental knowledge (e.g. NTFPs, ecological restoration and ecotourism).

5 Community benefits: description

The EI database addresses community benefits under a number of headings. These include Poverty Reduction (Table 6); marginalisation and empowerment within the Community Focus field (Table 7), and environmental sustainability within the Biodiversity field (Table 8). Table 9 presents a breakdown of cases according to the different Millennium Development Goal subcategories used by the EI (ensuring environmental sustainability, eradicating extreme poverty and hunger and promoting gender equality and empowerment of women). In this section, we begin by providing some descriptions of EI cases falling under the first three of these headings. Then we analyse community benefits with special attention to:

1 entrepreneurship and cultural values and

2 indigenous knowledge and community-based development.

5.1 Poverty reduction

Income generation and the creation of employment opportunities are well documented in the EI cases. Some of the initiatives reach a large number of people. For example, the CEFI, a consortium of about 80 community-based organisations, generates income through cooperative marketing ventures, revolving funds and the establishment of specialised companies. About 1750 families were said to benefit from revolving funds. In 2000, the Gram (Village) Mooligai (Herbs) Company Limited (GMCL) was created by the community organisations as shareholders and owners to trade in medicinal plants.

The Comunidad Indigena de Nuevo San Juan Parangaricutiro project controls 11,000 ha of forest land in a biodiversity-rich region under collective ownership. The project has set up a multifaceted social enterprise based on sustainable forestry and transformation of forest products; ecotourism; agro-forestry and wildlife management.

Of the 1300 community members and communal landowners, 800 are directly employed by the community-run enterprises. Community benefits flowing from the project have reduced out-migration, helped meet basic needs, eliminated extreme poverty, upgraded medical services, improved the quality of housing and helped provide residential water, sanitation and electricity.

5.2 Empowerment of women and issue of marginalisation

EI projects address empowerment and marginalisation issues in a variety of ways: by empowering the community as a whole with respect to their resource rights; empowering women by improving incomes in areas in which women dominate; encouraging gender equity so that men would not take over productive activities and enabling women to form their own groups. We provide examples of each.

The project, Mgori Village Forest Reserve, comprises the indigenous peoples of five villages occupying a 40,000 ha area in Tanzania on the eastern Rift Valley. This project was a response to the government's push to gazette forest areas in the 1990s, initiating an agreement between the government and the villagers that led to village demarcation, protection and coordination of a forest reserve for sustainable natural resource management. The community zoned the forest areas into three different areas: one for grazing and collection of firewood; one for beekeeping and one for biodiversity conservation. Villagers were empowered through the devolution of management powers over their resources and instituted a 25-member coordinating board to oversee activities in the 5 villages. The villages entrenched their forest management plans through district bylaws. Women were involved in beekeeping as well as in leading committees responsible for resources conservation.

In Improving Hillside Agriculture project, the Sehn-wowo village women make up 80% of the farmers. This project provides farmer-centred participatory training in which the target group is fully engaged in the identification, analysis and classification of problems, the formulation and application of solutions, as well as monitoring and evaluation of results. The ratio of women to men benefiting from the initiative is 3:1 since women dominate the farming sector. The initiative financially benefits and empowers women, as it enables them to cover the costs of children's school fees and household medical bills.

In the Conservation Melanesia project, proceeds of tapa sales go to a community-wide fund. Making tapa cloth is an age-old Maisin tradition, and this activity reaffirms the community's strong cultural heritage. When tapa making proved to be profitable, men joined the women in the enterprise, threatening women's incomes. This project encouraged gender equity so that the men would not dominate the industry; it made sure that women are included when members travel off the island to sell the cloth.

In ASARATY, community benefits included empowerment through increased self-esteem. The experience of the project opened up space for activity in new areas. Women were been involved at every level of the initiative, and some women formed their own group to manage textile production. Similar women's groups have emerged in the course of other EI projects. For example, the CABI project (Bolivia) facilitates an equitable distribution of benefits across 23 member communities and maintains communal access to natural resources. The project supported the creation of a women's centre that helped generate economic opportunities for women, strengthen indigenous

culture and ensure the sustainable use of the riverine forest. The group has implemented small-scale commercial projects administered by Izoceño women's groups, community stores, weaving, production of fish flour, mesquite flour and honey.

5.3 Sustainable use of biodiversity

Many of the EI projects are based on the idea of sustainable use of biodiversity but others were set up with the purpose of environmental restoration. For example, the Garifuna Emergency Committee of Honduras project has explicit ecological objectives. It involves the protection of forests, riverbanks, beaches and water sources; it teaches soil conservation, organic composting and the benefits of living in harmony with the environment. It has resulted in the planting of trees on both communal and private land. The NRDDB devised a management plan for the threatened species, Arapaima (*Arapaima gigas*), one of the largest freshwater fish in the world and a valuable commercial species. It included a two-year moratorium leading to a near doubling of Arapaima numbers (Fernandes, 2004). The NRDBB also seeks to rehabilitate several other kinds of depleted resources such as palms, valuable hardwoods, fruit and nut trees and natural fishponds, all of them economically important. The project engages in community-based monitoring for Arapaima and other resources.

In other projects, monitoring data are available to show sustainable use of resources over a period of time. Evaluation studies done in the Mgori Village Forest Reserve revealed sustainable use since the reserve was handed over to the villages in 1996. A forest department inventory showed an increase in the number of tree stems per ha from 988 in 1994 to 1012 in 2002. In the Comunidad Indigena de Nuevo San Juan Parangaricutiro project, monitoring carried out jointly with university partners showed that forest cover has increased by 1000 ha over 20 years. Illegal cutting has been eliminated; there are no diseases in the community forest and the frequency of forest fires has been reduced.

In many EI cases, improved livelihoods have helped reduce pressure on resources. For example, in Ngata Toro Community, where many economic activities are based on protecting biodiversity, alternative incomes have helped to reduce or eliminate illegal logging. Species diversity is preserved through the management of plant resources for handicrafts. The use of traditional crop species and varieties protect biodiversity and improve food security; organic produce often fetches a premium at the market and ecotourism brings supplemental income while preserving cultural and natural heritage.

6 Community benefits: analysis

6.1 Entrepreneurship and cultural values

Many of the EI indigenous businesses are social enterprises, often involving family members and relying on the support of extended family networks. The individual profit motive no doubt exists but it seems to be subordinate to meeting community needs and objectives. The social role of many of these enterprises are apparent in terms of providing local employment, making use of talents and resources locally available and sharing profits among community members.

Anderson (2002) and Anderson et al. (2003) have hypothesised that one common characteristic of indigenous enterprises may be the maintenance of cultural values while providing participation in the modern economy. These values may include the use of traditional social values in the business, a community emphasis, consensus decision-making and a focus on sharing and cooperation, instead of competition. It is well known that indigenous societies have their own economic logic that may be different from the Western one (Cavalcanti, 2002). There appears to be a strong cultural component to many of the study cases. However, the extent to which indigenous EI cases exhibit unique cultural characteristics is difficult to establish without carrying out work in the field. For example, the NRDDB case indicates that the social value of Arapaima fish (reflected through local myths and stories) was instrumental in the conservation action taken by the local indigenous communities (Fernandes, 2004). However, since the Arapaima stock has not yet recovered and there are no enterprises (yet) based on it, it is difficult to evaluate the use of some of these other cultural values.

The Menominee forest enterprise example (not an EI case) indicates that traditional values may indeed be crucially important. The Menominee started their forestry operations under three principles:

1 produce trees with both quality and quantity

2 do not put all the eggs in one basket and

3 remember that we are borrowing the forest from our grandchildren.

The first two principles illustrate community and connectedness. Production of quality requires growing trees to a large size, a practice that compromises quantity of production. The practice is different from the conventional one in that the older trees are not high-graded and harvested all at the same time. All species, and not only the commercial ones, are supported under the principle of keeping the eggs (forest productivity) in different baskets (species). The idea that the forest is borrowed from future generations expresses a lower than conventional discount rate for the future, sometimes called the seventh-generation principle (Trosper, 1995).

Similarly, the EI case of Nuevo San Juan Parangaricutiro is characterised by the use of indigenous holistic values for multiple-purpose forest management, rather than management for timber production alone (Castillo and Toledo, 2001). The Nuevo San Juan Parangaricutiro experiment has been evolving over two decades (Alvarez-Icaza, 1993; Pego, 1995). Multiple-use forest management has come to include objectives of biological conservation, environmental education and ecotourism, as well as forest products, and it is based on a management plan that combines scientific information (through university linkages) and local knowledge (Bocco and Toledo, 1997; Castillo and Toledo, 2001).

6.2 Indigenous knowledge and community-based development

These examples underscore the importance of the use of traditional ecological knowledge in indigenous entrepreneurships that are land- and resource-based. Indigenous communities tend to have substantial knowledge and understanding of the local fauna, flora and ecological processes, knowledge that is accumulated by generations of observation, practice and learning transmitted culturally. It is known, for example, that the ecological knowledge held by local indigenous groups is qualitatively and

quantitatively different from that of colonists in Amazonia (Muchagata and Brown, 2000). In 19 of the 42 EI cases, there is explicit reference to the use of local or traditional knowledge. The importance of indigenous knowledge for development has been recognised for some time (Warren et al., 1995), but its significance for indigenous entrepreneurship has not been investigated systematically.

The health of local knowledge depends on its continuous practice (Ingold, 2000) and its ongoing development through adaptive learning (Berkes, 1999). Indigenous people without a land and resource base are people who are in the process of losing what little comparative advantage they do have. Indigenous business enterprises are more likely to flourish when an indigenous group has control over its resources than not. The innovations of the Menominee forest enterprise and the Nuevo San Juan were possible only because these groups had the political power to manage their forests. Successful indigenous entrepreneurship is contingent on political control of resources and self-determination, and the recovery of access to and use of traditional lands and resources is important for business development.

Among the EI cases, there are clear instances of political empowerment, as well as cases of empowerment of women (CEFI) and youth (Ngata Toro Community). In the Mgori Village Forest Reserve case, for example, the formalisation of village forest management plans through district bylaws enables the villages to retain control over their forest. In this initiative and others, the ability to control resources in turn raises other issues regarding intellectual ownership. The cultivation of medicinal plants and the protection of genetically significant local varieties (land races) have been creating awareness among the communities about their intellectual property rights over these products, and leading them to seek ways of increasing the share of benefits from their use (Posey and Dutfield, 1996).

The symposium book, *Case Studies of Community-Based Forestry Enterprises in the Americas*, emphasises the importance of land tenure issues and political control in each of the seven cases in the volume, one each from the USA and Peru, two from Bolivia and three from Mexico. It shows that the development of forestry enterprises in each case required obtaining control of the resource in question. The community of Nuevo San Juan, one of the cases covered by the volume, obtained its first logging permits in 1979 and established its own forestry enterprise in 1981. But it was not until 1991 that the community was successful in securing legal recognition of their rights to communal land and innovative work began (Pego, 1995).

The Nuevo San Juan case and others help make the point that the issue is not merely entrepreneurship and economic development but rather community-based resource management that includes aspects of political, social as well as economic development. Community-based management and development, as a subject area, complements the study of indigenous entrepreneurship. Recent work has been focusing on bottom-up approaches and the sharing of rights and responsibilities at multiple levels of management (Berkes, 2004). Community-based approaches have come to predominate in a number of regions of the world. With some 70% of forests under the control of mestizo (mixed-blood) and indigenous communities, Mexico is said to be the largest experiment in community-based resource management in the world (Bray, 1995). Thousands of community-based forest management experiments are underway in India as well, although only a small percentage of these would involve tribal/indigenous groups.

6.3 Linkages and partnerships: description

Many EI cases show multiple linkages and partnerships. Of the 42 indigenous cases, 12 have one to three and 20 have four or more partners (Table 10). These partners are varied and they include local and national NGOs (22), various levels of government and governmental agencies (27), local and national financial institutions (6) and international organisations, including NGOs and donor agencies (21) (Table 10).

In some projects, the partnership structure is functionally simple, as in the case of Conservation Melanesia project. The partnership is between Conservation Melanesia and the Maisin people. CEFI project is formed through a partnership of four state-level NGOs: CCD (Tamil Nadu), IDPMS (Karnataka), SSP (Maharashtra) and Ekta Parishad (Madhya Pradesh) that facilitated community-based organisations in their respective states. In the Mgori Village Forest Reserve case, Mgori community's main partner is the district government that provides technical support and promulgates by-laws and action plans. The central government provides policy and legal support, and SIDA, the Swedish aid agency, provides financial support and training. In the Improving Hillside Agriculture project, the main partner of Sehn-wowo is HELVETAS, the Swiss aid agency, which is also the main provider of support.

An example of a more complex partnership is provided by ASARATY. The primary support for the initiative comes from the NGO, Fundación Natura. Other partners include an export corporation (Corporación de Promoción de Exportaciones e Inversiones – Corpei) that provides training for the local women's group (Asociación de Mujeres 'Grupo Germen') for textile production, and a local polytechnic that assists with the development of the ecotourism initiative. Additional support comes from other NGOs and private Alpaca herders.

Partnership formation in the Ngata Toro Community project is complex, involving as many as five partners, each specialising in different functions. CARE International Indonesia facilitates self-help community development; the Nature Conservancy provides technical assistance; Yayasan Tanah Meredeka conducts resource mapping; Stability of Rainforest Margins (STORMA) carries out research and Lore Lindu National Park Authority partners in conservation and community development.

Bolivia's CABI project has local/national NGO, international donor and industrial partners: Wildlife Conservation Society (WCS); Servicio Nacional de Areas Protegidas (SERNAP); Gas TransBoliviano (GTB) and the US Agency for International Development (USAID). CABI established the Ivi Iyambae Foundation as its technical arm, and developed the Kaa-Iya Project in conjunction with WCS and USAID-Bolivia for institution building. CABI also directed the design of the agreement signed by indigenous organisations and the sponsors of the Bolivia–Brazil gas pipeline, said to be an innovative framework for equitable participation of indigenous organisations and private companies. In the case of India's CEFI project, sponsors include multiple national and international NGOs and international donors: FRLHT, MSSRF, Ashoka Trust, Ford Foundation, Oxfam, HIVOS, South Indian Producer's Organisation, Small Industries Development Bank of India (SIDBI), State Bank of India (SBI), Regional Rural Bank (RRB) and Women Empowerment Cell of the Tamil Nadu State Government.

7 Partnerships and linkages: analysis

The literature on indigenous entrepreneurship has generated a few hypotheses regarding partnerships and linkages. Anderson (1997) and Anderson et al. (2005) indicate that competitive indigenous businesses are often made possible by alliances and joint ventures among indigenous groups and with non-indigenous partners. Reasons for this include generally lower levels of education and human capital development in indigenous communities. Specific technical skills and general business management skills tend to be lower among indigenous people as compared to the general population (see Dana and Anderson, 2007).

The EI experience provides ample evidence regarding the importance of partnerships. Nominations need to mention partnerships; hence, probably all EI cases have some sort of partnerships, although descriptions in 10 of the 42 cases do not specify them. Many cases have partnerships at multiple levels of political organisation. For example, in the NRDDB case, subject of a case study by Fernandes, there was one key partner, a national NGO (Iwokrama), but there were also three government agency partners and four funding agency partners. The case involved partnerships at four levels: international (funders), national (government agencies), regional (the NRDDB itself) and the local level (communities) (Berkes et al., 2004).

Data on EI projects (33 out of 42 cases) support Foley's (2003) finding that indigenous enterprises had a high degree of emphasis on business networking. However, the cases further indicate the importance of networking for fund-raising (21 cases), training and research (18), technical support (13), institution building (15), innovation and knowledge transfer (24) and gender empowerment and equity (27). The EI database does not support the hypothesis that indigenous businesses are often formed through with joint ventures with non-indigenous enterprises. There were only two examples of such joint ventures in 42 cases, plus two with indigenous enterprises (Table 10).

The EI cases provide solid evidence that there is an important role for development NGOs in indigenous business enterprises. In a forestry enterprise of the Runa of Ecuador (a non-EI project), Irvine (2000) comments that the communities had no commercial forestry expertise, no business experience and no marketing contacts. Development NGOs can fill this gap:

> "They offer technical advice and training. They can link local community projects to a wide network of valuable contacts. They can provide financial backing, especially to buffer the risk of starting new ventures" (Irvine, 2000, p.40).

The data on 42 EI cases indicate that there were 12 local NGOs and 10 national NGOs helping in the establishment or strengthening of business enterprises. The majority of the funding came from development organisations (15 cases) that included multilateral and bilateral donors and international NGOs. But there were also local and national financial institutions and foundations that provided funding.

8 Conclusions

The EI database of biodiversity conservation and poverty reduction cases is particularly well suited to investigate indigenous entrepreneurships that involve local land and resources. The 42 indigenous cases in 2004 EI database reveal a high diversity in the

kinds of businesses developed and resources used. The nature of community benefits strongly suggests that indigenous entrepreneurships tend to focus on social enterprise and local cultural values (Cavalcanti, 2002). Hence, indigenous entrepreneurship efforts involve social as well as economic development, integrating the two through community-based development.

Also an integral part of indigenous entrepreneurship is the question of land tenure, the politics of access to and use of indigenous lands and resources. Many groups seek self-determination and control over their traditional lands as a prerequisite to rebuilding their societies and improving their socio-economic status. Many of the cases illustrate the importance of indigenous control of land (e.g. Nuevo San Juan Parangaricutiro), and the devolution of management rights and responsibilities (e.g. Mgori Village Forest Reserve).

The 'special relationship to the land', a central pillar of indigenous identity, is manifested through local and traditional ecological knowledge. Traditional skills and activities, along with detailed knowledge of the land, provide indigenous entrepreneurs with comparative advantage in certain kinds of activities. For example, Donovan and Puri (2004) point out that throughout Southeast Asia, NTFPs, such as the aromatic resin *gaharu*, have traditionally been collected by tribal people because of their knowledge of the forest and their skill in organising collecting expeditions. Indigenous enterprises may have comparative advantage over non-indigenous ones in dealing with agro-forestry products, medicinal plants, arts and crafts, ecotourism and other areas in which indigenous people have special skills and knowledge. Hence, many successful indigenous businesses may be seen to be a consequence of special relationships to the land.

A major conclusion is the pervasiveness of networks and partnerships, consistent with other recent findings (Mahanty, 2002). Partnerships with groups at the same level of social and political organisation, for example, with communities across a geographic area (horizontal linkages), seem to be the norm rather than the exception. Perhaps even more significant, these linkages typically involve three or four levels of political organisation (vertical linkages). These connections go far beyond the needs of business networking and may include fund-raising networks and environmental knowledge building networks, as in the NRDDB example. Partnerships rarely entail joint ventures with non-indigenous businesses (only two of 42 cases) but instead involve NGOs or local-level government agencies or both.

It is difficult to say if extensive partnerships are typical of indigenous entrepreneurships in general. The EI set of cases is not a random sample of indigenous businesses. It is a handpicked set of presumably successful cases – those nominated for an international prize in poverty reduction through the sustainable use of biodiversity. To the extent that EI cases provide lessons in successful organisation, one may conclude that extensive networks and partnerships increase the chances of success of indigenous businesses.

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Lessons from the Equator Initiative: An Analysis of Partnerships and Cross-Scale Institutional Linkages in Forestry/Agro-Forestry Related Cases

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Chapter 1: Introduction

1. 1 Background to the Research

Conservation and development have been organized and conducted in different forms. Often, the goals of conservation were thought to be conflicting with the goals of development. Traditional, exclusionary approaches to protected areas using "fortress conservation" or "fences and fines" approaches have not met the conservation objectives effectively (Brown, 2002). These approaches distance local resource users, perceiving as drain on the scarce resources of many countries, impoverishing and marginalizing rural communities in poverty (Brown, 2002). The experiences of community-based conservation programs in the 1980s and 1990s have convinced researchers and donor agencies that programs must be based on the active support of local resource users providing appropriate incentives, and institutional support (Mahanty, 2002). The attempts to integrate development with conservation in the community-based approach, putting people at the forefront, has achieved some success through the integrated conservation and development projects of the 1980s, community-based conservation of the 1990s and emerging trends in resource management, wildlife use and extraction more recently. Some critics have pointed out that even these people-oriented approaches to conservation have largely failed to achieve their main goal: the protection of biological diversity (Wilshusen et al., 2002).

Hence, the general trend had been that the results of community-based conservation had been mixed. There are not enough community level successful cases that provide evidence to substantiate the claim that conservation and development efforts could be met simultaneously. Many researchers have cited different reasons for the failure of integrating conservation and development goals and one of them is the impracticality of the approaches used. Others have suggested that conservation and development integration have failed since there are misconceptions about community, participation, empowerment and sustainability (Brown, 2002). Participation and partnerships among different levels of government and community is emerging as a new approach ensuring sustainable management of biodiversity resources and promoting community development and reducing poverty.

Even for corporations (Waddock, 1988) and governments (Wildridge et al., 2004), especially with the modernization agenda and with the forces of globalization, it is no longer effective for organizations to work alone. Within the public, private and voluntary sectors, the need for partnerships working, often cross-sectoral working or working beyond the boundaries is recognized as a vital component of success (Wildridge et al., 2004). Recognizing partnerships as significant vehicle for implementing rural development policy in Britain scalar hierarchy of the state has been influential in structuring the scales and territories of partnerships, and that, despite an apparent devolution of the public face of governance, the state remains crucial in governing the process of governance through partnerships (Edwards et al., 2001). Brown (2002) using two case studies of innovative initiatives in integrated conservation and development

(ICD), a marine protected area in the Caribbean, and extractive reserves in Brazilian Amazonia, concludes that fundamental changes are necessary to institutions and management and decision-making strategies to address these issues and to effectively meet the goals of conservation and development. There are other cases, such as Small-scale fisheries management (Berkes, 2006), India Eco-development Project, Karnataka, which examined the role of relationships and networks between actors in conservation and development intervention (Mahanty, 2002).

Viewed from Amartya Sen's development-as-freedom perspective of poverty, development requires efforts in capability improvement and greater earning power (Sen, 1999). Similarly, Chambers (1995: 173) believes that realities of the poor are local, diverse, often complex and dynamic, and notes the neglected dimensions of deprivation. Chambers (1995: 173) mentions that development should be reversals to enable poor people to analyze and articulate their own needs. This notion resembles Sen's capability framework. Although facing similar challenges, the Equator Initiative cases have developed some innovative partnerships for conservation and poverty reduction. Trends in development and conservation call for partnerships and cross-scale institutional linkages for better outcomes.

1.2 Purpose of the Research

The overall purpose of this research is to examine some successful examples of the types of partners and kinds of partnerships in local level community-based conservation and development, and document institutional and organizational characteristics, and cross-scale linkages in Equator Initiative cases. The research provides evidence on how these linkages have facilitated meeting the objectives of conservation and development initiatives through participation in various forms of economic activities and small-scale business initiatives. This resulted in the examination of vertical and horizontal institutional linkages practiced in these cases that are contributing to conservation and development.

Community-based and collaborative forms of management between government institutions and local communities are becoming a more common form of natural resource management and conservation throughout the world (Berkes et al., 2003). Further research on Equator Initiative cases would add to better understanding of the possibilities of achieving dual objectives of generating sustainable livelihoods while conserving biodiversity. The increased implementation of community-based management programs, however, has not produced these promised successes. Results from community-based management and conservation programs have thus far been mixed at best, with both successes and failures documented (Barrett et al., 2001). Thus, an important area of research is the study of partnerships and institutional linkages that facilitates conservation and development and promotes community-based resource management.

1.3 Research objectives

The overall goals of the study is to analyze the types of partners and kinds of partnerships and institutional linkages in the Equator Initiative cases related to agro-forestry, non-timber forest products and medicinal plants and analyze the importance of these linkages for conservation and development. More specifically, the objectives of this study are:

i) To research the types (local and national NGOs, local and national governments, international organizations and others) of partners in the Equator Initiative cases related to forestry/agro-forestry, medicinal plants, and non-timber forest products.

ii) To identify the kinds of partnerships (business networking, fund raising, training/research, institutional building and others) and cross scale institutional linkages: vertical and horizontal, in the Equator Initiative agro-forestry, non-timber forest products and medicinal plants related cases.

iii) To derive generally applicable lessons from these partnerships and cross-scale institutional linkages in integrating conservation and development that facilitate community based entrepreneurial initiatives and community economic development.

Chapter 2: Introduction to the Equator Initiative Program

The Equator Initiative is designed to reduce poverty through conservation and sustainable use of biodiversity in the equatorial belt by fostering, supporting and strengthening community partnerships (Equator Initiative 2004). It is a partnership that brings together the United Nations Development Programme (UNDP) and a number of international and national agencies concerned with conservation and development. It involves a diversity of civil society, business, and local groups to help build capacity and raise the profile of grassroots efforts that promote sustainable communities in developing countries. At the heart of the Equator Initiative program is the observation that the world's greatest concentration of biodiversity is found in the tropics, mainly in countries with rural areas of acute poverty. Livelihood needs of these people create a threat for biodiversity conservation. However, investigations into Equator Initiative's locally driven work reveal many surprising innovative experiments, using local land and resources to create economic and business opportunities that effectively address poverty while conserving biodiversity (Timmer and Juma, 2005; Berkes and Adhikari, 2006).

Equator Initiative: A partnership for sustainable communities in the tropics

The Equator Initiative is a partnership that brings together the United Nations, civil society, business, governments and local groups that promote sustainable communities in developing countries within the equatorial belt (23.5 degree North and South ofthe Equator)

are actively charting a path towards a more sustainable future, using their biological resources in creative and sustainable ways for food, medicine, shelter and improved livelihoods. The Equator Initiative aims to champion and support community-level development projects that link economic improvement with the conservation and sustainable use of biodiversity.

There are two parts in the Equator Initiative; it recognizes local innovations through the Equator Prizes and supports the dissemination of lessons learned within these local partnerships and creates enabling environments for the scaling up of these local efforts (Timmer and Juma, 2005). The first one, the Equator Prize is the initiative's mechanism for identifying exemplary local community partnerships that work simultaneously towards sustainable income generation and environmental conservation. The Equator Initiative program strives to identify these experiments and reward them. The Equator Prize is the main mechanism by which the successful integration of conservation and development is rewarded. Award processes were organized in 2002, 2004, and it is planned for 2006 with hundreds of nominations received from homegrown local partnerships engaged in efforts to conserve biodiversity while ensuring a sustainable income for their communities (Timmer and Juma, 2005; Berkes and Adhikari, 2006).

The nominations were received from Asia, Africa, Latin America, and the Caribbean and covered a variety of approaches, including but not limited to innovations in restoring traditional natural resource management practices; establishing eco-tourism ventures and eco-lodges; adopt sustainable forestry and fisheries practices; engage in organic agricultural approaches; and harvest and market organic coffee, medicines, fabrics, crafts, cosmetics, and other natural sustainable products (Timmer and Juma, 2005). The

sustainable use of biodiversity forms a central part of these local enterprises; therefore, conservation practices are intertwined in these small business ventures and community projects. These efforts are illustrative of ethno-economics incorporating cultural and ecological diversity in economic thinking (Cavalcanti, 2002), illustrating different pathways to new knowledge area.

In many of the Equator Initiative 2004 prize winning program cases, institutional partnerships between organizations at the same political level across geographical regions (horizontal linkages) or organizations across political levels (vertical linkages as discussed by Berkes, 2002; Berkes, 2006) could be identified (Seixas et al., 2004). Evidently, varying degrees of horizontal and vertical linkages are noticed in these prize-winning cases. Similarly, Berkes and Adhikari (2006), analyzing 42 indigenous entrepreneurship type cases also document evidence of a range of partners and kinds of partnerships.

This report examines the Equator Initiative database to document lessons on types of partners and kinds of partnership and cross-scale institutional linkages. First, I explore the various types of land and resource based community economic and business initiatives with particular focus on forestry/agro-forestry, non-timber forest products and medicinal plants cases. Second, I discuss the types of partners and kinds of partnerships practiced in these cases and the importance of cross-scale institutional linkages. Third, I explore various categories of benefits produced by these initiatives for the communities with particular emphasis on poverty reduction, empowerment of women, children/youth, the marginalized groups, and sustainable use of biodiversity. I examine the community-based development and the importance of traditional ecological knowledge that had been instrumental in promoting community development.

Developing partnership is an essential component of Equator Initiative programs and there is evidence that most cases are required by the program and have built some form of partnerships, linking horizontally across space and vertically across levels of organizations (Berkes, 2006; Berkes, 2002; Young, 2002). Reviewing the cases that illustrate examples of indigenous entrepreneurship in the Equator Initiative database, I found varying degree of complexity at different levels of the organizations. Research on the Equator Initiative cases by other scholars in Asia, Africa, and South America has demonstrated the existence of strong partnerships and cross-scale institutional linkages and the complex nature of this linkage. At the same time, communities themselves are complex systems embedded into more complex systems (Berkes, 2006: 1). Cross-level arrangements, such as co-management provide ways to deal with linkages in complex adaptive systems (Berkes, 2006: 1). These findings are also illustrated by the Equator Initiative cases.

Chapter 3: Methods

3.1 Introduction

This research was carried out primarily as a review of information from the Equator Initiative program of the UNDP and its partner organizations as described above. Hence the primary source of data is the Equator Initiative database. The data generated from this database was classified into the various types of partners and kinds of partnerships. The analysis identifies the differences in the type of partners from Asia/Pacific, Africa and Latin American and Caribbean regions and among local, state, regional, and national level of partners. More specifically the research:

i) Reviewed all available 2004 prize nomination Equator Initiative program cases and narrowed down the search to agro-forestry, non-timber-forest products and medicinal plants related cases.

ii) Identified the various types of partners existing in these cases and programs.

iii) Identified the types of partners as local, district, state or provincial, national and international and sorted them as vertical and horizontal using tables and listing the number of cases that mentioned number of horizontal and vertical cases. This helped identify the dominant types of linkages.

iv) Sorted the partnerships under various kinds such as business networking, institutional building, fund raising, innovation and knowledge transfer, gender empowerment and equity and others.

Partnerships and institutional linkages are at the heart of the Equator Initiative program and have served to highlight examples of case studies illustrating how communities successfully pursue conservation and development simultaneously. The Equator Initiative program has a searchable database (partially developed at the time of writing this report) involving several hundred integrated conservation and development (ICDP) initiatives (e.g., Brown 2002) nominated for the Equator Prize. This technical report examines the Equator Initiative database to elucidate partnerships and institutional linkages existing in the agro-forestry, non-timber forest products and medicinal plants related cases.

First, as a starting point, all cases in these three categories were reviewed and found the geographical distributional pattern. Second, the kinds and diversity of land and resource-based community economic and business development and biodiversity conservation activities, initiated by these cases, were explored with attention on forestry/agro-forestry, non-timber forest products and medicinal plants. The range of benefits provided by these activities for the communities, with particular emphasis on poverty reduction, gender and community empowerment and sustainable use of biodiversity are discussed. Third, the partnerships in these three categories of selected 2004 prize nomination cases were

examined, with particular attention focused on the kinds of partnerships and types of partners and institutional linkages illustrated by these cases. Fourth, community-based development, community economic development, entrepreneurial initiatives, and the use of traditional environmental knowledge were explored and trends noted.

3.2 The Equator Initiative Database and the Data Analysis

There are 817 Equator Initiative cases from the Equator Prize competitions of 2002 and 2004. There were 400 nominations from 2004, out of which only 315 cases were actually available in the UNDP Equator Initiative database at the time of starting the data analysis for this report. In this technical report, I analyzed all available Equator Initiative programs for 2004 database (**Table 1**). These cases have been categorized as national, state/provincial, regional and local (**Table 1**) in terms of the geographical distribution. For the purposes of this research and the technical report, I narrowed down the search to agro-forestry (N=95 cases), non-timber-forest products (N=41) and medicinal plants (N=37) (**Table 2**) in the three regions of Asia & Pacific, Africa and Latin America & Caribbean. Program descriptions in these three categories of cases, with different geographical distribution, are reviewed along with various types of partners. This is then followed by the analysis of kinds of partnerships that helped to illustrate the cross-scale institutional linkages at various levels.

Table 3 lists the distribution of the three categories of cases by scale and region. In all three categories of cases there is greater concentration of local focus: forestry/agro-forestry (N=54 cases), non-timber forest products (N=26) and medicinal plants (N=24). The local scale focus is followed by state/provincial, regional and the national focus. The Equator Initiative database is organized by category. This technical report uses six categories from the database, each of which includes information related to business organization and income generation activities. These six categories are: Nominee Type, Productive Sector, Poverty Reduction, Community Based Organization, Biodiversity Conservation, and Millennium Development Goals. The database also includes two other categories (Ecosystem Type, Ecosystem Services) that are not included in this analysis.

Table 4 lists the productive sector cases by sub-category and region. There are fourteen productive sector sub-categories listed in the database. My focus in this technical report is synthesis of information from only three of the cases: agro-forestry, non-timber forest products and medicinal plants. The other productive sector categories include; agriculture, apiculture, artistry, aquaculture, ecosystem restoration, eco-tourism, fisheries, livestock, payment for eco-system services, protected area management, wildlife management (**Table 4**). In all the three category of cases there is greater number of productive sector categories from Latin America & Caribbean region followed by Africa and Asia respectively.

Tables 5-7 discuss some nominee type sub categories by scale and region such as: community-based organization, indigenous, and non-governmental organization. In all the three tables, there is greater concentration of the program cases at the community level illustrating the importance of community level initiatives for livelihood efforts and

the importance the communities are attaching to the conservation of biodiversity? **Table 5** presents community based organization sub-category and there are more then 50% of the total cases in these three productive sectors: forestry/agro-forestry (N=56 cases), non-timber forest products (N=22) and medicinal plants (N=25). **Table 6** illustrates that there are few cases categorized as indigenous from the three productive sector categories: forestry-agro-forestry (N=17 cases), non-timber forest products (N=14) and medicinal plants (N=6). There would be definitely more cases as indigenous when we read the cases descriptions but the database have identified only these limited numbers as indigenous. **Table 7** presents the number of cases in the non-government sector and there are about 50% for forestry/agro-forestry and non-timber forest products and about one third for the medicinal plants cases. **Table 8** lists case distribution of community focus subcategory by region and types such as children, indigenous, socio-economically marginalized sector, women, and youth. There are fewer programs addressing children's needs, some programs that are initiated by indigenous groups and large number of program cases catering to the socio-economically marginalized sector of the population. There are some programs catering to women and youth needs.

Table 9 discusses poverty reduction sub-category such as food security, access to water, health improvement, income generation, reduced vulnerability to disaster, socio-political security and by different regions. In this sub-category I found that a large number of cases are targeted to income generation in all the three productive sectors: forestry/agro-forestry (N=77 cases), non-timber forest products (N=34) and medicinal plants (N=31). Food security is also strong in most cases: forestry/agro-forestry (N=52 cases), non-timber forest products (N=23) and medicinal plants (N=20). Some programs are geared towards social political security and quite a god number of cases for health improvement: forestry/agro-forestry (N=29 cases), non-timber forest products (N=10) and medicinal plants (N=22). **Table 10** lists cases according to biodiversity subcategory such as sustainable use, conservation/protection and rehabilitation/regeneration types and regional distribution. All the three categories of cases have strong emphasis on the three-biodiversity conservation roles.

Table 11 discusses millennium development goals subcategories such as eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equity and empowering women, reducing child mortality, improving maternal health, combat HIV/AIDS, malaria and other diseases, ensuring environmental sustainability, developing a global partnership for development. All three cases have strong focus on ensuring environmental sustainability: forestry/agro-forestry (N=84 cases), non-timber forest products (N=36) and medicinal plants (N=33). All of them have strong emphasis on eradication of extreme poverty and hunger: forestry/agro-forestry (N=81 cases), non-timber forest products (N=35) and medicinal plants (N=32). With regard to promoting gender equality and empowering women, the numbers generated from the database indicate less emphasis on this subcategory: forestry/agro-forestry (N=11 cases), non-timber forest products (N=8) and medicinal plants (N=7). But the case descriptions illustrate strong emphasis in all the three categories of cases.

Table 12 lists various types of partners and institutional linkages generated out of case descriptions in the database. **Table 13** lists kinds of partnerships generated out of case descriptions in the database. The primary focus of this report is going to be descriptions of the types of partners and kinds of partnerships as illustrated in **Tables 12 and 13**. The cases analyzed for this report are from Asia & Pacific, Africa, and Latin America & the Caribbean region. I have randomly selected some cases for detail description based on diverse range of economic activities, business enterprises, biodiversity conservation initiatives and other community development programs as illustration of the type of material covered.

In this technical report, I have discussed the various types of partners that are represented and described from the cases. These partnership categories represent diverse cross-scale linkages and networks the communities are involved with in the course of managing their livelihood and conservation of biodiversity. The types of partners refer to the various political levels the communities are partnering with **(Table 12)** such as local and national NGOs; community organizations; local, state, regional and national government; international organizations; private sector; universities/research centres; joint forest management arrangements; financial institutions. The kinds of partnerships refer to the various kinds of activities with which the partners are supporting the communities **(Table 13)**. Some of these activities are business networking; fund raising and management; training, education and research; legal support and conflict resolution; institutional capacity building; technical support, advice and assistance; infrastructure building; cooperative business activities among many others. Community and partners involvement in these activities represents both vertical and horizontal linkages.

3.3 Data analysis using Nvivo

I used primarily two types of data analysis. The first source of analysis was the tables generated from the Equator Initiative Database that form most of the tables presented, except Tables 13 and 14. The other source of data analysis was done using the Qualitative Data Analysis software, Nvivo. Coding the data in the software primarily enabled to develop the data on types of partners and kinds presented in Tables 12 and 13. Tables were generated from the database for all the three category of cases: forestry/agro-forestry, medicinal plants and non-timber forest products. The tables refer to different sub-categories of the Equator Initiative program cases and illustrate the patterns and trend in the data type. Majority of cases reviewed indicate that they are local, community-based initiatives with support from different levels of government, NGO, international agencies and financial institutions **(Table 1)**. There are fewer national level cases, some regional and state/provincial level cases **(Table 1)**.

The Nvivo analysis was carried out using the following steps.

i) The information about these three categories of program cases in the database was saved in Rich Text format from the prize nomination evaluation (Nvivo does not accept and read information saved in other forms).

ii) Naming and development of nodes was the starting point for categorization of the data. After reading the texts in the case descriptions carefully, the researcher identified the nodes based on the themes and category of information discussed informed by the grounded theory research. Most of these types and kinds of partnership described in the case descriptions are kept as they appeared in the original text but some of them were derived and named by the researcher depending on the descriptions of the cases. These node types were then further added on and developed as informed by the previous research that the researcher had carried out (Berkes & Adhikari, 2006) and identified from other theoretical literature sources that relate to the partnerships and institutional categories. This was then elaborated and developed to expand the original idea of studying cross-scale linkage that was discussed briefly in the previous study (Berkes & Adhikari, 2006).

Coding data in Nvivo was the starting point for data analysis but I had to go back to coding and recoding with the new nodes identified and with new ideas that emerged in the course of starting this coding function. This process was important since it made it possible to go back and check the numbers that I had generated in the tables using the codes. The coding was carried out separately for all the three categories of cases, agro-forestry, non-timber forest products and medicinal plants.

iii) In the course of coding the data, I read through the material carefully to ensure that the information represented relevant categories, and appropriate conceptual linkages were identified.

iv) After completing the tables I started reviewing them, reading the case descriptions once again and began the process of writing this report. I referred to the summarized figures in this table and compared them across the three different categories of the cases.

Chapter 4: Types of land and resource based community economic and business initiatives: Findings

This section describes some of the economic and business initiative cases in the three Productive Sector subcategories as outlined in **Table 4.** These are forestry/agro-forestry, non-timber forest products, and medicinal plants cases. These case descriptions illustrate the kinds of resources in which the communities covered by the Equator Initiative Programs are based. Some of the cases are the same as those described in Berkes and Adhikari (2006), and I have avoided repeating them but instead included others that are part of the three productive sector subcategories. Some sample cases are outlined in the descriptions.

4.1 Forestry/Agro-forestry

The economic activities and business initiatives described in these cases are widely variable. The Comunidad Indigena de Nuevo San Juan Parangaricutiro (Mexico) is an indigenous people's organization that owns 11000 hectors of Forestland in a biodiversity-rich region with a multi-faceted social enterprise based on sustainable forestry and transformation of forest products (furniture and resins), eco-tourism, agro-forestry, and wildlife management. The community-run enterprises employ 800 out of the 1300 people in the community providing them secure and adequately-paid jobs that has helped reduction in out migration of the population, basic needs of all community members have been met, and extreme forms of poverty has been eliminated. The quality of housing has notably improved and the majority of residents have water, sanitation and electricity. Most of the families can count on medical services. This initiative has already sustained for over 20 years with community forest cover increase of 1100 ha and a diminished rate of forest fire. There has been annual produce of 500,000 forest species seedlings for reforestation activities inside and outside the community and white-tailed deer have been re-introduced and protected.

The forestry and forest products transformation activities have been tremendously successful, economically and the community has continued to diversify its economic activities. Sustainable production under different sectors (such as forestry, tourism) is completely integrated where natural resources within the community are managed by the community to complement each other. The community has received several prizes within Mexico and has achieved a certain level of international recognition (Quintero, 2006).

In the AIR project, rural communities of Chimaltenango, central Guatemala and Northern Nicaragua, foresters build and maintain tree nurseries for reforestation and community based sustainable farming in farmers fields to provide economic incentives to stem slash and burn practices and to stimulate forest re-growth. AIR has brought its lessons to 48 villages and 166 schools, teaching over 30,000 rural residents. Sustainable farming in beans, corn, and vegetables has doubled reducing poverty by both improving crop productivity and providing free organic fertilizers and pesticides. The use of only organic methods has reduced farmers' expenses. Many Village Leadership Committees have

started community micro-businesses such as selling tree seedlings and planting medicinal gardens to produce medicines, soaps, candles and other products.

The Community Enterprise Forum – India (CEFI) operates as a Consortium of 80 community based organizations under the partnership of four NGOs. It involves 3125 entrepreneurs, mostly women. It has improved community well beings by providing opportunities for growing and selling organic and ethnic food and herbal medicines, using bio-energy, setting up revolving funds. Income is generated through the cooperative marketing of the produce from biodynamic farming and ethnic recipes, handicrafts such as palm leaf baskets, terracotta pottery, and herbal medicines. CEFI activities take place in 4 talukas (counties) and involve 3125 entrepreneurs as members of 4 district federations, benefiting 19,182 persons, mostly women. It has succeeded in improving the well being of communities by providing opportunities to grow and sell organic and ethnic food and herbal medicines, using bio-energy, setting up revolving funds, empowering women, and establishing business centers in 4 districts.

The Kakamega Forest Integrated Conservation Project, Kenya, focuses on conservation of the only rainforest in Kenya by promoting non-forest derived income-generating activities for local communities including beekeeping and sericulture technologies, the cultivation of medicinal plants, the sale of energy conservation stoves, and provision of credit facilities. Farmers are cultivating and selling medicinal plants, community members are trained on beekeeping and sericulture. It promotes fuel-wood energy-saving methods and other technologies. Women's groups have increased their income source through this project (Maurice, 2004).

Local Empowerment Foundation, Mindanao, the Philippines project covers two provinces operating among poor farmers, almost 70% of whom grow coconuts. It provides sustainable livelihoods to marginal farmers by recycling of coco coir to produce soft spring beds, the planting of trees in an agro-forestry system, raising of small and large farm animals, and the marketing and sale of value-added products.

Kyantobi Agro-Forestry Community Association, Uganda, is a hilly region of high population density and degraded environment prone to landslides. Villagers began a movement to restore the watershed functions to control floods and their future. The village established community group nurseries growing high value soil retaining tree species for environmental resilience and income. The hill slopes and abandoned land are being replanted with soil controlling tree species and new income generating activities are helping overcome poverty. Every family now has at least two economic activities that are both natural resource and agriculture (market oriented) resource based. Rotational woodlots provide numerous products: wood for fuel and stakes for beans, poles, medicines, timber, and fruit.

4.2 Non-Timber Forest Products

Sexto Sol Center, Sierra Madre region of Chiapas, Mexico, and repatriated refugee communities in Guatemala program supports three programs each with community-based projects located in three geographical regions. Each project furthers income generation, food security, gender equality, and attempts to reverse to the destruction of the forest. It has been helping small-scale coffee farmers to overcome the hardships associated with the international coffee crisis by promoting organic and fair trade certification among those whose coffee can compete on the market, and supporting alternative sustainable livelihood strategies such as macademia nuts, women's weaving cooperatives, and eco-tourism. It operates a demonstration school for sustainable food production and ecological park.

Wildlife and Environmental Society of Malawi (WESM), is a community-based natural resources management project. The NGO formed in five villages to address problems of forest degradation due to charcoal burning and trade in forest products. Today it benefits more than 35 villages with a total population of 40,000 through promoting and helping to implement a number of conservation based enterprises based on indigenous knowledge systems. These include production of juice from baobab and tamarind trees, growing tree fruits, rearing and selling guinea fowl, beekeeping and honey production.

CHIEHA takes place in the Sangwe Communal Lands surrounding the Great Limpopo Trans-frontier Park, Zimbabwe. The forest forms an ecological base for CHIEHA projects, which promote sustainable livelihoods from NTFPs, processing these for sale, afforestation to regenerate the forest and protect the watershed, conservation of traditional crops and seeds, and the promotion of conservation through awareness raising activities. More than 50 families and 2,000 people collect and sale NTFPs deriving benefit from the forest products that provide a source of food, income and medicine and the whole community's well being has improved. The community enterprises in a diverse range of activities are promoted having a positive effect on income levels: an eco and ethno tourism venture, beekeeping, mapani worm collection, peanut and butter processing, juice production, sustainable agriculture, and small grains.

In Programa Mulher Cabocla project, Brazil, with a theme of "Protect Health and Happiness" has been working since 1987 with approximately 143 remote communities on the Amazon, Tapajos and Arapiuns rivers. Much of the communities work has centered on education and community capacity strengthening using popular theatre and other means. This project is for their work with a women's organization involved in the production of palm baskets from sustainably managed palm. Through the recovery of traditional handicrafts skills, diversification of products, quality control and organizational strengthening, the palm baskets are now being sold in major urban centers. 15% of profit goes to a community fund to be used for activities that combat malnutrition and improve maternal-infant health. 34 families are involved in palm production and have increased their family income by 80%.

The Fundacion Tierra Viva, Venezuela, initiative Park, People and Cacao are focused on generating an economic and environmentally sustainable relationship among these three elements that have co-existed for some time. Cacao cultivation has been re-introduced (using traditional approaches) and Union of Organic Cacao producers formed. It has 21 male and female members who have received the training required in order to obtain organic certification and to ensure long-term capacity within the community. In the context of the same process, students have also received training in order to ensure long-term capacity within the community. A micro-enterprise for cacao transformation has been established and is run exclusively by women creating ten new jobs. As in the traditional "Cayapa" approach, cacao producers work in teams on one another's plot. Each member of the organization of producer must contribute a certain amount of labour annually, avoiding payment for external labour when the producers do not have cash flow to cover the expenses. Project grew out of a partnership between the nominee and the National Institute of Parks. Financial support was provided by Philip Morris Latino America.

Guassa-Menz Natural Resource Management Initiative, Guassa-menz area, Afro-alpine ecosystem, Ethiopia, operates based on a centuries-old land tenure system locally called 'Qero'. It is a benefit-sharing and survival strategy for times of drought and involves the controlled harvesting of grasses for thatching, fuel-wood from the shrub lands, and grazing for cattle and other livestock. There are an estimated 15,000 beneficiaries in the eight farmers' associations that have user rights to the area. They harvest grasses and fuel wood and graze animals in a controlled way for subsistence and to overcome the risks associated with drought. The sustainable management of these resources has contributed to increased community well-being through reduced dependence on external food aid and income from the sale of thatch. Due to the user laws set up by the community, thatching grass is now abundant and can be sold on the market.

4.3 Medicinal Plants

Community Based Forest Managers of DuralHaitemba Village, 8 village communities in the Miombo Woodlands Manyara Region is a project in Tanzania. In response to Tanzania's 1990 drive to gazette woodlands for conservation, these villages, who relied on the forests for their means of subsistence, convinced the government to support them in managing their resources as a forest reserve. The project generated tangible benefits within a short time and today has scaled up to a total of 45 villages actively engaged in poverty reduction activities through sustainable biodiversity conservation. Through conservation of resources, food security has improved as subsistence goods such as fuel wood, medicinal herbs, building materials, fodder for livestock, honey, mushrooms, fruits, and vegetables are plentiful and are free. Women can harvest firewood to sell and are allowed one head load per day, which fetches them about US$ 210 per month. Beekeeping has also increased livelihoods allowing 75% families in the villages to meet education and health service costs. Improved farming techniques have increased soil fertility; production of food and cash crops and soon each village will be self sufficient in timber production for wood products.

Fundaction Chankuap, 56 Archuar indigenous communities of Ecuadorian Amazon and Peru, is a large scale initiative that began with a primary objective of combating poverty (ensuring food security, health and cultural well-being) in the communities and secondly as income generating. The nominee began by improving basic infrastructure: installing radio for improved communication among the communities, improving paths through the forest, and then installing dryers and fomenters for improved processing of products present in the area: peanuts, cacao, achote (seed used as spice, food colouring and for medicinal purposes), turmeric, ginger, and so on. It also required promoting trade among the communities before looking to trade outside. A range of activities were introduced to achieve these goals: forest management plans; native species nurseries; reforestation; reintroduction of traditional Archuar gardens; breeding places for wildlife; communal trading centers; organic certification and marketing of achote, cacao, chili, peanuts, and an essential oils project.

Fundacion ESPAVE, Biodiversity hotspot of global significance, Columbia, is a women's organization established to produce and process medicinal herbs where both biodiversity and local communities have been threatened by resource exploitation by outside interests. While riches were exported, 82% of the population remained in poverty. Faced with this situation, six women heads of household with experience in collecting and processing medicinal herbs began this initiative and formed a network, which now includes 85 women of African decent. The products are sold in a supermarket chains at good price. The women involved in the network have increased their family incomes by an average of 25%. Five women involved in managing the enterprise receive salaries and benefits in keeping with the legal minimum wage. Regulations regarding medicinal herb extraction/production are laid out and respected by members of the network. Recovery and valuing of medicinal herb species should contribute to biodiversity protection on a

broader level. Traditional knowledge applied to local biodiversity has led to economic returns.

Rwoho Forest Community Conservation Project on the edge of Rwoho Forest Reserve, Uganda, establishes collaborative forest management and equitable benefits sharing between the local forest edge community and the forest department. Through seed collection, tree nursery establishment and maintenance, afforestation with indigenous species, medicinal plants, beekeeping and honey production and marketing, renewable energy and fuel saving stoves, the communities are improving their well being and that of the forest. This has increased their food production and income from sales that has improved livelihood through sustainable use of forest resources. With increased production and sale of honey, 125 participating households report an average increase of 60% in income. Previously unemployed youth now have jobs in the nursery or in carpentry to make beehives. Locally produced herbal medicine provides available and affordable health care. Women have benefited by having fuel wood close to home, reducing their workload and enabling them to take on emerging roles such as political office.

Mama Watoto Women Group, 20 women near Kakamega rain forest, Kenya, is an initiative of women headed households due to absentee husbands who started self-help project in response to restrictions on collecting resources from the Kakamega rain forest. They started their own wood supply by planting trees, and introduced a number of income-generating activities, including cultivating medicinal plants, beekeeping and Soya processing. The women grow fast maturing trees for firewood and timber in "women-made forests" and indigenous medicinal herbs for themselves and to sell to traditional healers. They diversified their income sources by introducing beekeeping which brings them good revenue and Soya bean cultivation and processing with appropriate techniques from which they earn income from sales to local consumers and middlemen. From the firewood, timber, honey, herbal medicine, vegetables sales and soya beans, members are able to pay for their children's school and college fees, feed and clothe their families and construct their own houses. The domestication of medicinal plants is helping ensure the survival of rare indigenous species and the pollination by the women bees is helping to improve biodiversity and ensure food security. With emulation by the extended community, encroachment in the forest and conflict with Wardens is decreasing even more.

The Community Agro-biodiversity Center, Swaminathan Research Foundation, Kerala, India, has done some pioneering work in researching and recovering rice varieties, training/educating groups of mostly women in cultivating and processing medicinal plants, mushrooms and other skills related to the sustainable production of food and conservation of natural resources. The Center is revitalizing traditional health care by training women's self-help groups. About 500 members, largely women, are educated and trained in the conservation and sustainable use of at least 75 species of medicinal plants and equipped with skills and knowledge in the preparation and storage of about 36 different healthcare products that are in large demand. The Center produced purified quality seeds of rice varieties with medicinal value, including Navara, a well-known

variety that self-help groups is producing and marketing as a nutritious drink. The Center is involved in a network of partners that includes local communities. The Center fostered the formation of a network of 15 NGOs in the district each addressing different biodiversity aspects. With the help of extension agencies, the Center is promoting awareness among policy makers of potential of integrated farming towards income generation and sustainability.

The Bustaan Village initiative in Gambia gained ownership of a forest site and took over responsibility for its sustained management through a joint forest park management agreement with the Gambian Department of Forestry. It is improving its living standards through the sustainable use of forest resources, protection against fires, agriculture, and agro-forestry. The village is using the natural resources of two management forest areas in a sustained way for their own domestic use such as firewood, construction materials, food and medicinal herbs, which is contributing towards household savings for energy, shelter, food, and health. It also commercializes forest timber products in a controlled manner, such that it has benefited from the sale of wood in high demand. Proceeds had been invested in communal projects enabling each family to receive benefits out of it. Participatory forest management concepts promote poverty reduction and biodiversity conservation and the interdependency of the ecological, social and economic factors are recognized. The village started to manage the site in 1999 and gained ownership rights in 2000. It manages forest with only token interference by the government. The community is highly motivated to care for the surrounding forest.

4.4: Types of land and resource based community economic and business initiatives: Analysis

As in the set of indigenous cases (Berkes and Adhikari, 2006), communities tend to combine many different kinds of productive activities using different resources (**Table 4**). My focus in this report is on forestry/agro-forestry (N=95 cases), non-timber forest products (N=41), and medicinal plants (N= 37). Case descriptions analyzed here are based on randomly selected cases from these three categories. Other productive sector activities, such as agriculture (N=94 cases), eco-tourism (N=50), protected area management (N=33), ecosystem restoration (N=51), livestock (N=41), apiculture (N=31), ecosystem services (N=51) and others, are equally important and essential for the communities but are not covered here. As it can be seen from (**Table 4**), many productive sector activities could fit more than one category and these cases are overlapping. Communities advantageously combine different sectors activities as they vary with different seasons and their livelihood needs are dependent on these different activities.

Communities are involved in wide range of innovative experiments that are specifically relevant to local context. But there are similarities of trends and patterns observable across these diverse cases, reflective of community lifestyle, culture and social-economic patterns as discussed below.

Communities are practicing wide varieties of income generating and business activities such as cultivation of non-timber forest products, medicinal plants, seeds of rice varieties, soya processing, mushrooms, peanuts, cacao, achote, turmeric, ginger, growing tree fruits, production of juice from baobab and tamarind trees and others on a small scale. They are involved in beekeeping, ecotourism, and handicrafts such as palm leaf baskets, pottery, macademia nuts, women's weaving cooperatives, honey production and many other income generating sources. Livelihood needs of the communities are dependent on various income generating and business activities with reduced reliance on single product or service that may not be sustainable in the long run. These activities are not only generating income for the communities but they are also able to sustain the resources through tree plantation, conserving resources, introduction of improved farming techniques, sale of energy saving stoves and others.

Most business and income generating initiatives are either social or community enterprises that are established for meeting varieties of community objectives including income generation, preservation of traditional community knowledge and culture, ecological restoration, management of natural resources, social welfare benefits such as provision of health, education and provision of employment opportunities and enhancement of community capacity. Financial and management support is shared among the community and family members with some external donor and government funding. These activities are integrated and practiced simultaneously with community well being as the focus rather than exclusively for profit motives. Community vision tends to over-ride all other individual and self-fulfillment objectives and the running of the enterprises is guided by social objectives. Since most community enterprises are

small-scale, those are primarily targeted in meeting their local community needs and there are very few cases that are linked to the international or even national market.

There is increased evidence of shifting management and ownership rights towards the communities either through joint management initiatives, legal and policy support or total delegation of the ownership rights to the communities. Communities are managing forest resources themselves with little interference from the government, as a result of the shift in ownership rights. An example of this trend includes Bustaan Village initiative in Gambia. There is a new trend in land and resource management that gives communities' greater voice and power in their effort towards self-determination. An emerging trend of communities practicing equitable benefit sharing mechanisms either with the government, other communities or business enterprises is noticed in the case descriptions. There is greater involvement of women folks in the ownership and management of land and resources that are representative of community empowerment.

Communities are benefiting from practice of traditional ecological knowledge either through use of traditional skills in making products that are now fetching better income or through sustainable management of resources and contributing in conservation of biodiversity resources. Traditional knowledge is strengthening community institutions and governments in some countries are adapting the community practices into the management of natural resources such as parks, fish and forests.

Chapter 5: Partnerships and cross-scale institutional linkages

5.1 Types of partners: Findings

Most Equator Initiative cases involve multiple levels of partnership and multiple types of partners. Types of partners ranging from NGOs (local and national), government (local, regional, state and national), international organizations, local and national financial institutions, joint forest management, universities and research centers, community associations/organizations, and private sector are found in the cases analyzed (**Table 12**). In the three categories of cases: forestry/agro-forestry (N=95 cases), non-timber forest products (N=41) and medicinal plants (N=37) I found wide variation in the types of partners. Forestry/agro-forestry cases have greater number of local NGOs (N=46 cases) than national NGOs (N=28), whereas the non-timber forest products cases have greater number of national NGOs (N=20) than local NGOs (N=18). Similarly, the medicinal plant cases have greater number of national NGOs (N=18) than the local NGOs (N=13).

The types of government partners are also varied. The forestry/agro-forestry cases have (N=26 cases) local government, (N=37) state/regional government and (N=34) national government partners. The state/regional level government partnership is stronger than the national and local level. Non-timber forest product cases have (N=24) local, (N=17) state/regional and (N=16) national government partners. The medicinal plant cases have (N=19) local government, (N=14) state/regional government and (N=15) national government partners. The non-timber forest product and medicinal plant cases have stronger local government focus but not much difference between the regional/state government and national level government partners.

In all the three categories of cases local and national financial institutions as partners is limited in numbers: forestry/agro-forestry (N=11 cases), non-timber forest product (N=5) and medicinal plants (N=6). In majority of the cases financial support is either internally generated within the communities or it is mostly provided by international organizations including NGOs and various levels of governments (**Table 12**). The involvement of international organizations/institutions is very strong in all the three categories of cases: forestry/agro-forestry (N=59), non-timber forest products (N=25) and medicinal plants (N=19). There is more joint forest management types of partners in forestry/agro-forestry (N=19) cases as compared to non-timber forest products (N=5) and medicinal plants (N=6). There is a strong involvement of universities and research centers in all the three categories: forestry/agro-forestry (N=35 cases), non-timber forest products (N=19) and medicinal plant (N=18). Private sector involvement as partners is limited in all the three category of cases although non-timber forest products have (N=9) as compared to only (N=6) for forestry/agro-forestry cases and (N=3) for medicinal plant cases. The involvement of community organizations as partners is very strong with (N=52) for forestry/agro-forestry, (N=27) for non-timber forest products and (N=17) for medicinal plant cases. There are also some unclear cases that do not mention about the types of partners: forestry/agro-forestry (N=25 cases), non-timber forest products (N=10) and medicinal plant (N=11).

5.2 Types of partners: Analysis

These Equator Initiative cases provide ample evidence of community partnerships (Timmer & Juma, 2005) and partnership formation as an important part of the Equator Initiative program. Most cases reviewed in this analysis revealed multiple levels of partners at different levels of political organization (Berkes & Adhikari, 2006). The communities are partnering with wide range of organizations as partners ranging from community organizations; local, state, and national governments; local and national level non-governmental organizations; international organizations; joint forest management; university and research organizations; private sector and there are many cases with no clear types of partners as well (**Table 12**). These types of partners can be categorized under five levels: international (funders), national (government agencies), regional, state/provincial level and the local level (community organizations).

In all the three categories of cases: forestry/agro-forestry, non-timber forest products and medicinal plant cases there is a variation in the number and types of partners involved and there is no one particular dominant pattern or trend (**Table 12**). Perhaps this is reflective of the nature of community organizations and the various roles they perform in the communities. I found a strong dominance of horizontal partnerships representing local community organizations, local government and local NGOs jointly. But the local level, horizontal partnerships is further supported by the vertical level of partnerships that involves the state, regional and national government and the strong support of the international organizations. The necessity for this nested institutions (Ostrom, 1990) nature of partnerships linkage is beyond the scope of this report but I will discuss it in more detail in my thesis.

The importance of types of partners varies based on local needs. In some countries there is stronger role-played by NGOs, and in others governments have played a stronger role. Some development organizations have priority needs in some countries and they would be interested to partner with local community based organizations in such countries. But some form of partnerships seems inevitable in resource management and community initiation and participation makes it easier for other partners involved to join and contribute in the development of the region or the local economy. The international movement towards more community participation, scarcity of resources with the different levels of government, greater political awareness of the communities leading to the demand for more democratic and participatory form of government in the developing countries, and communities as complex systems (Berkes, 2006) are perhaps some factors encouraging partnerships in resource management. Certain resources like fish, forest and water span beyond national boundaries and necessitate nested institutions (Ostrom, 1990).

This analysis of some Equator Initiative cases reveals that partnership at various levels is complementary to each other. The case analysis indicated that the communities and their local organizations have the capacity to initiate and manage local resources using their local institutions and local practices but they do not have sufficient institutional (legal, policy, regulations), technical and financial resources to manage resources on their own. Governments at different levels plan for resource management but without community participation and using local organizational and social system it is not possible for them to achieve desired results. Similarly, international donors and NGOs have development priorities. But without community and government participation, international organizations are not able to have access to local level resource management and development. Hence, co-management initiatives apparently stand out as a highly desirable alternative in the expanding, complex global resource management scenario.

5.3 Kinds of partnerships: Findings

As mentioned earlier, the kinds of partnerships refer to the various community developments and income-generating activities supported by different outside agencies, government and community groups. These partnerships activities are business networking; providing and raising funding; training, education and research; institutional capacity building, legal support and conflict resolution, innovation and knowledge transfer; technical support; infrastructure building; promoting social enterprises; extension services and many more (**Table 13**). Business networking is a strong area of partnerships between the communities and different organizations: forestry/agro-forestry (N=57 cases), non-timber forest products (N=30), and medicinal plants (N=27).

Provision of funding and fund raising is another strong area of partnerships: forestry/agro-forestry (N=56), non-timber forest products (N=27) and medicinal plant (N=17). In the land, forest and resource management area there are: forestry/agro-forestry (N=50 cases), non-timber forest products (N=30) and medicinal plant (N=28) partnerships. Institutional capacity building is another strong area of partnerships: forestry/agro-forestry (N=61), non-timber forest products (N=29) and medicinal plant (N=28). In the innovation and knowledge transfer category, there are (N=50) forestry/agro-forestry, (N=28) non-timber forest products and (N=18) medicinal plant partnerships. Education, training and research have strong partnerships focus in all the three category of cases: forestry/agro-forestry (N=58), non-timber forest products (N=28) and medicinal plant (N=23).

In the access and benefit sharing area, there are (N=52) forestry/agro-forestry, (N=32) non-timber forest products and (N=25) medicinal plant partnerships. Access and benefit sharing practices are mostly between the government and the community groups, community to community and community and the people. In the technical support, advice and assistant area there are (N=43), (N=12) and (N=14) partnerships in the forestry/agro-forestry, non-timber forest products and medicinal plants respectively. Proportionately smaller numbers of cooperative business activities are observable: forestry/agro-forestry, (N=17) non-timber forest products (N=10) and medicinal plants (N=13). Activities that relate to promoting social enterprise and change are (N=36) in forestry/agro-forestry, (N=24) in non-timber forest products and (N=23) in medicinal plants areas. In the area of harvesting, sales and marketing of the products (including export), there is a relatively strong partnerships focus in the area of non-timber forest products (N=30 cases) than in the forestry/agro-forestry (N=37) and the medicinal plants (N=23) cases. In the infrastructure building kinds of partnerships, the forestry/agro-forestry has (N=30 example), non-timber forest products have (N=11) and the medicinal plants have (N=11).

There are more horizontal linkages (N=61) in forestry/agro-forestry cases than vertical (N=54). In the case of non-timber forest products, there is not much difference in the vertical and horizontal linkages (N=25) and (N=26), respectively. But evidently there is an emphasis on the importance of both types of linkages. In the case of medicinal plants horizontal linkage seems to be stronger (N=26) than the vertical linkage (N=22) although there is not a big difference in the two types of linkages. In all the three types of cases:

forestry/agro-forestry, non-timber forest products and the medicinal plants, both kinds of partnerships are contributing to community development and biodiversity conservation.

There are also program areas with relatively smaller emphasis of the kinds of partnerships as discussed below. In the health promotion programs: there are (N=28 cases) forestry/agro-forestry: (N=9) non-timber forest products, and (N=18) medicinal plants. The legal support and conflict resolution has: forestry/agro-forestry (N=25 cases), non-timber forest products (N=18) and medicinal plant (N=11). The extension services area has forestry/agro-forestry (N=37 cases), non-timber forest products (N=17) and medicinal plant (N=9) partnerships. The joint venture programs have (N=8 cases) in the forestry/agro-forestry area, (N=5) in the non-timber forest products area, and (N=11) in the medicinal plant program area. The promotion of cultural well being and preservation has very small number of partnerships: forestry/agro-forestry (N=4 cases), non-timber forest products (N=2) and medicinal plant (N=1). The case descriptions do not mention many programs that had partnerships meant specifically for cultural preservation or well-being but in many other program cases there is enough evidence of the importance of traditional knowledge in resource management. There are also cases with unclear partnerships kinds: forestry/agro-forestry (N=25 cases), non-timber forest products (N=10) and medicinal plant (N=11).

5.4 Kinds of partnerships: Analysis

The review of the kinds of partnerships reveal networking for multiple purposes, ranging broadly from community development, promotion of business entrepreneurship and economic activities, restoration of degraded land and resources, biodiversity conservation, capacity building of the communities and others (**Table 13**). Many initiatives such as business networking, providing alternative income sources and income generation are targeted towards poverty reduction, whereas others are motivated by biodiversity conservation, and restoration of previously damaged landscape and resources. These Equator Initiative cases provide strong evidence that the kinds of support provided by various levels of government; international organizations (including NGOs) are instrumental in strengthening the community initiatives. A case in point is the Ngata Toro Community (Indonesia) forest protection. Special areas for resource extraction and for protection are identified through participatory land use mapping and spatial planning; traditional fines and social sanctions are used to discourage illegal activities; a system of customary laws, collaboration with the Park Authority, and traditional forest rangers control the sustainable extraction and use of natural resources. Without the provision of external funding, technical support, government recognition of local level institutions and initiatives, many of these innovative programs would fall apart.

There is evidence that the kinds of partnerships vary among the cases; it differs based on geographical location of the community. Communities in different regions of the world have different contexts and their community needs are different. Many cases require financial support but others need more technical and institutional support. The evidence indicates that a single case may be partnering with many organizations at the same time but different partners are providing different categories of support. In majority of the cases there is a mix of both horizontal and vertical linkages but generally there is greater tendency for a partnerships preference of horizontal linkages. There is increasingly a stronger tendency among the various levels of government organizations to partner with community groups, international donors, research institutions and others. It is indicative of the fact that different levels of governments are beginning to realize the importance of partnerships as an important tool in resource management with varying degree of efficiency gains. There is a strong recognition, reliance and adaptation of the communities' traditional ecological knowledge by the government, donor agencies and other partners. In many cases there is evidence that government is adopting the community practices and their knowledge in the management of resources either jointly or my transferring the management rights to the community groups. This is an evidence of the community having a stronger self-determination and access to resources. In some other cases communities are forcing the government to allow them to recognize community practices and give them greater access and benefit sharing of the resources.

Chapter 6: Conclusion

Equator Initiative program is founded on the principles of partnerships and institutional linkages. These linkages occur horizontally across wide range of geographical scale and vertically across multiple levels of political organizations (Berkes, 2006; Timmer and Juma, 2005; Berkes and Adhikari, 2006). Varying types of partners and kinds of partnerships was observed in the cases (Table 12 and 13) analyzed for this report. Some partnerships are simple and few as in Improving Hillside Agriculture (Cameroon) that has two international donors and the farming community groups. Others are more complex, complementing different kinds of activities such as Kakamega Forest Integrated Conservation Project (Kenya) that partners with number of international organizations; governments of Uganda, Tanzania and Kenya; community groups and NGOs. These various forms of partnerships illustrate that communities themselves can be seen as complex systems – embedded in larger complex systems (Berkes, 2006) such as donors, government organizations, larger geographical span of resources, and varieties of ecological services. These partnerships are strengthening community institutions, enhancing the productive capacities of the communities and improving their resilience. Participation and partnerships among different levels of governments, communities and international organizations is emerging in the sustainable management of biodiversity resources and promoting community development.

Partnerships in some cases are involved in mitigating environmental damages such as those caused by improper use of slash and burn practices (AIR Project) through engagement in reforestation, environmental education, and community forestry. In others, communities are practicing wide varieties of income generating and business activities such as cultivation of non-timber forest products, medicinal plants, seeds of rice varieties, soya processing, mushrooms, peanuts, cacao, achote, turmeric, ginger, growing tree fruits, production of juice from baobab and tamarind trees and others on a small scale. Livelihood needs of the communities are dependent on various income generating and business activities (Timmer and Juma, 2005; Berkes and Adhikari, 2006) with reduced reliance on single product or service that may not be sustainable in the long run. These activities are not only generating income for the communities, but they are also able to sustain the resources through tree plantation, conserving resources, introduction of improved farming techniques, sale of energy saving stoves and others. Communities are able to achieve not only development goals but they are also enhancing biodiversity conservation simultaneously as their needs are dependent on these resources.

The types of partners that communities are working with include a wide range of organizations such as community organizations, various levels of government organizations, local and national NGOs, international organizations, joint forest management, university and research institutions and private sector. Five categories of types of partners are observable: international (funders), national (government agencies), regional, state/provincial level and the local level (community organizations and local governments). In the three productive sector categories investigated, there is a dominance of horizontal partnerships: most of these include community organizations, local government and local NGOs. Vertical partnerships and linkages complement the

horizontal partnerships by providing linkages across levels of organizations. The kinds of partnerships demonstrate networking for multiple purposes; ranging from community development, promotion of business entrepreneurship and economic activities, restoration of degraded land and resources, biodiversity conservation, and empowerment of communities. The kinds of partnerships vary among cases and by regions. Without the provision of external funding, technical support, government recognition of local level institutions and initiatives, many of these innovative programs would fail to survive.

These partnership efforts are strengthening community efforts in localizing globalization. The partnerships arrangements have proven critically important in resource allocation among the community groups. Business and income generating initiatives are either social or community enterprises established for meeting varieties of integrated community objectives including income generation, preservation of traditional community knowledge and culture, ecological restoration, management of natural resources, social welfare and enhancement of community capacity. Most community enterprises are small-scale, primarily targeting local community needs with few cases linked to the international or even national markets.

There is increased evidence of shifting management and ownership rights towards the communities either through joint management initiatives, legal and policy support or total delegation of the ownership rights to the communities. Communities are managing forest resources themselves with little interference from the government, as a result of the shift in ownership rights (e.g. Bustaan Village initiative, Gambia). A new trend in land and resource management, at local level, giving communities greater voice and power in their effort towards self-determination is increasing (MEA, 2005; Berkes and Adhikari 2006). Communities practicing equitable benefit sharing with the government or other communities or business enterprises, are also on the rise. There is greater involvement of women in the ownership and management of land and resources that are representing community empowerment trends.

Communities are benefiting from practice of traditional ecological knowledge; traditional skills in making products that are now fetching better income and sustainable management of resources conserving biodiversity. Traditional knowledge is strengthening community institutions and governments are adapting the community practices into the management of natural resources such as parks, fish and forests with greater involvement of communities and other partners. Local communities are experiencing greater dependence of their sustainable livelihood needs on the common pool resources, providing incentives for conservation of biodiversity.

As evidenced in the foregoing discussion, many Equator Initiative cases are driven by biophysical changes such as land use changes and not driven purely by market or other economic considerations. Economic considerations, especially livelihood maintenance through socially initiated business and economic activities, closely follow. Other considerations include demographic, socio-political, and cultural matters at the local scale and their cross-scale impacts.

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Tables and Figures

Table 1: All Equator Initiative Cases according to Scale and Region

Scale	Asia & Pacific	Africa	Latin America & Caribbean	Total Cases
Local focus	37	80	107	224
State/Province focus	13	13	4	30
National focus	4	15	7	26
Regional focus	2	5	28	35
Total Cases	**56**	**113**	**146**	**315**

Table 2: Forestry/Agro-Forestry, Non-Timber Forest Products & Medicinal Plants Cases by Region

Region	Forestry/Agro-forestry	Non-Timber Forest Products	Medicinal Plant	Total number of cases
Asia & Pacific	16	7	8	56
Africa	42	11	12	113
Latin America & Caribbean	37	23	17	146
Total	**95**	**41**	**37**	**315**

Table 3: Forestry/Agro-Forestry, Non-Timber Forest Products & Medicinal Plants Cases by Scale and Region

Scale	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Local focus	5	3	2	27	9	11	22	14	11	**54**	**26**	**24**
National focus	3	1	2	5	0	1	2	2	0	**10**	**2**	**3**
Regional focus	1	1	0	2	1	1	12	7	3	**15**	**8**	**4**
State/provincial focus	8	2	4	6	1	0	2	0	2	**16**	**3**	**6**
Total cases	**17**	**7**	**8**	**40**	**11**	**13**	**38**	**23**	**16**	**95**	**41**	**37**

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 4: Productive Sector: Cases by Sub-Category and Region

Sub-Categories	Asia & Pacific	Africa	Latin America & Caribbean	Total Cases
Forestry/Agro-forestry	17	40	38	**95**
Non-timber Forest Products	7	11	23	**41**
Medicinal Plants	8	13	16	**37**
Agriculture	21	36	37	**94**
Ecotourism	5	12	33	**50**
Protected Area Management	5	14	14	**33**
Ecosystem Restoration	16	25	10	**51**
Artisanry (Arts & Craft)	7	5	12	**24**
Livestock	10	21	10	**41**
Apiculture	2	24	5	**31**
Aquaculture	8	5	6	**19**
Ecosystem Services	16	25	10	**51**
Wildlife Management	1	7	5	**13**
Fisheries	4	3	9	**16**

Table 5: Nominee Type: Community-Based Organization Sub-Category by Scale and Region

Scale	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Local focus	4	1	1	24	6	10	11	8	6	**39**	**15**	**17**
National focus	6	2	1	3	1	0	1	0	0	**10**	**3**	**1**
Regional focus	1	1	0	1	0	1	0	0	0	**2**	**1**	**1**
State/provincial focus	0	0	4	2	1	0	3	2	2	**5**	**3**	**6**
Total cases	**11**	**4**	**6**	**30**	**8**	**11**	**15**	**10**	**8**	**56/95**	**22/41**	**25/37**

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 6: Nominee Type: Indigenous Sub-Category by Scale and Region

Scale	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Local focus	1	3	1	3	3	0	7	5	3	**11**	**11**	**4**
National focus	2	1	0	0	0	0	1	0	0	**3**	**1**	**0**
Regional focus	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**
State/provincial focus	0	0	1	0	0	0	3	2	1	**3**	**2**	**2**
Total cases	**3**	**4**	**2**	**3**	**3**	**0**	**11**	**7**	**4**	**17/95**	**14/41**	**6/37**

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 7: Nominee Type: Non-Governmental Organization Sub-Category by Scale and Region

Scale	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Local focus	1	2	1	8	3	1	11	7	4	**20**	**12**	**6**
National focus	3	0	2	4	0	0	1	0	0	8	**0**	**2**
Regional focus	2	1	0	3	0	0	3	1	3	8	**2**	**3**
State/provincial focus	1	0	0	0	0	0	10	6	1	11	**6**	**1**
Total cases	**7**	**3**	**3**	**15**	**3**	**1**	**25**	**14**	**5**	**47/95**	**20/41**	**12/37**

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 8: Cases According to Community Focus Sub-Category and Region

Sub-Categories	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Children	0	0	1	7	0	2	0	0	1	**7**	0	4
Indigenous	2	3	1	5	3	2	10	6	5	17	12	8
Socio-economically marginalized sectors	16	5	6	34	9	11	25	19	13	75	33	30
Women	4	2	5	10	1	4	2	5	5	16	8	14
Youth	0	0	2	5	0	2	2	1	0	7	1	4

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 9: Cases According to Poverty Reduction Sub-Category and Region

Sub-Categories	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Income Generation	12	3	6	35	11	11	30	20	14	77	34	31
Food Security	10	3	7	29	9	8	13	11	5	52	23	20
Social Political Security	6	4	3	4	2	0	5	6	3	15	12	6
Health Improvement	6	3	6	18	3	9	5	4	7	29	10	22
Reducing Vulnerability to Natural Disaster	3	0	1	6	2	1	2	1	1	11	3	3
Access to Water	2	0	1	6	1	3	3	2	1	11	3	5

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 10: Cases According to Biodiversity Sub-Category and Region

Sub-Categories	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Sustainable use	4	4	4	10	9	5	22	18	10	**36**	**31**	**19**
Conservation/Protection	9	3	4	25	8	8	10	6	3	**44**	**17**	**15**
Rehabilitation/Regeneration	10	1	4	29	6	10	9	5	6	**48**	**12**	**20**

***Legend**: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant*

Table 11: According to Millennium Development Goals Sub-Category and Region

Sub-Category	Asia & Pacific			Africa			Latin America & Caribbean			Total Cases		
	FAF	NTFP	MP	FAF	NTFP	MP	FAF	NTFP	MP	FAF N=95	NTFP N=41	MP N=37
Ensure Environmental Sustainability	15	5	7	38	10	11	31	21	15	84	**36**	**33**
Eradicate Extreme Poverty and Hunger	16	6	8	38	10	11	27	19	13	81	**35**	**32**
Promote Gender Equality & Empower Women	3	2	3	6	2	1	2	4	3	11	**8**	7
Develop a global partnerships for development	0	0	0	0	0	0	0	0	0	0		**0**

Legend: FAF = forestry/agro-forestry; NTFP = Non-Timber Forest Products; and MP = Medicinal Plant

Table 12: Types of Partners**

Total cases in this sub-category	Forestry/Agro-forestry (N=95)	Non-Timber Forest Products (N=41)	Medicinal Plant (N=37)
Local NGOs	46	18	13
National NGOs	28	20	18
Local government	26	24	19
Regional and/or state government	37	17	14
National government	34	16	15
Financial Institutions	11	5	8
International organizations/institutions	59	25	19
Joint Forest Management	19	5	6
Universities and research centers	35	19	18
Private sector	6	9	3
Community associations/organizations	52	27	17
Unclear	25	10	11

** *Coding Based on Case Description*

Table 13: Kinds of Partnerships**

Total cases in this sub-category	Forestry/Agro-forestry (N=95)	Non-Timber Forest Products (N=41)	Medicinal Plant (N=37)
Business networking	57	30	27
Providing and raising funds	56	27	17
Training, education and research	58	28	23
Institutional capacity building	61	29	28
Legal support and conflict resolution	25	18	11
Innovation and knowledge transfer	50	28	18
Technical support, assistance and advice	43	12	14
Infrastructure building	30	11	11
Facilitating social enterprises and change	36	24	23
Harvesting, sales, and marketing (including exports)	37	30	23
Cooperative business activities	17	10	13
Health promotion programs	28	9	18
Extension services	35	17	9
Land, forest, resource management	50	30	28
Joint venture	8	5	11
Promoting cultural well-being and preservation	4	2	1
Access and benefit sharing	52	32	25
Unclear	25	10	11

** *Coding Based on Case Description*