International Journal of the Commons
Vol. 4, no 1 February 2010, pp. 183–212
Publisher: Igitur, Utrecht Publishing & Archiving Services for IASC
URL:http://www.thecommonsjournal.org
URN:NBN:NL:UI:10-1-100208

ISSN:1875-0281

Community-based enterprises: the significance of partnerships and institutional linkages*

Cristiana Simão Seixas
Center for Environmental Studies and Research, State University at Campinas (UNICAMP),
csseixas@unicamp.br

Fikret Berkes
Natural Resources Institute, University of Manitoba,
berkes@cc.umanitoba.ca

Abstract: Community-based institutions used to be driven by local needs, but in recent decades, some of them have been responding to national and global economic opportunities. These cases are of interest because they make it possible to investigate how local institutions can evolve in response to new challenges. A promising set of cases comes from the UNDP Equator Initiative, a program that holds biennial searches to find and reward entrepreneurship cases that seek to reduce poverty and conserve biodiversity at the same time. What can we learn from these local entrepreneurship cases that seem to be playing at the global level? Here we focus on partnerships and horizontal and vertical linkages in a sample of ten Equator Initiative projects. We find that successful projects tend to interact with a large array of support groups, typically 10–15 partners. Based on information from on-site research, these partners include local and national NGOs; local, regional and (less commonly) national governments; international donor agencies and other organizations; and universities and research centres. These partners provide a range of services and support functions, including raising start-up funds; institution building; business networking and marketing; innovation and knowledge transfer; and technical training. These findings indicate that a diverse variety of partners are needed to help satisfy a diversity of needs, and highlight the importance of networks and support groups in the evolution of commons institutions.

* This paper was prepared with the input of Damian Fernandes, Jessica Herrera, Arthur Hoole, Stephane Maurice, Dean Medeiros, Alejandra Orozco, Lance Robinson, Jason Senyk and Shailesh Shukla, using the case study material gathered by these researchers in the project technical reports cited herein.

Keywords: Community-based conservation, community-based enterprises, institutional linkages, partnerships

Acknowledgements: We thank the International Development Research Centre (IDRC) in Canada, the Canada Research Chair program and the Social Sciences and Humanities Research Council (SSHRC) for funding and supporting the project.

1. Introduction

Rural and indigenous communities used to be isolated places and many still are. However, an increasing number of these communities are beginning to play a role in the globalized world, moving from the familiar role of victims of development, to an exciting new role as the co-authors of the scripts that define their relationships to the outside world. A community may try to isolate itself from the outside world, or it may decide to "opt-in" and actively participate in the global economy by identifying opportunities. Anderson et al. (2006) see the importance of entrepreneurship in this regard: the identification of opportunities and the creation of enterprises to exploit these opportunities in the service of the local economic development process. A characteristic of these initiatives is the prevalence of community ownership and the importance of the long-term viability of the businesses created, not as an end but as the means to an end. Some of these ends include the creation of employment, control of land and resources, protection of culture, and the creation of wealth to fund health and well-being (Anderson et al. 2006; Berkes and Adhikari 2006; Berkes and Davidson-Hunt 2007).

Opting-in to the global economy is not easily achieved. To do so successfully, a community group has to be able to identify business opportunities, have the means to supply the products needed, find financial and human resources, develop organizations and institutions, and build capacity. To satisfy their economic and other objectives, and to do so on their own terms, they need to learn to access the various resources needed. "This is the process of entrepreneurship", Anderson et al. (2006, 49) point out, "entrepreneurship that is broadly conceived of as an economy-building process".

In working with communities that have opted-in to the global economy, several studies have amassed evidence that a large number of supporting organizations or institutional partners are needed (Timmer and Juma 2005; Berkes 2007; Stronza 2007; Seixas and Davy 2008); conversely, the lack (or loss) of such partners results in failure (Herrera 2006; Ohl-Schacherer et al. 2008). However, little is known about the nature of these partnerships and the kind of linkages that occur between communities and their partners. As these linkages often cross levels of political, social and economic organization, this area of study can be broadly situated in the field of multi-level governance (Berkes 2008).

Developed largely in the field of political science, multi-level governance shares at least two basic characteristics: it has vertical and horizontal dimensions or

interdependence across governance levels, and it shows interaction among different actors (Bache and Flinders 2004; Pierre and Peters 2005). Following Young (2002) and Young et al. (2008), institutional interplay at various levels involves horizontal (across the same level) and/or vertical (across levels of organization) interactions. Some authors note, however, that in many cases these linkages can be better characterized as networks rather than as simple horizontal and vertical connections (Folke et al. 2005). Scale is defined as the spatial, temporal or other dimension used to measure or study a phenomenon, and level is defined as the unit of analysis located at different positions on a scale (Cash et al. 2006).

There is a social learning dimension of governance. Some of this learning occurs through key individuals and leaders, called knowledge brokers or policy entrepreneurs (Beem 2007). The experience with learning organizations indicates that much of the learning occurs through the work of what has been called boundary organizations (Cash and Moser 2000) or bridging organizations (Olsson et al. 2004; Olsson et al. 2007). These are groups that translate findings or messages from one level of organization to another, or groups that provide the platform or the arena in which joint governance takes place (Berkes 2009). Social and institutional learning has been receiving a great deal of attention not only with respect to joint resource management (co-management) or business management, but also with respect to adaptation to change in general (Armitage et al. 2007).

What can we learn from local entrepreneurship cases that seem to be playing successfully at the global level? First, this paper explores the linkage between commons (common-pool resources) and social enterprises in the context of resource governance in a globalized world. In particular, we focus on commons institutions with horizontal and vertical linkages and networks. The rationale for studying these relationships is that the nature of these partnerships and linkages is poorly known, and such a study has the potential to provide new insights on how grassroots organizations, enterprises and local conservation groups come into being and develop (Mahanty 2002; Wollenberg et al. 2006). Second, the study contributes to the understanding of how commons institutions evolve (Ostrom 2005) and the role of social and institutional learning in governance (Armitage et al. 2007). In particular, we focus on the role of leadership and bridging organizations in the dynamic process of institutional change.

In previous work, we noted that the success of conservation-development projects seem to be strongly related to the availability of supportive partners that are able to help with capacity-building (Berkes and Adhikari 2006). We found that a number of ingredients have to come together, at the right time, analogous to a dish prepared by a great chef (Seixas and Davy 2008). These "ingredients" include leadership, trust and other factors. We do not make the claim that partnerships and linkages are the only important factors – but simply that they are a necessary (but insufficient) condition for the success of community-based enterprises (Berkes 2007).

We draw our examples from a set of conservation-development projects, the UNDP Equator Initiative cases. This UNDP program holds biennial searches to

find and reward entrepreneurship cases that seek to reduce poverty and conserve biodiversity at the same time. The short-listed cases are largely those that have been able to respond to national and global opportunities, and presumed to be cases "that work". These UNDP Equator Initiative cases have been used to explore several related themes: combining biodiversity conservation and poverty reduction (Timmer and Juma 2005), identifying characteristics of emerging indigenous businesses (Berkes and Adhikari 2006), recognizing self-organizational processes in integrated conservation and development (Seixas and Davy 2008), identifying particularly innovative and successful ecoagriculture practices (Isely and Scherr 2003), exploring the role of community scaling-up in achieving the millennium development goals (MDGs) (Hooper et al. 2004), and exploring the role of leadership in community-based conservation (Timmer 2004a,b),

All UNDP Equator Initiative cases, by definition, involve a local-level organization working directly with community members. Nevertheless, the local-level in one case (e.g. a resource user organization) may not be the exact equivalent of another (e.g. a district-level NGO). Additionally, the number of levels of organization may vary from system to system (and particularly from country to country). This adds complexity to cross-level institutional analysis. Moreover, as a system evolves, the levels of organization within it, and the role of partners, may change. All these considerations provide fertile grounds within which the dynamics of commons institutions may be investigated. In this paper, we aim to explore some of these complexities by carrying out case comparisons among community-based enterprises.

2. Researching equator initiative cases

In order to understand the role of partnerships, networks, and linkages in creating and maintaining community-based enterprises, we analysed a set of 10 case studies out of over 50 short-listed or awarded initiatives in 2002 and 2004 Equator Prize competitions, and one (Peru) that was not short-listed. The finalists were chosen from a pool of over 400 nominations by a technical advisory committee (TAC),[1] composed of researchers and practitioners, and the prize winners were chosen by a jury with expertise in integrated conservation and development issues from around the world. We have insights into the selection process through the experience of one author (Berkes) being part of the 2006 TAC, and through the experience of the other author (Seixas) in observing the Jury interaction with the 2004 Prize Finalists.

There are certain risks in focusing on successful cases only and not having a control group (or a control 'group' of one: Peru). We argue that it is not possible, in any case, to identify *all* factors that determine success or failure in

[1] TAC used seven criteria to assess the initiatives: impact on biodiversity, impact on poverty, partnership, sustainability, innovation and transferability, leadership and community empowerment, and, gender equality and social inclusion. Of course, other criteria may be used to define success but that discussion is beyond the scope of this paper.

community-based management (Ostrom 2007). But learning lessons from what does work helps focus attention on some of the key factors in a diagnostic fashion (Berkes 2007; Ostrom 2007). The on-site, in-depth research in nine countries along the Equator Belt was conducted by a team of graduate students from the University of Manitoba. The case choice was opportunistic according to the availability of cases and the language skills, previous experience and interests of graduate students. Nevertheless, we tried to cover the main regions: Africa (3 cases), Asia (2 cases), Latin America (3 cases) and the wider Caribbean (2 cases) in a way that is representative of the Equator Prize short-listed cases and finalists. We understand, however, that if a different set of cases have been chosen, our findings may have been somewhat different.

The researchers applied a standard case study methodology and produced technical reports for each case. These may be found at the site http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects.html#Equator_Initiative. The ten projects were:

1. Medicinal Plants Conservation Centre, Pune, India (Shukla 2004)
2. Community-Based Arapaima Conservation in the North Rupuni, Guyana (Fernandes 2004)
3. Honey Care Africa Ltd. (HCA) in Kakamega and Kwale districts, Kenya (Maurice 2004)
4. Cananeia Oyster Producers Cooperative (Cooperostra), Brazil (Medeiros 2004)
5. Toledo Institute for Development and Environment (TIDE) Port Honduras marine reserve, Belize (Fernandes 2005)
6. Pred Nai community forestry group and mangrove rehabilitation, Thailand (Senyk 2006)
7. Casa Matsinguenka indigenous ecotourism lodge project, Peru (Herrera 2006).
8. Nuevo San Juan Forest Management, Mexico (Orozco 2006)
9. Torra Conservancy, Namibia (Hoole 2007)
10. Pastoralist Integrated Support Programme (PISP), Kenya (Robinson 2008)

Based on this set of cases, in this paper we conducted an analysis across cases to explore: (i) the number and kind of linkages; (ii) the role of partnerships; and, (iii) the nature of linkages in community-based enterprises. In exploring the nature of these linkages we observed: (a) the dynamics; (b) formality; (c) direction; (d) magnitude; and, (e) outcomes of linkages. We discuss the role of leaders, institutional memory and learning in establishing linkages. The following sections will discuss each of these themes in turn. Our analysis is based on researchers' reports and figures developed for each case study, and the figures presented in this paper are not entirely consistent in style and formatting. Below, we present a list of acronyms used throughout the text and in some of the figures.

List of acronyms

Acronyms in the text	
AKF	Aga Khan Foundation
CBNRM	Community-based natural resources management
CBO	Community-based organization
CEDIA	Centro para el Desarrollo del Indígena Amazónico (Peruvian NGO)
Cooperostra	Cananeia Oyster Producers Cooperative
CRSP	Coastal Rural Support Program
EI	Equator Initiative
FRLHT	Foundation for the Revitalization of Local Health Traditions
HCA	Honey Care Africa Ltd.
INRENA	Instituto Nacional de Recursos Naturales (Peruvian government)
MDGs	Millennium Development Goals
MLFD	Ministry of Livestock and Fisheries Development
NGO	Non-governmental organization
NRDDB	North Rupununi District Development Board
PHMR	Port Honduras Marine Reserve
PISP	Pastoralist Integrated Support Programme
RC	Rural Commune
RCMPCC	Rural Communes' Medicinal Plant Conservation Center
RDF	Royal Forest Department
RECOFT	Regional Community Forestry Training Center for Asia and the Pacific
TAC	Technical Advisory Committee – Equator Initiative
TIDE	Toledo Institute for Development and Environment
TNC	The Nature Conservancy
UNDP	United Nations Development Program

Acronyms in the Figures	
Figure 1 – Thailand case	
CODI	Community Organization Development Institute
DMCR	Department of Marine and Coastal Resources
RDF	Royal Forest Department
RECOFT	Regional Community Forestry Training Center for Asia and the Pacific
SIF	Social Investment Fund
TAO	Tambon Administration Organization
TRF	Thailand Research Fund

Figure 4 – Peru case	
APECO	Asociación Peruana para la Conservación de la Naturaleza (NGO)
CEDIA	Centro para el Desarrollo del Indígena Amazónico (NGO)
CM	Casa Matsiguenka
COMARU	Consejo Machiguenga del Río Urubamba (indigenous org.)
Ecotour-Manu	Association of Manu Tour Operator Agencies
FANPE	Fortalecimiento del Sistema Nacional de Areas Naturales Protegidas por el Estado (national project funded by the GTZ)
GTZ	Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
INRENA	Instituto Nacional de Recursos Naturales (government org.)
PNM	Parque Nacional del Manu (Manu Nacional Park)
Figure 5 – Belize case	
TIDE	Toledo Institute for Development and Environment
TNC	The Nature Conservancy
Figure 6 – Kenya case – HCA	
AKF	Aga Khan Foundation
CRSP	Coastal Rural Support Program
HCA	Honey Care Africa Ltd.
MLFD	Ministry of Livestock and Fisheries Development
VDC	Village Development Committee
VDO	Village Development Organization
Figure 8 – India case	
FRLHT	Foundation for the Revitalization of Local Health Traditions
Figure 9 – Kenya case – PISP	
ALRMP	Arid Lands Resource Management Project
CARITAS	(NGO)
CDF	Constituency Development Fund
CORDAID	Catholic Organization for Relief and Development Aid
DSG	District Steering Group
IIRR	International Institute for Rural Reconstruction
ITDG	Intermediate Technology Development Group
MP	Member of Parliament
SMC	School Management Committee
WESCOORD	Water and Environmental Sanitation Coordination Group

Figure 10 – Guyana case	
UNDP-GEF	Global Environment Facility – United Nations Development Program
DFID	Department for International Development
CIDA	Canadian International Development Agency
IUCN	World Conservation Union – Netherlands committee
Mamiraua	Mamiraua Institute For Sustainable Development
CI	Conservation International
AS	Audubon Society: Latin America
U of F	University of Florida
MAA	Ministry of Amerindian Affairs
MFCL	Ministry of Fisheries Crops and Livestock
GFC	Guyana Forestry Commission
THAG	Tourism and Hospitality Association of Guyana
GTA	Guyana Tourism Authority
GAT	Guyana Aquarium Traders
RV	Rock View
FPA	Forestry Producers Association
CFC	Community Fisheries Committee members
MR	Makushi Researchers – Makushi Researcher Unit
CEW	Community Environmental Workers

3. A wealth of linkages

The cases considered in this study are not isolated projects. At the time of the field research, all of the Equator Initiative (EI) cases seemed to have an unexpectedly large number of institutional linkages and interactions that cut across many levels of organization, typically four or five (Table 1). Successful projects usually interacted

Table 1: Number of partners of each initiative at the time of field research and number of levels of organization in which these partners operate.

Cases	Partners[a]	Levels of organization
Medicinal Plants Conservation Centre, India	11	6
Arapaima conservation, Guyana	16	4
Honey Care Africa Ltd., Kenya – Kakamega	8	5
Honey Care Africa Ltd., Kenya – Kwale	6	5
Cananeia Oyster Producers Co-operative, Brazil	14	4
TIDE Port Honduras marine reserve, Belize	13	4
Pred Nai mangrove rehabilitation, Thailand	20	5
Casa Matsiguenka indigenous ecotourism, Peru	7	3[b]
Nuevo San Juan forest management, Mexico	22	5
Torra Conservancy, Namibia	8	4
Pastoralist Integrated Support Programme, Kenya	17	5

[a]There may be deviations from the number of partners indicated in figures and these numbers, but these are based on the best estimates of the researchers regarding the major partners.
[b]There was an international NGO level until 2003.

with a large array of supportive agencies and partners, usually around 10–15 partners in our sample (Table 1). In most cases, there was a local or community level; a regional or district level; a state or provincial level; a national level; and an international level.

The number and complexity of institutional interactions changes over time according to the development phase of each initiative. In most cases, the number of linkages and levels of organization increases as the initiative evolves. This is the case, for instance, of the Pred Nai Community Forestry Group, in Thailand (Figure 1), the Arapaima Management Project, in Guyana (Figure 2), and the development of Community-based Conservancies in Nambia (Figure 3).

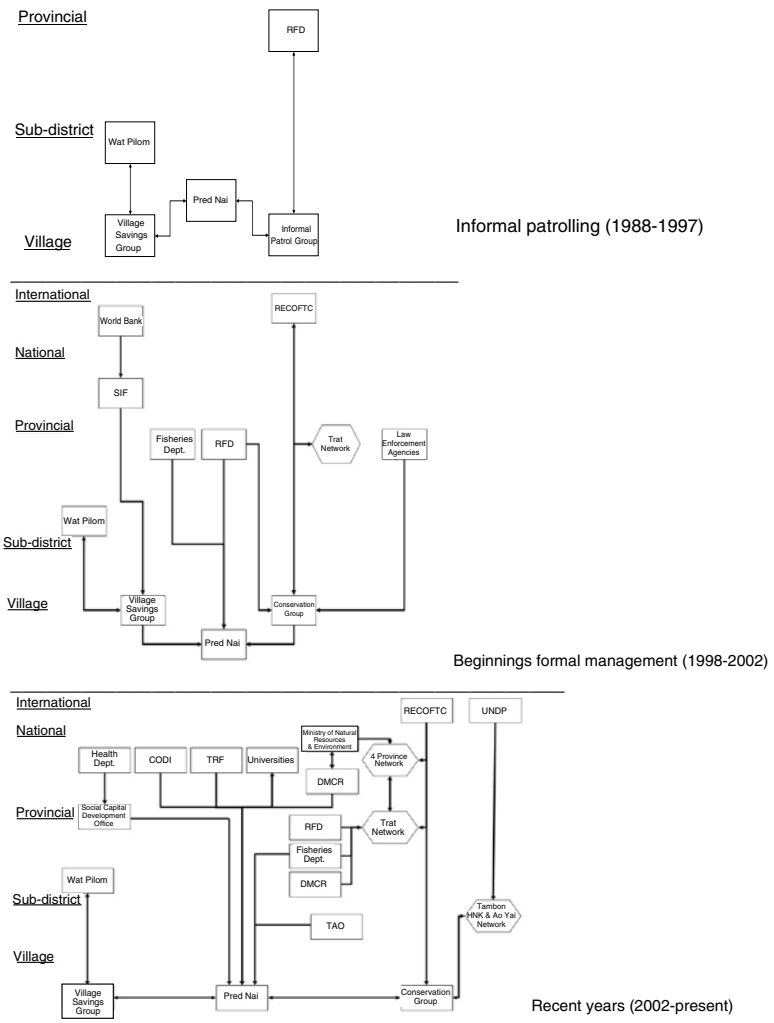

Figure 1: Institutional linkages Pred Nai Community Forest Group, Thailand (Adapted from Senyk 2006).

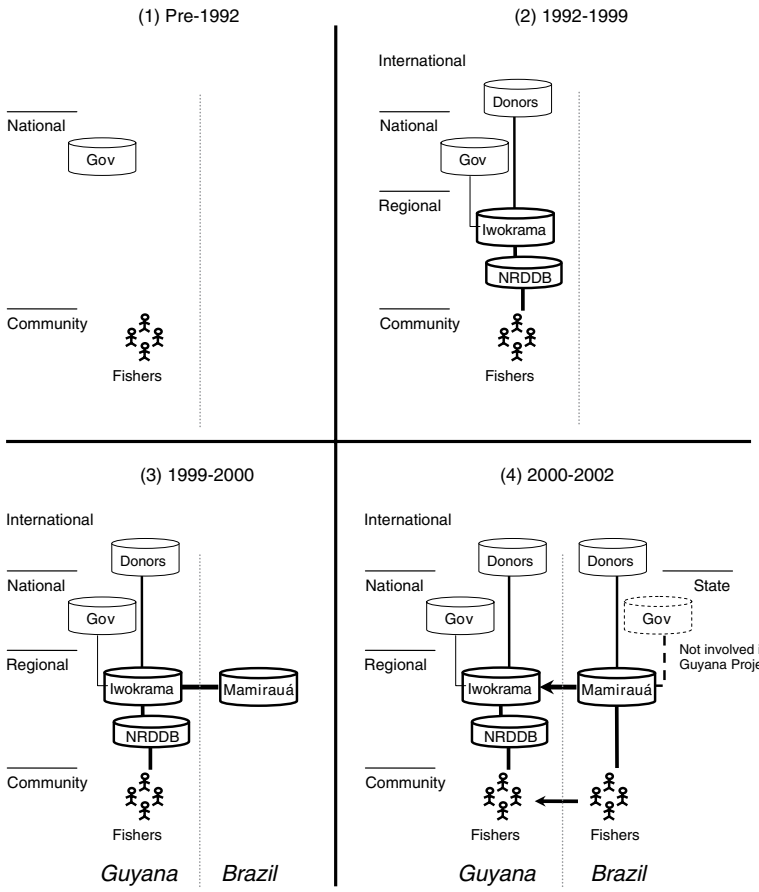

Figure 2: Institutional linkages leading to the development of the Arapaima Management Project, Guyana. Iwokrama is a national NGO; North Rupununi District Development Board (NRDDB) is a Regional Indigenous Organization; Mamirauá is a Brazilian NGO and also the name of a Protected Area (Fernandes 2005).

In Thailand, Pred Nai community developed an informal patrolling program to respond to resource use conflicts and degradation of the mangrove forest. From 1988 to 1997, the community established linkages with only two outside partners, resulting in interactions across only three levels of organization. Pred Nai advanced from informal patrolling of their mangroves to the establishment of a formal conservation group that actively managed the local mangrove forest. At the beginning of formal management (1998–2002), nine outside partners from five different organizational levels, including government, NGO, university, and other communities through formal and informal networks, had a stake in management. In recent years (2002–2006), the numbers of partners have doubled while the number of organizational levels remained the same (Figure 1).

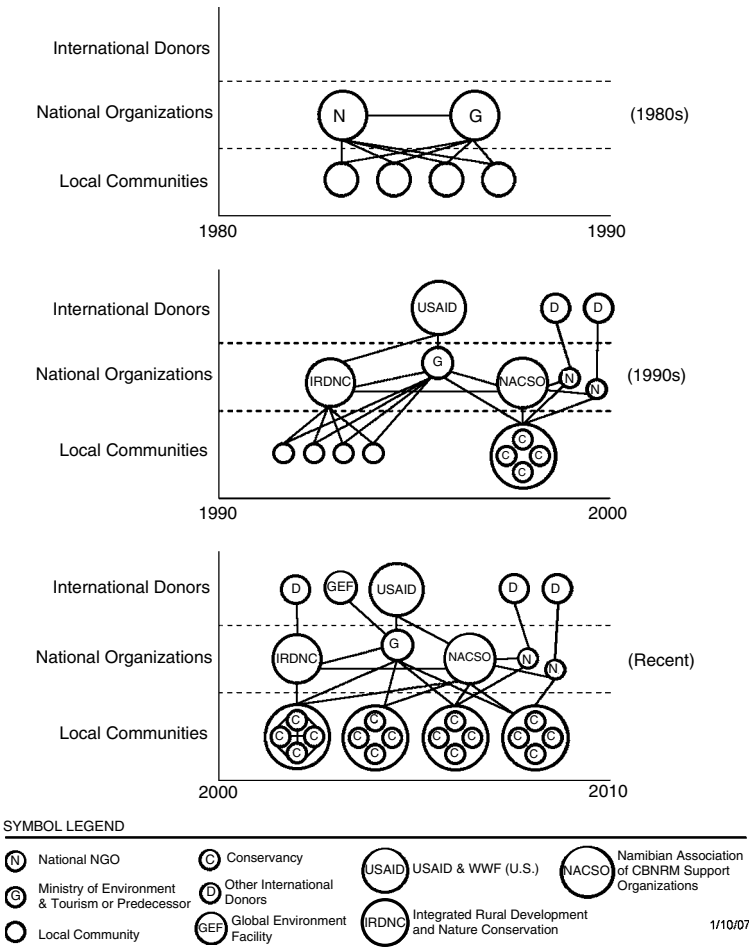

Figure 3: Evolution of community-based conservation in Namibia (Hoole 2007, Hoole this issue).

The idea of managing Arapaima (a large fish from the Amazon basin) in the North Rupununi District in Guyana was developed during a series of workshop involving the North Rupununi District Development Board (NRDDB) and a national NGO (Iwokrama), with support from government and funding agencies. Later, Iwokrama connected NRDDB with a Brazilian NGO managing a protected area (Mamirauá Reserve) with positive experience in the adaptive management of Arapaima (Castello et al. 2009). The Brazilian NGO and Brazilian fishers helped NRDDB to develop its Arapaima Management Plan. They also trained Guyanese fishers to assess Arapaima populations and estimate sustainable harvest levels using local ecological knowledge. Institutional linkages in this case became more complex as appropriate knowledge to achieve local objectives (i.e. Arapaima management) had to be attained elsewhere (in another country) (Figure 2).

The community-based natural resources management (CBNRM) program and conservancies in Namibia have evolved over a period of 25 years, and the number of conservancies has scaled up from an initial 4 in 1998 to 44 in 2006. Key linkages and partnerships have evolved from a few simple ones among local communities, a national conservation NGO and the national government wildlife agency during the initial community game guard program to multiple linkages and networks, involving several international donors, multiple national NGOs, the University of Namibia, private enterprise, and the Ministry of Environment and Tourism (Hoole, this issue, Figure 3).

What can we learn from these three cases regarding the wealth of partnerships? The Thailand case shows that as an initiative matures, it may start responding to broader needs and/or demands, often increasing the number of partners to do so. The Guyana case demonstrates that resources and/or knowledge/skills required to develop an initiative sometimes are not available within the organizations initially involved in the initiative; hence, there is a need to establish new vertical linkages across organizational levels and/or horizontal linkages. The Namibia case points out that, as a program expands its geographical scope or functional scope, so does the number of linkages and partners.

Less commonly, the number of partners in an initiative decreases as it evolves. Sometimes, as an initiative matures, there is a tendency of support organizations, particularly funding agencies and NGOs, to be phased out, with the expectation that the initiative will become self-sustaining or will find other sources of support. This is the case of the Casa Matsinguenka Indigenous Ecotourism Lodge Project in Peru (Figure 4). From 1997 to 2003, an international agency provided funding

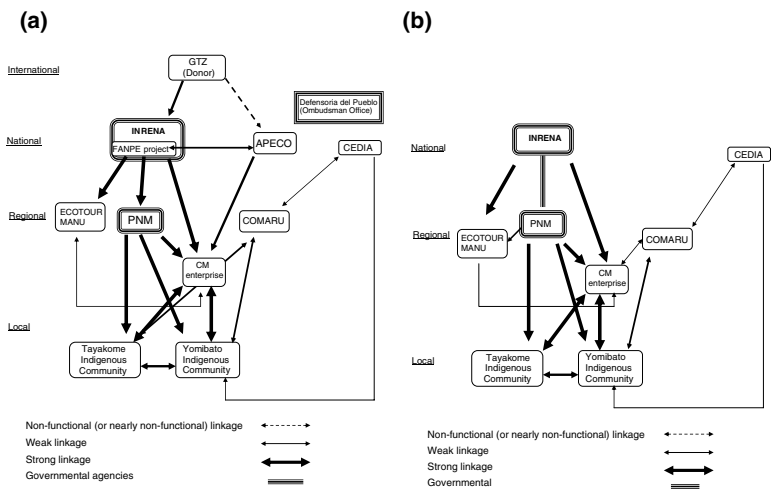

Figure 4: Institutional interactions among stakeholders of the Casa Matsiguenka Community-based Ecotourism Lodge Enterprise: (a) during development and implementation of the project (1996–2003); (b) in 2005 (Herrera 2006).

through government and a national NGO to help build the ecotourism lodge and train community members to manage the lodge. As funding ended in 2003, both the funding agency and the national NGO finished their involvement with the Indigenous Ecotourism Project. Since then, the lodge has been managed primarily by local community members and only one outside assistant manager. Other examples of NGOs reducing their involvement are discussed below for the Belize and Guyana cases.

4. The role of partnerships

The high diversity of linkages and partnerships may be related to the diversity of functions and roles of the partners. All initiatives analysed here by definition involve a community-based organization (CBO) and/or local communities working with a particular support organization, often a non-governmental organization (NGO). These CBOs or NGOs have established institutional interactions with other NGOs (local, regional, national or international); local, regional and (less commonly) national governments; donor agencies, often international; private-sector organizations; regional indigenous organizations or unions representing an economic sector; and universities and research centres. These partners interacted with the local community to provide a range of services and support functions, including raising start-up funds; institution building; business networking and marketing; innovation and knowledge transfer; technical training; research; legal support; infrastructure; and community health and social services (Berkes and Adhikari 2006; Berkes 2007).

In most cases analysed, there was a redundancy in functions of partners. For instance, Figure 5 depicts key institutional linkages and their contribution for the creation of Port Honduras Marine Reserve and associated livelihood projects. Funding and human resources were provided by at least five stakeholders, and knowledge and technical expertise by at least four stakeholders. In another example, the Nuevo San Juan Forest Management initiative in Mexico, 13 out of 24 partners[2] (54%) contributed with funding or fundraising; six (25%) provided business networking for access to markets and/or access to capital; six (25%) provided different types of technical support; five (21%) provided training and/or helped the initiative with research; and three (13%) contributed with political networking. This redundancy of partners providing similar functions is likely to build resilience into the initiative. In fact, the Mexican case is the longest running (>25 years) case among the ten studied.

Redundancy of interactions providing similar functions may be crucial to sustain a project; when some interactions are weak, others may be strong. This is the case of the Honey Care Africa (HCA) experience in the Kwale

[2] These include major partners and some minor ones.

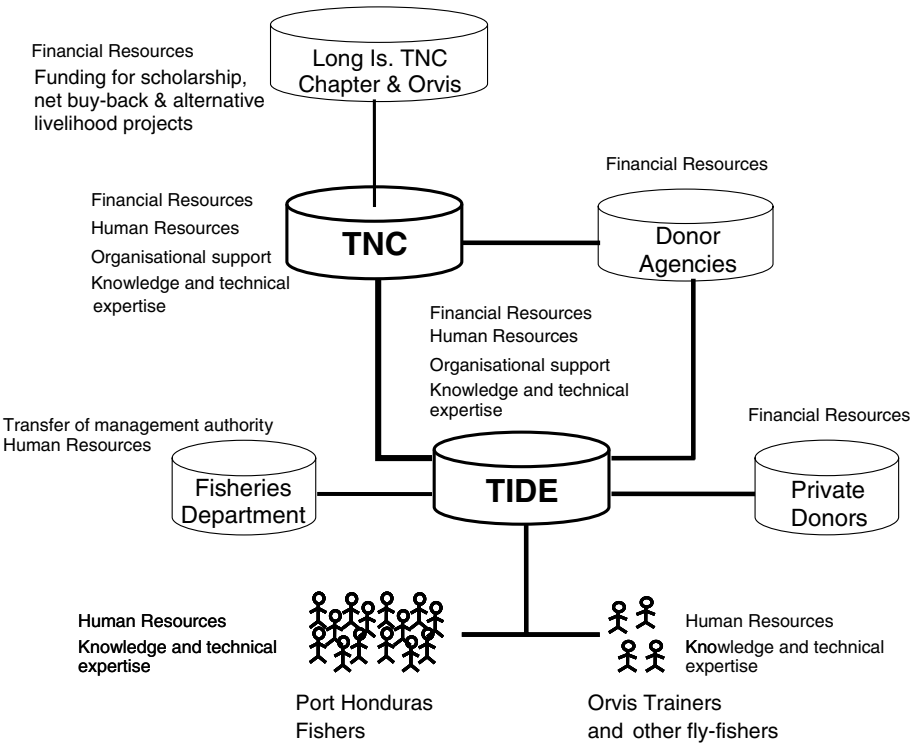

Figure 5: Toledo Institute for Development and Environment (TIDE), Belize. Key institutional linkages that facilitated the creation of Port Honduras Marine Reserve (PHMR) and associated livelihood projects (Fernandes 2005).

region of Kenya (Figure 6). Honey Care Africa partnered with a district NGO program (CRSP) to implement beekeeping in local communities. The NGO, working with district level staff of a government department (MLFD) in close partnership, had better communication with beekeepers than the NGO alone was able to do. This contributed to the support and sustainability of the beekeeping project.

Multiple funding sources were a characteristic of most initiatives (e.g. Belize, Guyana, India, Mexico, and Namibia cases). In fact, different but often complementary funding sources are frequently needed for different stages and functions. The Cooperostra case in Brazil provides a good example of the numerous institutional interactions required to conclude one particular project. Figure 7 summarizes how the Cooperostra group went about seeking funds in an effort to obtain health certification for their oysters from the Brazilian Federal Inspection Service. Funding was required for the various stages of designing the oyster depuration station, obtaining land for the station,

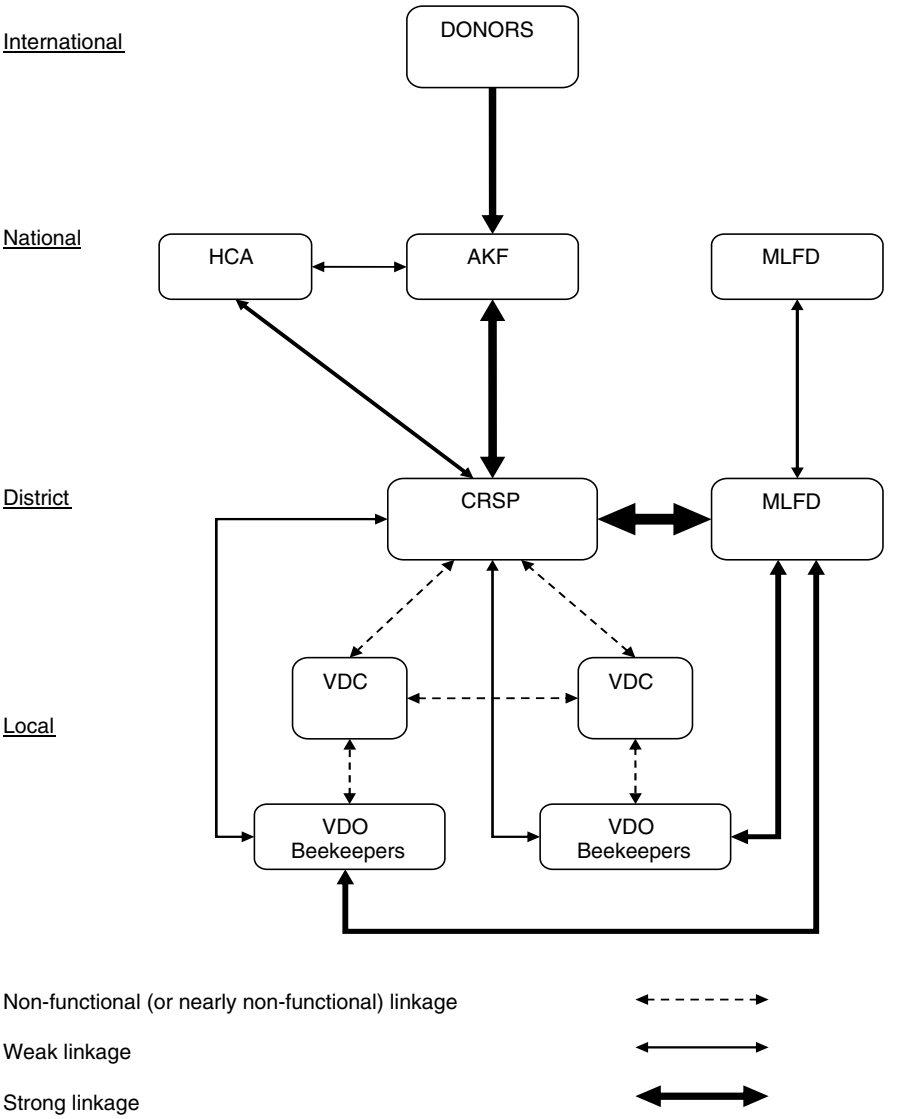

Figure 6: Honey Care Africa initiative in Kwale District, Kenya: Institutional interactions among stakeholders (Maurice 2004).

buying construction materials and so on. At least five complementary sources of funding contributed to the endeavour. Many of the other cases show similar multi-source funding and multi-agency linkages. Less common are initiatives that depend on only one source of funding, as in the Peru case discussed in the previous section.

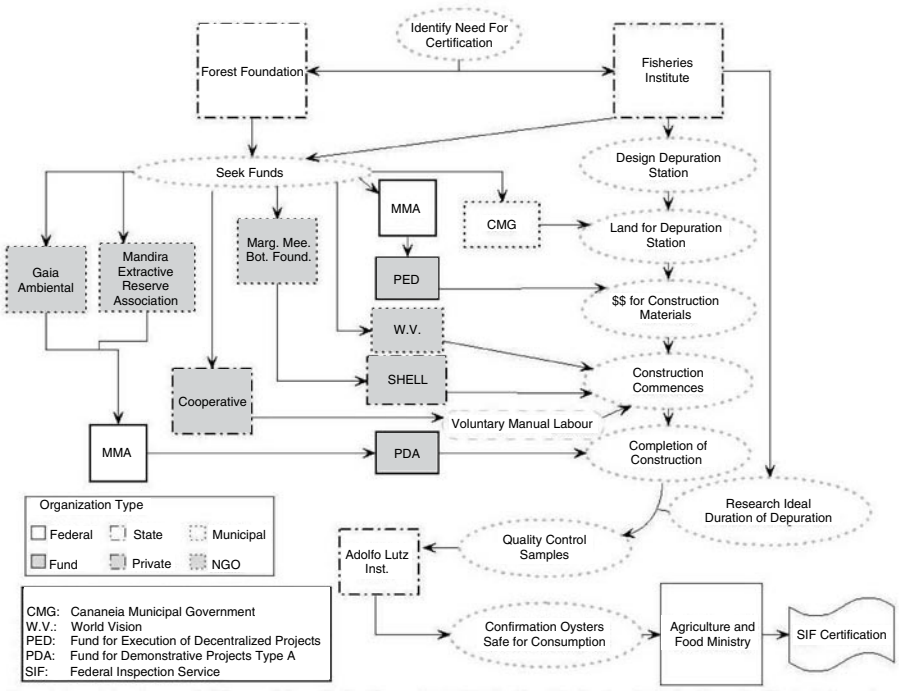

Figure 7: Institutional linkages which enabled the Cooperative to obtain Health Certification from the Federal Inspection Service (SIF) for its oysters, Brazil (Medeiros 2004).

5. The nature of linkages

Linkages may be analysed in a number of ways, such as the levels of organization or spatial scale/sectors crossed (vertical or horizontal linkages); the nature of agreement (formal or informal linkages), the flow of resources/information/demands (one way or both way linkages), the magnitude of interactions (weak or strong linkages), and the outcome of the interaction (positive or negative linkages).

5.1. Cross-level dynamics: horizontal and vertical linkages

One way of analysing institutional interactions is to examine if they take place within the same organizational level across space or across sectors or if they connect two or more levels of organization. All EI case studies showed a number of horizontal and vertical linkages. Horizontal linkages may be established at various levels, as demonstrated in the Guyana case (Figure 2), in which there are horizontal linkages between NGOs of two countries and between fishermen of two countries. Horizontal linkages often serve to: (i) exchange information, knowledge and experience, as in the India, Guyana, Brazil, and Thailand cases, particularly in networks involving community groups; (ii) to

exchange products/clients, as in the case of Peru; and, (iii) to complement and/or substitute skills/resources, such was the case of government agencies interacting with NGOs in the Peru, Belize, Kenya (HCA/Kwale), and India initiatives (Figures 4, 5, 6, 8).

Horizontal linkages that complement and/or substitute skills/resources was a pattern noted in half of the initiatives, including Brazil, Guyana, Kenya (HCA), Kenya (PISP), and India. In each of these, there was one very strong horizontal linkage providing a tandem of support for the local level, connecting it to sources of funding, information and other supports. In the India case, the support linkages had the form of a network, with the Pune Center (RCMPCC) at the middle (Figure 8). The main supporting organizations in each case included both NGOs and government organizations. The key government agencies were often at state or district level, providing the extremely important function of political support. In most cases, the key support function was not found at the national level; the

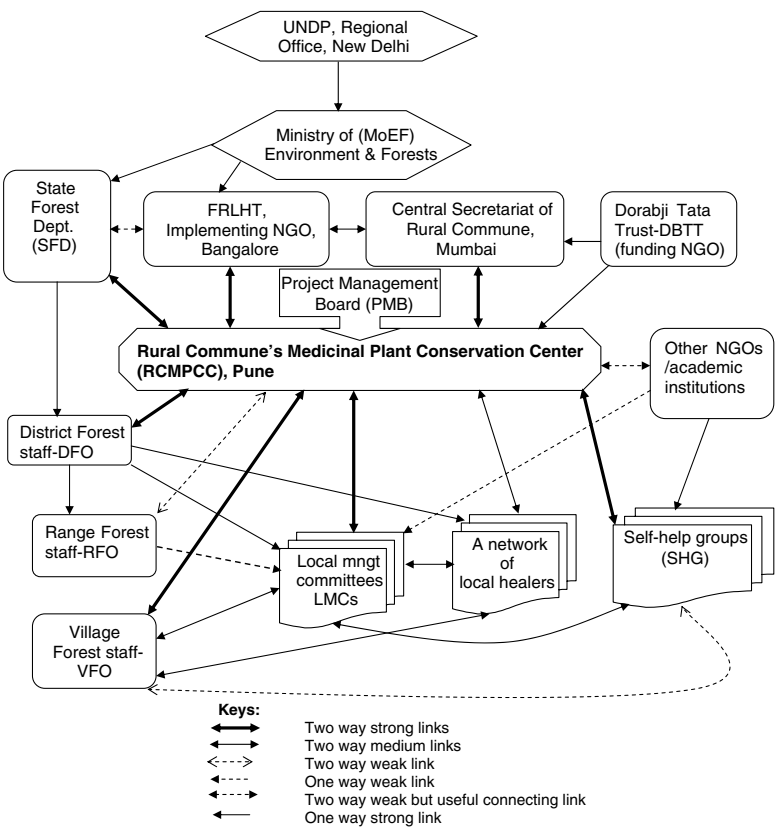

Figure 8: Rural Communes' Medicinal Plant Conservation Center, Pune, India: enabling institutional linkages which helped achieve project goals (Shukla 2004).

central government seemed passive or benign. It did not provide support, but at least it did not create barriers either. In at least one of the cases (Honey Care Africa, Kenya), we know that the organizers stayed away from central government agencies and actively pursued partnerships with the district level government instead. One researcher characterized national level agencies "as an omnipresent threat." The State level, by contrast, was a key level in political support in two cases: Brazil and India. In the India case, it was the State government that created a favourable policy environment (without the benefit of new legislation) that led to the issuing of government notification to empower local groups and agencies to participate in the conservation of medicinal plants.

The analysis of horizontal and vertical linkages is not always clear-cut. For instance, how does one characterize the linkage between the local/regional office of a national-level government agency with a local/regional community-based organization? The example is not unusual considering that most organizations are based at one level but operate at multiple levels, as Table 2 illustrates.

Another problem in analysing institutional linkages is related to the choice of organization or level on which to focus. For example, the Pastoralist Integrated Support Program in Kenya supports and facilitates activities in various communities. Robinson (2008) analysed institutional linkages first for PISP (Figure 9a) and then for one of the communities PISP has been working with (Balesa) (Figure 9b). One can see from the figures that the structure and complexity of interactions are quite different depending on the choice of the vantage point.

Table 2: Cross-level representation of stakeholders in Kakamega Honey Care Africa project, Kenya (Maurice 2004).

	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	Leval at which institution is based.
	Leval at which institution is active in relation to the HCA project.
	Leval at which instiution is not active in relation to the HCA project.

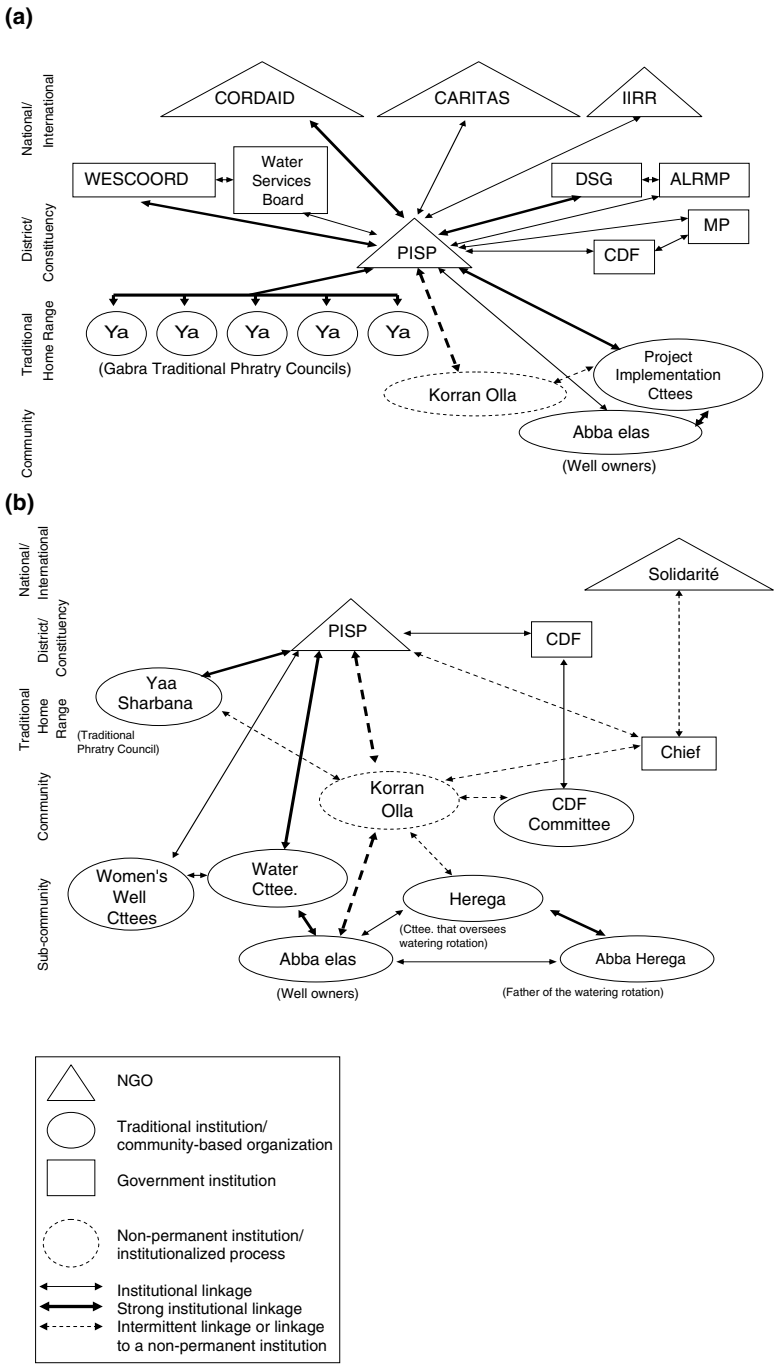

Figure 9: Pastoralist Integrated Supporting Programme (PISP), Kenya: (a) Some of the strongest institutional linkages at the present time; (b) Key linkages at the town of Balesa (Robinson 2008).

5.2. Formal and informal agreements

In most EI cases both formal and informal partnerships played important roles. Formal partnerships were important when funding was involved or when a formal network was established, as in the case of the Network of Local Healers in the India initiative. Formal partnerships were important also when a contract was set up for an organization to provide a certain service (e.g. training). Informal partnerships depended on volunteer work, in-kind support and exchange of knowledge/experiences. Learning networks, both formal and informal, were of particular interest in this regard. In Thailand, for instance, Pred Nai Community Forest Group was involved in a number of formal networks at various levels (sub-district, provincial and national) as well as informal networks with other communities. In other cases, formal networks did not seem very important. Pastoralist Integrated Support Program (PISP) in Kenya is one example. Robinson (2008) suggested that at district level, the need for networking with other peer organizations was largely fulfilled by PISP's participation in two multi-stakeholder consultative bodies.

5.3. Direction of linkages

Interactions among organizations, networks and communities may be one-way or two-way, pointing out which organization influences which. Three examples of one-way interactions are presented here. First, when an organization provides funding, a specific resource or training to another organization, the money, resource or knowledge flows in only one direction. Examples are found in all EI cases, and clearly shown in India (Figure 8) and Guyana (Figure 10) cases. Second, when a government agency provides legal support (e.g. a favourable political environment) or a service to an initiative, the former often does not receive anything in return. This was seen for example in the Thailand case in which two government agencies (RDF and Fisheries Department) assisted villagers in transitioning from an informal patrol group to a formal management group (Figure 1). Third, when the positive outcome of an initiative influences higher level institutions, this influence is normally in one direction only, e.g. the impact of the India project in the Planning Commission of India at national level which was inspired to set up and fund another 200 Medicinal Plant Conservation Areas across the country. Two other initiatives that also triggered increased government involvement, or support to community-based enterprises within their countries, were the Thailand and Guyana cases.

Examples of two-way interactions are often related to exchanges of information/ knowledge or sharing of power and/or responsibilities. In two-way interactions resources can also flow in one or both directions. In the Belize case, the Toledo Institute for Development and Environment (TIDE) co-managed the Port Honduras Marine Reserve with the Government of Belize (Figure 5). Another good example of two-way interactions was the development of a "symbiotic relationship" between two strongly interacting organizations in the process of supporting a project. There were several examples of such an interaction in our set of EI cases.

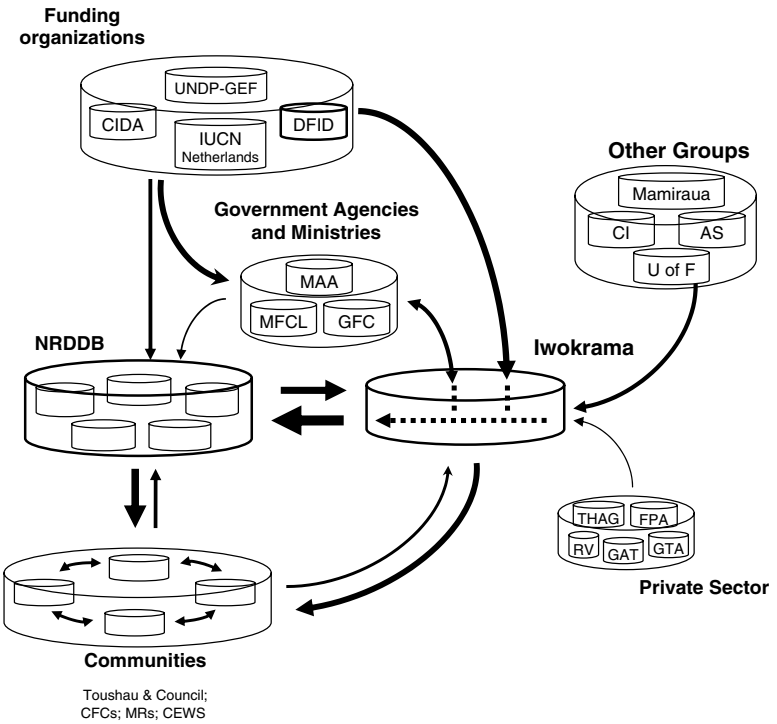

Figure 10: Key institutional linkages facilitating the activities of the North Rupununi District Development Board (NRDDB), in Guyana (Fernandes 2004).

In the India case, the leading NGO (Rural Commune's Medicinal Plant Conservation Centre – RCMPCC) maintained such a "symbiotic relationship" with State and District Forest officers in implementing and monitoring project activities (Figure 8) (Shukla 2004). In the Honey Care Africa initiative in Kwale, Kenya, the NGO (CRSP) provided office space and transportation for the government agency staff; in turn, the NGO received help from government field staff, which had a close relationship with local farmers, to assist in promoting and supporting the NGO's projects (Figure 6). In addition to complementarities in effort, infrastructure and personnel, the fact that staff of the two agencies worked so closely together was beneficial to both parties, as it also created opportunities for learning. Other examples of one-way and two-way interactions can be found in Figures 1, 4, 6, 8 and 10. Two-way interactions may consist of either horizontal linkages or vertical linkages, while one-way interactions often involve vertical linkages.

5.4. Magnitude of interaction in the linkages

In addition to the direction resources and knowledge flow among stakeholders, it is important to understand the magnitude or the degree of intensity of these interactions. The magnitude varies along a continuum, and although it cannot be measured

precisely, it can be calibrated by comparing linkages within the same system. Our research team developed some figures indicating the magnitude of linkages, as weak, strong, or non-functional. Figures 4, 6, 8 and 10, regarding the Peru, Kenya (HCA Kwale), India and Guyana cases, respectively, show the magnitude of linkages.

Of particular interest is the Guyana case (Figure 10) which indicates that in two-way interactions, the magnitude of the interaction may be different from the vantage point of the two partners. Another point: non-functional interactions may hinder project success, as the case of communication problems mentioned above in the Honey Care Africa initiative in Kwale, Kenya (Figure 6). Moreover, the inability to establish strong political linkages with government, in some cases, may become a threat to the initiative. The lack of policies or adequate legislation (or the lack of enforcement of existing ones) affects some initiatives negatively. A case in point is the Arapaima Management Plan in Guyana: the government's lack of commitment to Arapaima management was arguably the biggest threat to the continued survival of the species in Guyana (Fernandes 2004).

Despite the large number of horizontal and vertical institutional linkages identified in each project, most of them have only very few (often one or two) quite strong, two-way linkages that were the core set of linkages which maintain the project. This core set of linkages is likely to increase with an increase in the scope of the project (either in number of communities or activities involved). For instance, in the India case involving several communities in a state-level project, there were about seven strong, two-way linkages (Figure 8).

5.5. Outcomes of linkages

One can analyse institutional interactions according to their outcomes. Positive interactions may be understood as any interactions that contribute to project evolution and sustainability, whereas negative interactions are those that hinder the project. In all EI projects in our sample, the number of positive interactions outweighed the number of negative interactions. But there were cases in which a negative relationship may prove crucial to the outcome. An example of a key negative interaction may be found in the Peru case. The NGO (CEDIA) that had the original idea to develop the indigenous ecotourism lodge accused the government agency (INRENA) of plagiarizing the project and took legal action against both the government agency and indigenous communities. As a consequence, one of the two communities involved in the project broke relations with the NGO (Figure 4). However, in some cases negative interactions may stimulate learning, as it happened in the India project after some community groups started free-riding by selling their products in markets claimed by other communities. The NGO implementing the project then had to develop new norms and ways of managing the free-rider groups by redesigning certain local management strategies (Shukla 2004).

It is also interesting to note that some linkages that may at one time contribute to project development may at another moment hinder the project. This was the case with the government agency (INRENA) in the Peru example in its relation to the Ecotourism Lodge enterprise. At the national level, the agency promoted and

supported project development, but at regional level the agency's staff hindered the project by not responding in a timely way to the needs/requests of the Ecotourism Lodge Enterprise at a critical moment (Figure 4). This was also the case in the Honey Care Africa initiative in Kwale, Kenya (Figure 6). The national level NGO (AKF), out of which emerged the district NGO program (CRSP) that partnered with Honey Care Africa, did not devolve authority down to the district level NGO, resulting in a situation in which decisions were made in the country's capital, rather than at the district level.

6. Establishing linkages: leadership, institutional memory, learning

In the previous section we showed that presumably successful projects were partnered with a number of organizations across institutional levels, sectors and space to obtain the required knowledge, skill and resources in order to attain their objectives. We also pointed out that the nature of such partnerships often varied widely according to several attributes (cross-level dynamics, formality, direction and magnitude of impacts, and outcomes). In this section we turn to the question of how linkages are established.

The major lesson from most, if not all of the cases, is that key individuals matter a lot! Often key individuals who initiate linkages are based at the lead organization; such is the case in Belize and Guyana discussed below. Moreover, sometimes linkages are established through individuals within an organization and not between organizations *per se*. This was the case at the beginning of the enterprise development in the Mexico initiative: key linkages were established primarily with individuals rather than with organizations and agencies, and it was these individual linkages that drove the case forward.

In Belize, the Executive Director of TIDE (an NGO) advocated the creation of Port Honduras Marine Reserve by lobbying Government officials and promoting the Reserve in the surrounding communities. He was also heavily involved in fund raising activities, and increasing TIDE's visibility both nationally and internationally. As Director, he was cognisant of the multiple actors and institutional levels involved in the project. He was able to link international concerns with local needs. In doing so, he gained the Belize Government's support and transfer of management jurisdiction (Fernandes 2005). In the Guyana case, the acting Director General of Iwokrama (NGO) was directly responsible for sourcing project funding, and establishing links between the communities, government agencies, and Mamirauá, the Brazilian NGO that helped build capacity.

One interesting pattern is that key people initiating linkages within an organization often bring their knowledge/skill/memory from their previous work experience in another organization. Several examples may be cited. In Belize, TIDE's Executive Director had previous experience as a consultant for the Belize Centre for Environmental Studies which worked closely with The Nature Conservancy's (TNC) local office. In his new position he used his previous experience to establish new linkages. In India, a senior Forest Official became the project director of the NGO (RCMPCC Pune) responsible for implementing

the project. This enabled him to strengthen linkages between the NGO and the State Forest Department. In Brazil, a university researcher contacted by the Federal Government to help establish an extractive reserve in the Atlantic Rain Forest, formed partnerships between the university and the State Secretariat for the Environment and the Fisheries Institute (a State agency). Later he moved to the Forest Foundation (another State agency) and began coordinating a project to implement the oyster cooperative (Cooperostra). In this new role he has established a number of linkages that enabled the evolution of the project.

Another important finding about leaders is that key people often act at multiple levels of organization. That is, many key leaders seem to be active not at only one particular level, but rather straddle two or more levels of social and political organization. Such individuals are the knowledge brokers and policy entrepreneurs, and make linkages and translate local concerns to levels above, and *vice versa*.

New interactions may emerge as a result of positive outcomes of previous linkages. In India, the earlier work between two NGOs (FRLHT and RC) in revitalizing local health traditions through medicinal plants created an enabling environment for an increased commitment of resources for the project on the part of UNDP and Ministry of Environment and Forests (Shukla 2004). Previous experience with a partner may also help facilitate new linkages. In Mexico, several outsiders who provided some help previously to Nuevo San Juan developed contact with this community through the active role it had played previously in the regional organization of local communities. In addition, the establishment of certain initial linkages can make a project more visible to other potential partners. This was the case of the Pred Nai community, which became known by RECOFT (a national and international level NGO which became the project's major supportive partner) after the project received support from smaller groups and funding from the government.

Some key partners may play an important role at the beginning of a project but may reduce their involvement as the project matures. For instance, in Belize, the Nature Conservancy (TNC) local office gave a great deal of support (technical and funding) for TIDE's development and also served a major role in linking TIDE to other donors, but as TIDE matured, TNC local office reduced it involvement with TIDE and took on a supportive role. A similar pattern is observed in the Guyana case, where most of the NRDDB/community linkages with funding sources, government agencies and the private sector were initially facilitated by Iwokrama (NGO). This changed as the NRDDB began to use Iwokrama-created linkages to establish independent links with Government and funding groups. However, the NRDDB still remained dependent on Iwokrama for some technical, financial and organizational support (Fernandes 2004).

Almost all of the longer-term EI projects, including the Mexico case (Orozco, 2006), have some partnerships that have evolved and others that have declined in importance. In other instances, key partners continued assisting community organizations, even when a particular project they were supporting was over. For instance, RECOFT remained an important partner of Pred Nai community, assisting them with conservation and management issues, even after the end of the funded project that linked them.

7. Discussion and conclusions

The analysis of these cases suggests a number of hypotheses that could be further investigated. They include the following:

- In successful community-based enterprises, the number of two-way interactions (i.e. those benefiting two parties) exceeds the number of one-way interactions.
- In successful community-based enterprises, the core set of strong two-way linkages occurs at levels closer to the community (rather than at higher levels, such as the national).
- Positive outcomes of the first interactions are crucial to the later development of a project, that is, path-dependency is important (Chuenpagdee and Jentoft 2007). Hence, choosing initial partners carefully is fundamental to a project's success.
- Successful community-based enterprises are those that take advantage of a window of opportunity (Olsson et al. 2004) to establish linkages for their benefit, but most importantly, those that can foster the creation of such windows of opportunity.
- The availability of a redundancy of partners with similar interests and capabilities may be important to provide back-up support (e.g. a "plan B") for a community-based enterprise (Berkes 2009).

Based on a set of ten UNDP Equator Initiative cases studied in the field, our findings suggest a number of conclusions. The results indicate that a diverse variety of partners with different skills and capabilities are needed to help satisfy a diversity of organizational and development needs. These results expand and support the earlier findings based on 42 indigenous peoples cases from the 2004 UNDP Equator Initiative database, but without the benefit of fieldwork (Berkes and Adhikari 2006). The results also highlight the importance of networks and support groups in the development of conservation-development projects (Mahanty 2002; Stronza 2007), and in expanding the use of commons in the way that local groups are able to "opt-in" to the global economy (Anderson et al. 2006).

The findings indicate the importance of on-site research to assess the full wealth of linkages in a community-based enterprise. Key partners of each project are listed in the UNDP Equator Initiative database. But typically, these lists do not do justice to the range of partners involved with a project during the lifetime of that project. When we analysed the data concerning key partnerships in the Nomination Forms of 21 Equator Prize finalists, we found that the total number of key linkages per initiative varied from 2 to 16, with a mean of six, a median of five and a mode of four (Seixas et al. 2008). By contrast, in the present sample of ten EI projects studied in the field, the number of key partners ranged from 6 to 22, with a mean and a median of 13, and a mode of eight.

Not all of these partnerships are active at any one time. Certainly, they are not all equally important. Despite the large number of horizontal and vertical linkages identified in each project, most of these projects show only very few (often one or

two) strong, two-way linkages that are at the core of developing and maintaining that project. In most cases, the supporting partner is not a single group but a "tandem" of two groups with complementary strengths and capabilities. This tandem of support is often provided by a NGO and a district or state-level government agency.

These findings raise the question of why one finds such a large number of partnerships in a given case (typically 10–15 in our sample) when the key linkages often involve only two partners and the number of partners listed in the UNDP Equator Initiative nomination forms only average five. There seems to be two possible explanations for this, one having to do with the history of the project and the other with the function of partnerships.

Regarding the first explanation, the number and complexity of institutional interactions change over time according to the development phase of each initiative, as seen for example in the Mexico case. As an initiative matures, it may start responding to broader or different needs, requiring different kinds of partners. Resources or skills needed may not be available through the partners initially involved in an initiative. As an initiative expands its geographical scope or functional scope, the number of linkages and partners may also increase. Alternatively, as an initiative matures, there may be a tendency to phase out some of the partners, for example the initial funding agencies.

Regarding the second explanation, the diversity of linkages and partnerships are no doubt related to the diversity of functions and roles of the partners. For example, an initiative may need help with fund-raising, business networking, legal support, training, technical support, research, knowledge transfer, institution-building, and capacity-building for gender and equity (Berkes and Adhikari 2006). Often, a diversity of partners is needed for these multiple functions. Perhaps less obvious, redundancy of partnerships may also be important. Redundancy of partnerships providing similar functions may be crucial to sustain a project, as redundancy provides resilience (Low et al. 2003). When some linkages fail, other partners may step in to help the project ride out shocks and stresses. In our ten cases, the most common kind of redundancy involved funding; many projects were characterized by multiple funding sources.

We use the term, one-way interaction, to refer to one organization providing to another organization a specific resource or service, such as funding. In such interactions, the money, resource or knowledge flows in only one direction. By contrast, two-way interactions are often related to exchanges of goods and services, such as information and knowledge. Two-way interactions may either be horizontal or vertical linkages, whereas one-way interactions typically involve vertical linkages.

Many of the EI initiatives have linkages in the form of networks (Olsson et al. 2004; Folke et al. 2005). Although the distinctions between horizontal and vertical linkages are not always clear-cut, in the sample of ten EI cases, horizontal linkages often serve to exchange information, knowledge, experience, products and clients. Between government agencies and NGOs, horizontal linkages may serve to complement skills and resources between the two parties. Vertical linkages are often important for funding, business networking, legal support, technology

transfer and capacity building. Vertical linkages are important in power sharing for resource and environmental management.

The combination of a number of factors, analogous to the ingredients of a great meal, is important in the development and success of a conservation-development initiative (Seixas and Davy 2008). Our findings here are particularly supportive of the importance of one of these factors: leadership. Leaders or key individuals often make the difference between a successful and a failed project. Some leaders may play an important role at the beginning of a project but reduce their involvement as the project matures, as in the Thai case. In other cases, leaders may continue assisting the initiative, with an evolving portfolio of functions, as in the Kenya example. Key people initiate linkages and they often bring their knowledge, skills, and experience from their previous work. Many leaders and key people, like boundary organizations (Cash and Moser 2000) and bridging organizations (Olsson et al. 2007), act at multiple levels, straddling and bridging two or more levels of organization.

Ultimately, successful conservation-development initiatives, such as many of the EI cases, are dependent on successful learning, experimentation and working together (Berkes 2009). New interactions may emerge as a result of the experience, creativity and bridge building of the leaders, and the positive outcome of previous linkages. Previous experience with a partner often facilitates further linkages. Experience with new skills and technologies accumulate iteratively, with adaptive learning (Armitage et al. 2007). Successful enterprises, including those in the conservation-development area, are those that can build on their experience, engage in mutual learning with their partners, and further develop their linkages.

Literature cited

Anderson, R. B., L. P. Dana, and T. E. Dana. 2006. Indigenous land rights, entrepreneurship, and economic development in Canada: "Opting-in" to the global economy. *Journal of World Business* 41:45–55.

Armitage, D., F. Berkes, and N. Doubleday, eds. 2007. *Adaptive Co-Management: Collaboration, Learning, and Multi-Level Governance*. Vancouver: University of British Columbia Press.

Bache, I., and M. V. Flinders, eds. 2004. *Multi-Level Governance*. Oxford: Oxford University Press.

Beem, B. 2007. Co-management from the top? The roles of policy entrepreneurs and distributive conflict in developing co-management arrangements. *Marine Policy* 31:540–549.

Berkes, F. 2007. Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences* 104:15188–15193.

Berkes, F. 2008. Commons in a multi-level world. International Journal of the Commons 2(1):1–6. [online] URL: http://www.thecommonsjournal.org.

Berkes, F. 2009. Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management* 90:1692–1702.

Berkes, F., and T. Adhikari. 2006. Development and conservation: indigenous businesses and the UNDP Equator Initiative. *International Journal of Entrepreneurship and Small Business* 3:671–690.

Berkes, F., and I. J. Davidson-Hunt. 2007. Communities and social enterprises in the age of globalization. *Journal of Enterprising Communities* 1:209–221.

Cash, D. W., and S. C. Moser. 2000. Linking global and local scales: designing dynamic assessment and management processes. *Global Environmental Change* 10:109–120.

Cash, D. W., W. N. Adger, F. Berkes, P. Garden, L. Lebel, P. Olsson, L. Pritchard, and O. Young. 2006. Scale and cross-scale dynamics: governance and information in a multilevel world. *Ecology and Society* 11(2):8. [online] URL: http://www.ecologyandsociety.org/vol11/iss2/art8/.

Castello, L., J. P. Viana, G. Watkins, M. Pinedo-Vasquez, and V. A. Luzadis. 2009. Lessons from integrating fishers of arapaima in small-scale fisheries management at the Mamirauá Reserve, Amazon. *Environmental Management* 43:197–209.

Chuenpagdee, R., and S. Jentoft. 2007. Step zero for fisheries co-management: what precedes implementation. *Marine Policy* 31:657–668.

Fernandes, D. 2004. Community-Based Arapaima Conservation in the North Rupuni, Guyana, *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Fernandes, D. 2005. TIDE Port Honduras marine reserve, Belize. *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Folke, C., T. Hahn, P. Olsson, and J. Norberg. 2005. Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources* 30:441–473.

Herrera, J. 2006. Casa Matsinguenka indigenous ecotourism project, Peru. *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Hoole, A. 2007. Lessons from the Equator Initiative: Common Property Perspectives for Community-Based Conservation in Southern Africa and Namibia. *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Hooper, M., R. Jafry, M. Marolla, and J. Phan. 2004. "The Role of Community Scaling-up in Achieving the MDGs: An Assessment of Experience from the Equator Prize" Between the Lines (New York, The Equator Initiative, 2004) page 2–10. [online] URL: http://www.undp.org/equatorinitiative/documents/pdf/BetweenTheLines_Issue6.pdf [Accessed 2009-04-09].

Isely, C., and S. Scheer. 2003. Community Based Ecoagriculture Initiatives: Findings from the 2002 UNDP Equator Prize Nominations, United Nations Development Programme.

Low, B., E. Ostrom, C. Simon, and J. Wilson. 2003. Redundancy and diversity: do they influence optimal management? In *Navigating Social-Ecological Systems,* eds. F. Berkes, J. Colding, and C. Folke, 83–114. Cambridge: Cambridge University Press.

Mahanty, S. 2002. Conservation and development interventions as networks: the case of India ecodevelopment project, Karnataka. *World Development* 30:1369–1386.

Maurice, S. 2004. *Equator Initiative Technical Report*. Kenya: Honey Care Africa Ltd. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Medeiros, D. 2004. *Equator Initiative Technical Report*. Brazil: Cananeia Oyster Producers Cooperative. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Ohl-Schacherer, J., E. Mannigel, C. Kirkby, G. H. Shepard Jr., and D. W. Yu. 2008. Indigenous ecotourism in the Amazon: a case study of 'Casa Matsiguenka' in Manu Nationl Park, Peru. *Environmental Conservation* 35:14–25.

Olsson, P., C. Folke, and T. Hahn. 2004. Social-ecological transformation for ecosystem management: the development of adaptive co-management of a wetland landscape in southern Sweden. *Ecology and Society* 9(4):2. [online] URL: http://www.ecologyandsociety.org/vol9/iss4/art2/.

Olsson, P., C. Folke, V. Galaz, T. Hahn, and L. Schultz. 2007. Enhancing the fit through adaptive co-management: creating and maintaining bridging functions for matching scales in the Kristianstads Vattenrike Biosphere Reserve Sweden. *Ecology and Society* 12(1):28. [online] URL: http://www.ecologyandsociety.org/vol12/iss1/art28/.

Orozco, A. Q. 2006. Lessons from the Equator Initiative: The Community-Based Enterprise of Nuevo San Juan, Mexico. *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Ostrom, E. 2005. *Understanding Institutional Diversity*. Princeton NJ: Princeton University Press.

Ostrom, E. 2007. A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences* 104:15181–15187.

Pierre, J., and B. G. Peters. 2005. *Governing Complex Societies: Trajectories and Scenarios*. New York: Palgrave Macmillan.

Robinson, L. W. 2008. Lessons from the Equator Initiative: Institutional Linkages, Approaches to Public Participation, and Social-Ecological Resilience for Pastoralists in Northern Kenya. *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Seixas, C. S., and B. Davy. 2008. Self-organization in integrated conservation and development initiatives. *International Journal of the Commons* 2(1):98–123. [online] URL: http://www.thecommonsjournal.org.

Seixas, C. S., B. Davy, and W. Leppan. 2008. Lessons learnt on community-based conservation and development from the 2004 Equator Prize finalists. *Canadian Journal of Development Studies* 28(3).

Senyk, J. 2006. Pred Nai community forestry group and mangrove rehabilitation, Thailand, *Equator Initiative Technical Report.* [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Shukla, S. 2004. Medicinal Plants Conservation Centre, Pune, India. *Equator Initiative Technical Report*. [online] URL: http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html.

Stronza, A. 2007. The economic promise of ecotourism for conservation. *Journal of Tourism* 6:1–21.

Timmer, V. 2004a. "*Characteristics of Leadership and Five Equator Prize 2002 Finalists," CID Graduate Student Working Paper No. 3*. Cambridge, MA: Science, Environment and Development Group, Center for International Development, Harvard University.

Timmer, V. 2004b. "*Community-based Conservation and Leadership: Frameworks for Analyzing the Equator Initiative," CID Graduate Student Working Paper No. 2*. Cambridge, MA: Science, Environment and Development Group, Center for International Development, Harvard University.

Timmer, V., and C. Juma. 2005. Biodiversity conservation and poverty reduction come together in the tropics: Lessons from the Equator Initiative. *Environment* 47(4):24–47.

Wollenberg, E., M. Colchester, G. Mbugua, and T. Griffiths. 2006. Linking social movements: how international networks can better support community action about forests. *International Forestry Review* 8:265–272.

Young, O. R. 2002. *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale*. Cambridge, MA: MIT Press.

Young, O. R., L. A. King, and H. Schroeder, eds. 2008. *Institutions and Environmental Change*. Cambridge, MA: MIT Press.