Self-organization in integrated conservation and development initiatives

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Abstract: This paper uses a cooking metaphor to explore key elements (i.e., ingredients for a great meal) that contribute to self-organization processes in the context of successful community-based conservation (CBC) or integrated conservation and development projects (ICDPs). We pose two major questions: (1) What are the key factors that drive peoples' and/or organizations' willingness to take responsibilities and to act? (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 *trigger events* and *catalytic elements* in several cases among the Equator Prize finalists and short-listed nominees, from both the 2002 and 2004 awards. The Prize recognizes efforts in integrating biodiversity conservation and poverty reduction. We use secondary data in our analysis, including data from several technical reports and scientific papers written about the Equator Prize finalists and short-listed nominees. We observed common ingredients in most projects including: (1) involvement and commitment of key players (including communities), (2) funding, (3) strong leadership, (4) capacity building, (5) partnership with supportive organizations and government, and (6) economic incentives (including alternative livelihood options). We also observed that CBC and ICDP initiatives opportunistically evolve in a multi-level world, in which local communities establish linkages with people and organizations at different political levels, across different geographical scales and for different purposes. We conclude that there is no right 'recipe' to promote community self-organization but often a mix of some of these six ingredients need to come together for 'success' and that one or two ingredients are not sufficient to ensure success. Also the existence of these six ingredients does not guarantee *a great meal* – the 'chef's' creativity also is critical. That is, the success

of a project results from its ability to use the available resources and ingredients creatively or perhaps wisely.

Keywords: Community self-organization, Community-based Conservation, Integrated conservation and development projects (ICDPs).

1. Introduction

What makes a great cook ('chef'): one who follows set recipes strictly or one who creates a delicious meal with the available ingredients? We prefer the second case and in this paper we will use the cooking metaphor to introduce the theme of how successful community-based conservation projects originate. We believe that more than just the amount and variety of ingredients are important and that what makes a delicious meal is the cook's ability to visualize beforehand the potential meal(s) he can prepare with the available ingredients, and much of the skill revolves around how to choose and combine them appropriately (i.e., use them wisely). Of course, some common ingredients are required in almost all meals, such as salt, oil and sugar. The same may be said for community-based conservation (CBC) projects: there is no final or fixed recipe for promoting successful community-based conservation, but a vision (a goal) and some common elements (ingredients) are obviously important and often the success of a project results from its ability to use the available resources and ingredients creatively or perhaps wisely. In this sense, this paper aims to investigate the common ingredients, including trigger and catalytic elements that contribute to the origin and evolution (i.e., the self-organization) of successful community-based initiatives - many of them promoting cross-scale linkages.

Community-based Conservation (CBC) initiatives and/or Integrated Conservation and Development Projects (ICDPs) aim 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 systems have several attributes such as nonlinearity, emergence, uncertainty, scale, and self-organization (Levin 1998; Gunderson and Holling 2002). Most management systems, such as Community-based Conservation and Integrated Conservation and Development Projects, operate at multiple scales; that is, the governance structure encompasses 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'.

In this paper we focus our attention on aspects of self-organization in human systems; in particular, we explore key elements (i.e., ingredients according to our cooking metaphor) that contribute to community self-organization in successful Community-based Conservation and Integrated Conservation and Development Projects. We pose two major questions: (1) What are the key factors that drive peoples' and/or organizations' willingness to take responsibilities and to act? Or to put it differently, what capacities and institutions make 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 examined several cases among the Equator Prize finalists and short-listed nominees, from both the 2002 and 2004 awards. The Equator Initiative (EI) is a partnership of several international organizations, governments, private sector, civil society and communities, coordinated by the United Nations Development Program (UNDP) working to help build capacity and promote a greater recognition of the role of local communities in reducing poverty and conserving biodiversity. The Equator Prize is one of the four major themes of the Equator Initiative (URL: http://www.undp.org/equatorinitiative/).

Before examining how communities self-organize through conservation and development 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 a few individuals to hundreds or even thousands of people. In this paper, we use the above considerations with that of the Singleton and Taylor's (1992) concept of community as a set of people with some shared

beliefs, who interact directly on a 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 totalling 30,000 people. A common thread among these initiatives was that the large majority of them deal partially or entirely with common-pool resource management. The exceptions are two initiatives that focus on agro-business (Seixas et al., forthcoming).

2. Methods

This paper uses secondary data in its analysis, including data from several technical reports and scientific papers written about the Equator Prize finalists and shortlisted nominees, from both the 2002 and 2004 awards. Case-study, in-depth field research was carried out by graduate students from the University of Manitoba, who produced seven technical reports about the following cases:

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., Kenya (Maurice 2004),
4. Cananeia Oyster Producers Cooperative, Brazil (Medeiros 2004),
5. TIDE Port Honduras Marine Reserve, Belize (Fernandes 2005),
6. Pred Nai community forestry group and mangrove rehabilitation, Thailand (Senyk 2005), and
7. Casa Matsinguenka indigenous ecotourism project, Peru (Herrera 2006).

Desk analysis of the Equator Prize nomination forms and interviews by mail and/ or phone were carried out by Jonas (2003) and Timmer (2004a). Face-to-face interviews with representatives of the 2004 Equator Prize finalists were conducted by Seixas et al. (forthcoming). Finally, a synthesis report about the first four cases researched by the University of Manitoba research team was produced by Berkes and Seixas (2004).

All the cases analyzed here were considered successful by the Equator Initiative Technical Advisory Committee (TAC)[1], composed of researchers and practitioners involved in Community-based Conservation (CBC) and Integrated Conservation and Development Projects (ICDP) from throughout the world. Seven criteria were used by the TAC 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.

We assume here that all the Equator prize finalists and those short listed have been successful in achieving biodiversity conservation and poverty reduction[2]. One may argue though that the real test to the hypothesis that there are some common ingredients, but no specific recipe on how to cook a great meal (i.e., a successful project), should include the analysis of unsuccessful initiatives. We agree with this point but including unsuccessful cases in our sample was not an option since the set of initiatives identified by the Equator Initiative were all considered successful to a certain extent. Of course, we assume the risk of being very descriptive in our analysis. Nevertheless, we believe that the EI cases form a unique data set of Community-based Conservation initiatives and Integrated Conservation and Development Projects selected from several countries around the Equator belt that deserve investigation.

In order to investigate 'what contributes to produce a great meal' (i.e., what contributes to produce successful projects), we first investigate what leads a cook to start a meal (i.e. the trigger events of a project) and what common ingredients are often used (i.e., common and catalytic elements to start and to maintain a project). For this purpose, we first look at the seven EI cases researched in detail by the University of Manitoba team. Then, we further explore trigger events and catalytic elements using data from all the sources pointed out above. By trigger events, we mean the motives or events, which led people to get mobilized around an initiative. By catalytic elements, we mean the factors that contribute to speeding up the process of organizing an initiative (initial catalytic elements) and those that maintain the initiative (continuing catalytic elements).

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[1] We make no distinction between short listed initiatives, finalists and winners. We understand that all were considered successful by the TAC independently from the final Jury decision by which the final 6 'winners' were chosen.

[2] It should be noted, however, that we (Seixas at al., forthcoming) 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.

3. Factors contributing to community self-organization

3.1. Project origins – trigger events

What leads a cook to prepare a meal? There may be many reasons. For instance, if he or someone is hungry and he needs to prepare something for the person to eat. Following our analogy - there is a crisis and something must be done to deal with it. Another instance, one knows someone will be hungry in the near future and then it is time to plan a meal (i.e., one envisions a crisis and prepares for it). A third instance, one works for a restaurant and there is an order from a customer (i.e., he follows the order from an outside agenda). Another example, one sees or receives a specific ingredient, envisions the potential meals he can cook with it, and starts preparing it (i.e., a new window of opportunity is open and he takes advantage of it). Other reasons may exist, of course, but basically to prepare a good meal a cook may take the initiative or receive an order from others and he has to have in mind (to envision) the potential meal he expects to cook. This analogy may also be applied to Community-based Conservation and Development initiatives.

A vision of possible changes to improve the social-ecological system (i.e., of potential project outcomes) is the first step to plan a successful initiative (a great meal). Such vision should be developed with the community and key people in order to develop a shared motivation to promote change. This vision may emerge from within the community or from outside, but often results from trigger events that indicate changes are necessary. Hence, Community-based Conservation initiatives and Integrated Conservation and Development 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.' Among the seven EI cases researched by the University of Manitoba team, four were initiated by community-based organizations or local NGOs (Belize, Guyana, Peru, and Thailand), and three by outside supportive organizations (Brazil, India, and Kenya). Seixas et al. (forthcoming) observed that 63 percent out of 24 finalists of the 2004 Equator Prize seemed to be initiated by community-based organizations or local NGOs while 21 percent were initiated (or largely influenced) by outside supportive organizations.

Table 1 presents the trigger events and catalytic elements leading to the organization of the seven EI cases researched by the University of Manitoba team. The motives (trigger events) to start these initiatives included environmental degradation (Belize, Brazil, Guyana, and Thailand), the plan to implement conservation and/or development agendas (Brazil, Guyana and India), a search for an alternative livelihood opportunity (Peru), and new market opportunity (Kenya). Jonas

(2003) noted that many projects of 27 finalists of the Equator Prize 2002 seemed to originate from post-disaster situations. For instance many of these 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, roads and related infrastructure projects) (15%). Two or more factors may have triggered some of the projects.

Table 1. 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 (BE)	- increased slaughter of manatees - increased illegal fishing by foreigners	- strong local leadership - strong commitment of an international NGO - community support - involvement of key people, who had previous relation with the leader (i.e., use of existing network of friends)	- government 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 (BR)	- decreasing oyster yield due to over-harvest - government 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, government organizations and private sector - partnership between two government agencies providing capacity building and technical support - higher prices for certified oysters
Arapaima Conservation Guyana (GY)	- Arapaima over-harvest - Iwokrama (national 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 right connections to support the project	- creation of alternative sources of income - consistent funding, capacity building and organizational support by a national NGO

Medicinal Plant Conservation India (IN)	- partnership between two NGOs (national and regional) willing to promote community-based me-dicinal plant conservation (CBMPC) - partnership among NGOs and State forest department encouraged through inter-national funding in order to promote CBMPC	- funding opportunity - replication of successful model - commitment of senior government 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 (HCA) Kenya (KE)	- HCA saw an opportunity to develop a high-end honey supply to serve the domestic market in larger centre 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 (PE)	- need to find economic alternatives for indigenous groups whose livelihood was restrained by the creation of a national park - outsider bringing the idea of ecotourism	- Pressure from indig-enous organization and NGOs on government authorities to take action on improving the com-munities living condi-tions by giving them an economically sustainable alternative - international funding for lodge construction and capacity building - government 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 (TH) | - 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 Government Departments (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.

Seixas et al. (forthcoming) compared the initial motives (trigger events or elements) for the start of each of the 2004 Equator Prize finalists with the lead organization behind each initiative. They observed that local lead organizations often fight for rights and cultural revitalization, try to solve conflicts, and/or respond to environmental degradation, threats or disasters (80% of the cases locally initiated). Interestingly enough, the other 20 percent of the cases locally initiated, which is related to the conservation and development agenda, started in response to the establishment of protected areas nearby or within their community area. The idea was to ensure that the communities benefited from the establishment of protected areas (e.g. improving livelihoods with ecotourism profits) while supporting the existence of such protected areas. The motivation of outside supportive lead organizations is usually related to the integrated conservation and development agenda (100% of the cases identified as initiated by outsiders), 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.

Even when a project is community initiated, it often requires support from outside organizations. In the set of cases analyzed by Seixas at al. (forthcoming) 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 pen-

etrate into market or policy-making processes) and asked NGOs or government agencies already working in the area to help them through the process. Isely and Scherr (2003) observed a similar pattern among cases of Ecoagriculture initiatives extracted from the 2002 Equator Prize nominations. The issue of partnership between local community and supportive organizations and/or government is further explored below.

In some cases there are trigger events leading to the establishment of an initiative, such as the large-scale destruction of local mangrove for intensive shrimp aquaculture in the Pred Nai community of Thailand – a direct threat on local livelihoods. In other cases though, there are a series of events (related or unrelated ones) that take place throughout the years preceding the establishment of the program or initiative. In the latter case, some key people or organizations see an opportunity to build upon existing knowledge and institutions to solve current problems. Olsson et al. (2004) present a good example of how a key leader built upon opportunities and existing knowledge and institutions (produced from unrelated ongoing 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) An NGO began presenting an 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 neighbouring 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).

3.2. Project development – common and catalytic elements

What are the common ingredients often used to prepare good meals? That is, what are the common and catalytic elements that help to start and maintain (i.e., to self-organize) a successful project? We observed in Table 1 that (1) involvement and commitment of key players (including communities), (2) funding, (3) strong leadership, (4) capacity building, (5) partnership with supportive organizations and government, and (6) economic incentives (including alternative livelihood options) appeared as major common and catalytic elements in more than 50 percent of the cases (Table 2). Each of these elements is discussed in more detail in the following sub-sections.

Table 2. Common and catalytic elements contributing to cases of self-organization

Catalytic elements	Initiatives*							
	BE	BR	GY	IN	KE (i)	KE (ii)	PE	TH
Involvement and commitment of key players	X	X		X	X			X
Funding	X	X	X	X		X	X	
Strong leadership	X		X		X			X
Capacity building	X	X	X	X	X	X		X
Partnership w/ supportive organizations and gov't	X	X	X	X	X	X	X	X
Economic incentives / Alternative livelihoods	X	X	X	X	X	X	X	X

* BE (Belize), BR (Brazil), GY (Guyana), IN (India), KE-i (Kenya – Kakamega), KE-ii (Kenya – Kwale), PE (Peru), TH (Thailand).

In addition to the aforementioned catalytic elements, another one that appears in most of these seven EI cases, although not clearly stated in Table 1, is clear pre-existing relationships developed 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 critically important relations were built among the local community, and a university research group and a government agency (the Forest Foundation) during the prior implementation of a protected area (Extractive Reserve) encompassing the community. Another instance, in both the 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.

3.2.1. Involvement and commitment of key players

Each Community-based Conservation (CBC) initiative and Integrated Conservation and Development Project (ICDP) 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 support), expertise, labour, and/or facilitation of decision-making and legal frameworks. Local communities and/or local-level organizations (indigenous groups, local non-governmental organizations, or community-based organizations) are the major actors in these initiatives, despite the fact that some initiatives were initiated by outsiders.

Government agencies from different political levels and economic sectors are often involved in such CBC and ICDP 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 facilitate CBC and ICDP development. There are also cases in which the government is involved later in the process, due to political pressures such as in the case of the community-based Ecotourism Lodge in Peru or for political reasons such as in the case of Pred Nai forestry management in Thailand.

Most community-based conservation and development initiatives also benefit from the involvement of supportive organizations – organizations working closely with communities to improve conservation and/or development, but not considered part of the more formal government system (e.g., research institutes, conservation NGOs or development agencies). As well there are a large number of other organizational actors involved in part of the CBC and ICDP initiatives such as regional/national indigenous organizations and of course the private sector.

In an attempt to categorize the key players involved in 24 finalists of the 2004 Equator Prize, Seixas at al. (forthcoming) observed that there are at least 5 types of such key players: (i) local communities and/or local-level organizations (either indigenous groups, local non-governmental organizations, or community-based organizations) were present in all these initiatives as expected (such involvement was a prerequisite to become a prize finalist); (ii) government agencies from different political levels were involved in 50% of the cases; (iii) supportive organizations were involved in 54% of the cases; (iv) regional indigenous organizations in 13 % of the cases; and (v) the private sector in 13% of the initiatives as well.

3.2.2. 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 operate 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., forthcoming). Funding seems a less important element to start an initiative when environmental awareness and livelihood threats trigger immediate community action. In fact, all the three Equator Prize finalists in 2004 initiated without 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 research team, emerged as a response to large-scale destruction of local mangrove for use in intensive shrimp aquaculture – a direct threat to local livelihoods (Table 1). 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 people's work, resources and willingness to collaborate; i.e., no funding was initially used.

Even in cases where no start-up funding is used, operational funding may be used to improve the initiative. In the Thailand case, after the more formal conservation group was formed (about 10 years after community based patrolling had begun), it received funding from the World Bank through a government program to buy equipment and build infrastructure to improve patrolling activities. In this case the important role of formalizing/legalizing community organizations in order to access funding is clearly shown.

Funding may come from multiple sources and fundraising skill is often critical to the project's success. Funding may be a major enabling factor and a diversity of sources is often needed. For instance, to construct the depuration station at the Oyster Producers Cooperative in Brazil, funding came from six different sources. There are cases though 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 is 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 critically important in accessing funds from different sources.

Seixas et al. (forthcoming) investigated possible ways of getting money for an initiative, based on interviews with the 2004 Equator Prize finalists. Starting from the initiative side, initiatives may contact donors, on their own or with outside help, and apply for funding. Key, often very knowledgeable, people seem to play a critical role in securing funds – they either have key knowledge about possible funding opportunities 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 further investigation – in particular considering that many countries around the Equator Belt have weak institutions and corruption is more the norm. A variety of related questions merit follow-up, for example related to how to optimally build appropriate capacity given these findings. Another point that is worth investigating is whether small grants (such as

GEF-UNDP Small Grants Programme) are better managed and more effective in achieving their goals than large or even medium sized grants. Some interviewees have pointed out, for instance, that small grants seem more appropriate to begin smaller scale initiatives.

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, construction, 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 for numerous other purposes in different projects as well.

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 financing 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 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 Village 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' (Senyk 2005).

In order to design and implement their projects, most initiatives creatively use a variety of voluntary help and/or free facilities and borrowed equipment provided by supportive organizations and other counterpart assistance from NGOs, government, and universities. This included voluntary help from people paid from other sources but allowed to work in these projects during their free time. Such help often focussed on 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 in a wide variety of other ways (Berkes and Seixas 2004).

3.2.3. Capacity building

The term 'capacity building' is usually used to mean government, NGO or other technical people 'educating' the local people. However, in the seven EI 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 related technical issues as well as less formal training provided through a wide variety of meetings, workshops and guided visits are but a few examples of how capacity may be built at a 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 seven 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 for both outside and local practical knowledge. Learning from successful examples or from previous mistakes is a powerful way of building capacities. In some of these arenas, know-how and knowledge from previous positive/negative experiences are transferred within the same community or from experiences elsewhere. 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 meetings involving the major organizations

and scientists were designed to bring together local and scientific knowledge and experiences in a collaborative, problem-solving environment. This approach may be viewed as an adaptive co-management process, such was the one described by Olsson et al. (2004) in Sweden. Indeed, one characteristic of all these EI projects is that they provided shared learning spaces to combine local and scientific knowledge to either improve resource management or human well-being (Berkes and Seixas 2004).

Capacity building may be needed for a variety of purposes. 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., forthcoming). Concerning community organization, training was provided for institutional capacity building, financial management, organizational management techniques, development of management board and other governance systems, team building and community work, leadership skills, 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.

In addition to building capacity at the local level, in some instances, capacity often needs 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. 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.).

3.2.4. Leadership and key players

Leadership is fundamental to drive Community-based Conservation initiatives and Integrated Conservation and Development Projects. Leadership may be provided by individuals or organizations (NGOs, government agencies, private sector enterprises, research institutions), and be from within the community or from outside. A literature review on leadership indicates that successful leaders are likely to have characteristics of one or more of the following: innovators, communicators, learners, bridge-builders, and system thinkers (Timmer 2004b, Table 3). Timmer (2004a) analyzed five Equator Prize 2002 finalists in light of these characteristics.

Table 3. Leadership characteristics (Timmer 2004a)

Leadership	Characteristics
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

Many initiatives during their beginning had a key leader or organization acting as a broker, that is, able to make the right connections to promote capacity building, and achieve technical support, funding support and/or political support, as in the case of Leader I in the Brazilian case (Table 4). The broker may also provide a vision for or reinforce the motivation behind the initiative, and promote players' trust in the initiative as in the case of the Pred Nai Community Forest Group in Thailand. In many instances, a broker as a key player in starting an initiative is likely to have characteristics of innovator, communicator and bridge-builder. In other instances, the broker may also have characteristics of a systems thinker and/or learner, as in the case of the head of the NGO TIDE in Belize; in which the leader acted as learner, bridge-builder, and system thinker. It is also important to note that in some cases the leadership role seems diffuse among several players, as in the Indian and Peruvian cases.

Leaders are often viewed as 'agents of change'. These key players (people and/or organizations) lead in many instances the process of transformation of the social-ecological system. There seems to have a strong correlation between 'agents of change' and level of education. We identified agents of change in at least seven out of 24 finalists of the Equator Prize 2004 (Seixas et al., forthcoming). All of them were well-educated people, some holding Masters or PhD degrees and some being religious leaders. There are cases, though, in which leaders have no higher education, but often they are better educated (i.e., have more school years or are able to speak a second language) than the average people in the community.

An initiative may have different key players leading different tasks concomitantly or in sequence. As well, in the same initiative, the role of one key player may change over time. Our analysis of the seven EI cases shows that key players

and their roles have changed over time in all of the projects (Berkes and Seixas 2004). In Brazil, a sequence of government agents/researchers played a leadership role throughout project design and implementation (Table 4).

The role of agents of change, bringing new knowledge, ideas and/or technology to local people was crucial for the project development in all the seven EI cases. In general, women play a minor role as agents of change and local leaders in formal organizations, government departments and NGOs. Exceptions included the female head of the Pred Nai community in the Thailand case and the outside female government agents/researchers leading the Brazilian case in equal proportion with outside men. In all the other cases, leaders are male. At the community level in three of the cases (India, Kenya, and Peru), increasingly more women became involved in livelihood opportunities promoted by the project. Some of these women became local leaders within their own groups (Berkes and Seixas 2004).

Table 4: External leaders and their roles, affiliation and connections in the Brazilian case.
Source: D. Medeiros, 2004.

	PHASES				
	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 Fisheries Institute	State Forest Foundation
Role	grad student: research socio-ecological viability of extractive reserve	government researcher: started 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

3.2.5. Partnerships

We have illustrated above that Community-based Conservation (CBC) initiatives and Integrated Conservation and Development Projects (ICDP) often establish partnerships with a wide variety of 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.

We observed that both formal and informal partnerships occur in CBC and ICDP initiatives. Formal partnership takes place when government and other supportive organizations provide organizational expertise, legal support, training, and/or funding. Informal partnerships may evolve by informal learning processes; that is, when certain arenas (e.g., workshops, meetings, visits, bar talks, one-on-one talks) promote knowledge and information exchange among people, including sharing of lessons learned both from success and mistakes. These people may be community members, supportive organization staff, government agents, or members of other communities doing related work.

The number of formal partnerships established in each initiative changed over time and likely reflected a balance among available resources within the community, new needs created by the initiative, and leadership ability to maintain or establish new partnerships. Among the 21 finalists of the Equator Prize 2004, the number of partnerships per initiative varied from 2 to 16 (Median 5, Mode 4) (Seixas et al., forthcoming). From these 21 finalists, 15 (71%) 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); 10 (48%) of the initiatives had the municipal or district-level government as a key partner; the same number (10) had at least one national-level environmental and/or development agency/ministry as a partner; and, 9 (43%) of the initiatives had at least one academic or research organization working in collaboration with them.

Fritjof Capra (no date) states that, 'Partnership is a key characteristic of life. Self-organization is a collective enterprise'. These words explain much of what this paper is about. Partnership is crucial for Community-based Conservation and Integrated Conservation and Development Projects. It is one of central pillars of community self-organization.

3.2.6. Economic incentives and alternative livelihood options

One of the key elements for maintaining people committed to an initiative is to provide them with economic incentives. In all seven EI cases researched by the University of Manitoba team, we observed economic incentives, sometimes provided in terms of alternative or complementary livelihood options, as key catalytic elements for the self-organizing process of a project.

In the Peru case, the development of an ecotourism lodge has provided the first source of income for the indigenous group living inside a protected area. In at least two cases (Kenya and India) complementary livelihood options were created (beekeeping and medicinal plant sales, respectively). In another case (Belize), alternative livelihood options were proposed to convince locals to stop over-fishing: an NGO provided training in tour-guiding and range patrolling for fishers and offers of employment as rangers. In the Brazil case, the incentive to participate in the cooperative was to get a higher price for certified oysters.

Interestingly enough, sometimes economic returns (incentives) may not come soon but may be foreseen. This is the case of the Arapaima management initiative in Guyana. Despite the fact that the government has not yet approved the Arapaima management plan for sustainable fishing, fishers have identified high value markets for future sale of Arapaima harvest. While no direct income comes from Arapaima fishing, an alternative source of income for local fishers was promoted: small-scale aquarium trade.

In the Thailand case, the development of a Village Savings Group (Box II) and its outcome helped to increase the unity within the village, develop village leadership in terms of organizational abilities and management of money, and it was used as a platform to further educate villagers about conservation. In addition to economic incentives, social and cultural incentives may also contribute to people's commitment and community self-organization. Although we have no data on this, we suggest that further research investigate such 'non-material' incentives.

4. Conclusion

This paper sought to examine two questions. (1) What drives or encourages different people's and/or organizations' involvement in a project, their willingness to take responsibilities and to act? Or to put it differently, what capacities and institutions make it possible for people and organizations to work together? (2) What are the key components of community self-organization? In other words, how do conservation-development projects originate, evolve, survive or disappear? In the following paragraphs we seek to shed further light on these questions, at least partially.

What contributes to people's and/or organizations' involvement in a project, or their willingness to take responsibility and to act? We observed that in some initiatives, people had previous experiences working with community mobilization (e.g., through religious groups) 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, the initiative worked with existing

Trigger event(s)

Envisioning transfomation

Window of opportunity

The social-ecological system

Incentives   Leadership

Involvement/commitment of key players, including communities: shared view, skills and knowledge

Funding and other resources   Capacity building

Suportive organizations and government agencies: skills and knowledge

Political environment   *Governance structure*

Self-organization

Feedback and learning

Catalytic elements
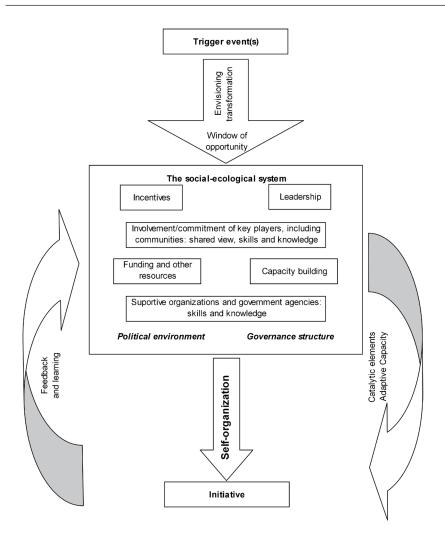Adaptive Capacity

Initiative

Figure 1. The self-organization process in conservation-development initiatives starts with a vision to change the socio-ecological system created in response to trigger event(s) (e.g., disasters, conflicts, new agendas). Such a vision is usually developed in collaboration with community members and concerned partners. The stimulus for change (anticipated incentive or incentives) helps to motivate community engagement to seek a new and different set of outcomes. When a window of opportunity (e.g., institutional environment, partnerships, capacity building) appears, one or more key people (leaders) start to mobilize the available materials (in-kind resources, infrastructure, funding, information/knowledge) and available energy (leadership, community involvement, supportive organization and government involvement) for the development of the project.

institutions and social networks. Building on existing institutions and capabilities has served as a catalyst to some initiatives. Sick (2002, 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'. Involving 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 guerrillas, dictatorial governments) as well as those that are internal (e.g., internal group conflicts and lack of trust of outsiders' ideas) (Seixas et al., forthcoming).

How conservation-development projects originate, evolve, survive or disappear? Going back to our cooking metaphor, we observed throughout this paper that there is no perfect recipe for conservation-development projects. However, we note that there are some common ingredients present in most of the cases. Based on our studies we observe that most groups/individuals seek to make the best use of some common ingredients (e.g., shared vision of possible change and motivation to promote change, appropriate (in both the temporal and level/issue scales) leadership, and involvement and commitment of key players (particularly community)). Other ingredients may serve as catalytic factors in the self-organization process (e.g., knowledge and skills of supportive organizations and government agencies, funding and other resources, capacity building, economic incentives). Figure 1 attempts to provide a model of the dynamics of the self-organization process in Community-based Conservation (CBC) initiatives and Integrated Conservation and Development Projects (ICDP). It provides the key elements that have contributed to the origin and development of most of the projects analyzed by our research team. Each project used different 'amounts' 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 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 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 favourable 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 degree of actual involvement of different actors into the process.

After the initial self-organization process, the project is often reconfigured through feedback and learning; that is, although not all projects have monitoring systems, lessons of what works and what does not work are often incorporated (though it may take a long time) into new arrangements (configurations) of the

project. Catalytic elements, including social, economic and/or ecological incentives often move the project forward. However, it is the capacity to adapt to internal forces (e.g., new demands, internal conflicts) and external forces (e.g., markets, central government policies, international economic policies ('globalization') and donor policies) that dictate the ability of a project to survive or disappear.

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

To conclude, this paper has shown that Community-based Conservation and Integrated Conservation and Development Projects opportunistically evolve in a multi-level world, in which local communities establish linkages with people and organizations at different political levels, across different geographical scales, and for different purposes. As Berkes (2006) puts it 'community-based conservation is … about governance that starts from the ground up and involves multi-level interactions'; moreover it 'is a complex systems problem'. This paper analyzes self-organization processes in complex systems and concludes that there is no right 'recipe' to promote community self-organization. Despite the fact that we observed six common ingredients[3] to be present in most of the projects, the existence of these six ingredients does not guarantee the success of a project: – the 'chef's' creativity also is critical. Moreover, not all ingredients are used in all projects and other different key ingredients are used in some of the projects. Our results show (Table 2), however, that often a mix of some of these six ingredients need to come together for 'success' and that one or two ingredients are not sufficient to ensure success. One hypothesis that emerges from our findings and could be tested in further research is that when some of the key ingredients disappear continued success becomes difficult. One important lesson that also emerges from our findings is that valuing and empowering local institutions and encouraging and facilitating multi-level, cross-scale partnerships seem to be key steps in making a delicious meal – i.e., in promoting a successful Community-based Conservation initiatives and Integrated Conservation and Development Projects.

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[3] Common elements: (1) involvement and commitment of key players (including communities), (2) funding, (3) strong leadership, (4) capacity building, (5) partnership with supportive organizations and government, and (6) economic incentives (including alternative livelihood options).

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