The limits to integration: critical issues in integrated conservation and development[1]

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[1] The paper is based on ongoing research undertaken by the authors for the Millennium Ecosystem Assessment (MA). The MA is concerned with analysing the consequences of ecosystem change for human well-being as well as the options available to enhance the conservation of ecosystems and their contribution to meeting human needs, including poverty alleviation. Within the MA, a comprehensive assessment was undertaken of the impacts of different kinds of societal responses on ecosystems and human well-being. Responses include policies, strategies, interventions and measures aimed at addressing specific issues, needs or problems in different domains (Millennium Assessment 2003). The authors of this paper conducted an assessment of responses considered as being 'integrated'. In this paper we distil the findings of the assessment of integrated conservation and development.

Abstract:

Integrated approaches are gaining in importance as a means to address the increasing pressures and demands of society on land, water and biological resources and the continuing degradation of ecosystems. Their aim is often to promote sustainable and productive land-use systems and to protect critical resources and ecosystems by balancing land, water and other resource uses, providing a basis for participatory decision-making and conflict resolution among stakeholders, and creating an enabling political, social and economic environment. Integrated strategies are increasingly associated with multi-stakeholder processes and with decentralisation and they may include actors and institutions from government, civil society and the private sector. They have taken a variety of forms, including Integrated Coastal Zone Management (ICZM), Integrated Conservation and Development Projects (ICDPs) and Integrated River Basin Management. Although many integrated approaches make ambitious claims about their likely benefits, in practice the results of implementation have been mixed in terms of ecological, social and economic impacts. This paper examines what has worked and failed to work in integrated approaches and why. It investigates the enabling conditions and well as the biding constraints that appear to affect the success of such approaches. We draw on examples from integrated conservation and development to examine these issues.

The paper first explores the conceptual issues of integration, outlining the different ways in which integration can occur and the different directions it can take. Integration can mean, for example, integration of different goals such as biodiversity conservation and social and economic development. It can also be integration between different actors and institutions, such as government and communities, and it can occur at different scales from local to international, and across scales. It can also involve integration between different ecosystem services to improve human well-being. Different types of integration imply the usage of different tools and instruments or combinations of these. For example, integrating conservation and development may require addressing simultaneously property rights, production and marketing issues. The paper then maps the main integrated approaches developed and implemented in recent decades. The mapping illustrates how integration occurs in practice, including the tools and instruments used and scale of implementation. Based on a review of meta-analyses of approaches aimed at integrating conservation and development and on the authors' own research, the paper draws general lessons about the enabling conditions and constraints facing integrated strategies, which can be of a political, institutional, economic, social and ecological nature or a combination of them. Although integrated approaches imply synergies and win-win solutions, in practice they also involve important trade-offs, which need to be identified and negotiated so that solutions are minimally acceptable to all stakeholders.

1. Introduction

Since the Rio Summit in 1992, growing attention has focused on the inherent linkages that exist between environment and development. Through its call for sustainable development, the Rio process accomplished to place the integration of social, economic and environmental goals firmly on the policy agenda. Despite there being much disagreement regarding what sustainability means, ample consensus has formed around the need to protected and manage natural resources wisely for sustaining and improving social and economic development. It is increasingly recognised that sustainability problems are complex and require integrated, multi-faceted solutions. The need for greater integration has become a recurrent argument in policy and research on issues as diverse as biodiversity conservation, climate change, rural development and land-use planning. Integration, however, has acquired different meanings depending on the approaches it comes to form the basis of. Nevertheless, some common elements are manifest such as approaching problems from a holistic or systems perspective, involving key stakeholders, enhancing co-ordination among different institutions, promoting linked interventions at multiple scales, and making decisions based on improved knowledge.

It is not difficult to see why integration has gained rapid acceptance among policy and research communities. A wide range of resource management interventions are unsuccessful because they fail to understand and address the complex cause-and-effect relationships underlying many environmental problems as well as the interrelated nature of such problems. There has also been a tendency to work at a single scale and segregated from other interventions and sectors, which is often inadequate when problems cut across geographical and institutional boundaries. In government, for example, the integration of environmental considerations into sector policies has become a fundamental concern (OECD 2002). This is because many policies conflict with and undermine environmental goals. A typical example is economic policies that encourage tropical deforestation (Mahar 1989, Mahar and Schneider 1994). In biodiversity conservation, projects have often failed to consider the needs of local populations, often exacerbating poverty and engendering conflicts (Blaikie and Jeanrenaud 1996). Integration is often necessary but what kind of integration depends on the issue (or set of issues) being addressed and its social, economic and ecological context. Common types of integration include integration of policies, goals, stakeholders or scales of intervention. Sometimes a combination of some or all of these is required.

While the concept of integration is appealing and pursuing integrated strategies seems to be an eminently sensible approach to solving complex, multi-dimensional natural resource management problems, there is not much empirical evidence to support the claim that integrated strategies are better than conventional ones. The focus of research and policy has largely been on putting forward the argument for more integration rather than critically examining its implementation and outcomes. For example, the difficulties associated with promoting and sustaining collaboration between stakeholders with different resources, knowledge and power for the implementation of integrated projects are frequently underestimated. The costs and feasibility of pursuing integration are also not discussed. It may be that a conventional approach is preferable because of being less resource intensive or more feasible to implement, even through it may not result in optimal outcomes. Integration, therefore, is a policy option, the strengths and weaknesses of which need to be further considered and analysed.

This paper explores the conceptual dimensions of integration and analyses the practical implementation of integrated approaches to environment and development. It aims to identify what the limitations of these approaches are and suggest some ways to make them more effective. Integrated strategies have been applied to a range of issues and implemented at many scales, from local level projects to national and international strategies. We identify the main integrated approaches to environment and development but focus on integrated conservation and development, which has become popular in recent decades. The paper is organised as follows. Section 2 explores the different dimensions of integration. Section 3 characterises the most important integrated approaches we have identified, including the main problems it they seek to address, which elements make them potentially integrated, at what scale they have been implemented, who are the actors involved and what kinds of instruments they use. Section 4 examines efforts to integrate conservation and development, drawing out the main findings of existing assessments and what they mean for integration. Section 5 presents empirical cases from Nepal and Brazilian Amazonia. The Nepal case is a protected area in the Terai region, while the Amazonia example is that of extractive reserves in Brazilian Amazonia. These represent significantly different ways of approaching the integration of conservation and development but share similar types of constraints, which we argue are primarily institutional. Section 6 proposes some potential ways to address such constraints.

2. Dimensions of integrated approaches

Although the need for more integration is increasingly advocated in many areas of environmental policy, what integration means and implies is often unclear and is subject to interpretation. Integration as it is used in environmental policy and management has a number of dimensions, which we explore in this section. The nature of these dimensions is conceptual, in the way the linkages between social and ecological systems are understood and different kinds of knowledge brought together; institutional, in the way the different actors and institutions interact with one another, and with legal frameworks, government, civil society and the private sector; and practical, in the way that governance frameworks are organised at different scales or across scales.

Social and ecological systems

Concerns over integration have augmented ever since sustainability became a prominent concept and guide to policy. It is widely accepted that sustainable development requires the integration of social, economic and environmental goals. However, debates surrounding sustainability have also motivated more fundamental changes in worldviews, which call for an integrated perspective on social and ecological systems or society and nature. It is no longer sensible to view environment and society as two separate entities. Scientists have begun to argue that the distinction between them is artificial and arbitrary (Berkes and Folke 1998). Human societies affect ecosystems and environmental conditions and, likewise, environmental conditions and ecosystems both impose constraints and encourage societal development. Societies co-evolve with nature through dynamic and reflexive processes occurring at a variety of scales, from local to global. An emerging body of theory defines such co-evolving systems as linked social-ecological systems (Berkes and Folke 1998, Gunderson and Holling 2002, Olsson et al. 2003). Integration, therefore, begins with the recognition that environment and society are closely linked.

Disciplines and knowledge systems

There is an emerging consensus about the need for a fundamentally different scientific approach to meet sustainability challenges, one which is capable of bridging the divide

between disciplines that analyse the dynamics of ecosystems and those that analyse economics and social interactions (Scheffer et al. 2002). A concern has begun to emerge within many disciplines themselves regarding the importance of synthesis and integration with other disciplines. These concerns are being reflected in new interdisciplinary and multidisciplinary research initiatives and institutions. Thus, it would appear that designing strategies to achieve sustainable environment-society interactions requires integration, in this case of scientific disciplines (Adger et al. 2003). Sustainability science, for example, has recently emerged as an integrative approach that blends concepts and understandings from across disciplines (Kates et al. 2001). There is also a call for integration of different kinds of knowledge. Interventions to address the decline of ecosystems have drawn mostly on western scientific knowledge and worldviews. This has resulted in the exclusion of other equally valuable and valid types of knowledge. Efforts are underway to integrate traditional and lay knowledge into strategies to address environmental issues, resulting in adaptive forms of management (Gunderson and Holling 2002).

Horizontal and vertical integration

Ultimately, integration can be horizontal or vertical. Horizontal integration implies achieving greater coherency and integration within and across sectors and institutions. It is about promoting linkages within the same level of social organisation and across space. Vertical integration implies linking different scales of governance, from local to international, and institutions across different levels of social organisation. Horizontal integration is particularly important in government. Implementing sustainable development requires efforts by government to better integrate economic, environmental and social goals within the mandate of each government institution, and to ensure some degree of coherency between different policy sectors (OECD 2002). This is essential to ensure that different policies are consistent with the gaols of sustainable development. Vertical integration is important in contexts where hierarchical forms of governance dominate, which in the absence of collaboration and co-ordination tends to lead to fragmented responses unable to deal with complex problems. It is also crucial when multiple actors at different scales, both spatial and organisational, influence or are affected by complex environment-society interactions. In this case integration is about involving all relevant stakeholders, addressing competing interests and negotiating trade-offs.

Integration across scales

Institutions are recognised as playing a mediating role in environment-society interactions. Institutions are constellations of rights, rules, and decision-making procedures that define social practices, assign roles to the actors involved in such practices, and guide the interactions among those actors. Institutions exist at all levels of social organization from local arrangements dealing with matters of land use to global frameworks dealing with biological diversity. Institutions interact with one another horizontally (at the same scale or level of social organisation) and vertically (across scales of social organisation, from local through to national and international). Researchers are giving particular attention to the outcomes of interactions (or interplay) between institutions at different scales or across scales (Young 2000, 2002). Cross-scale interactions have often had negative consequences for the environment. Berkes (2002), for example, cites a number of examples where state regulation has impacted negatively on local institutions for natural resource management, often leading to the breakdown of self-organised systems that were effective at sustaining livelihoods and the environment. However, there is also evidence that cross-scale linkages help increase the resilience of social-ecological systems by enhancing adaptive capacity (Olsson et al. 2003). One important dimension of integration, therefore, is to manage cross-scale interactions in ways that contribute to sustainability.

Integration of different stakeholders and institutions

A growing body of evidence suggests that addressing environmental problems or managing natural resources often requires collaboration between different actors (see, for example, literature on co-management and decentralisation). The idea is to involve all relevant stakeholders and make use of their comparative advantages. For example, many local communities are dependent on natural resources for livelihoods, are knowledgeable of their environment and demonstrate capacity to define common rules and sanctions, all of which contributes to making them potentially effective resource managers (Ostrom 1990, Gibson et al. 2000). However, on their own these actors are unlikely to be able to deal with wider pressures and constrains, such as the ones brought about by globalisation. Other actors have the outreach and capability to address such constraints, examples being governments, NGOs, businesses and donors. Underpinning stakeholder involvement is the notion of participation, which has become a central ingredient to improve the effectiveness, legitimacy and equity of environmental governance (World Bank 1996). Participation and stakeholder inclusion can

be seen a form of integration between different actors concerned with environmental management.

3. Mapping integrated approaches

Integration has different dimensions and happens in different ways. It can be horizontal or vertical, bring together different types of knowledge, involve collaboration between multiple actors and institutions or link different scales of governance. In what follows, we briefly characterise the most important integrated approaches in use, identifying the main problems it they seek to address, which elements make them potentially integrated, at what scale they have been implemented, who are the actors involved and what kinds of instruments they use. We also provide some specific examples and references to them when applicable. The aim is to provide an overview of why, by whom, how and where integrated approaches have been applied. We identified a wide range of integrated approaches, which can be roughly divided into overarching concepts and programmes, strategies, management concepts, and targeted projects. We do not attempt to provide an exhaustive list of integrated approaches, only a sample of those that have received greater attention in the literature. This 'mapping' of integrated approaches is summarised in Table 1.

[INSERT TABLE 1 HERE]

Overarching concepts such as sustainable development, which provides principles to guide policy options, and programmes such as Agenda 21, which offers more pragmatic guidelines for the achievement of multiple social, economic and environmental goals, are explicitly concerned with integration. Integrated river basin management and integrated coastal zone management consider both the geographical span of ecosystems and links between different ecosystems, and the fit between ecosystems and institutional structures and between institutions themselves. Both of these responses span a number of different ecosystems – land and water or marine – and numerous services. They each involve multiple actors and cross scales, and utilize different instruments in their implementation. Thus, they perhaps display a higher degree of integration than other integrated responses.

Many different management concepts, instruments and tools are used to implement or bring about integration. The choice of concepts and means of implementation depends on the

objectives of the approach and which drivers of ecosystem change it seeks to address, the scale of implementation, and the actors involved. The distinction between management concepts and means of implementation is not always a clear one. Co-management, for example, is simultaneously a concept and a specific institutional arrangement whereby management responsibilities are shared between government and local users. This concept has been widely used in sustainable forest management. Another integrative management concept, which has been used to guide the implementation of some integrated approaches, is adaptive management. The emphasis of adaptive management is on learning by doing and the incorporation of different types of knowledge in decision-making. Adaptive management has been used in different situations, including forest management, integrated coastal zone management, and protected area management. Different instruments and combinations of instruments can be used for the implementation of integrated approaches. Examples include economic (i.e. economic incentives), legal and institutional instruments (i.e. property rights and power sharing), voluntary approaches and partnerships, and targeted projects.

4. Exploring 'integration' in integrated conservation and development

From all the integrated approaches currently in use, we chose to focus in more detail on integrated conservation and development projects (ICDPs) as an example of how integration is conceptualised and implemented. ICDPs seek to demonstrate the compatibility of conservation and development goals and the feasibility of achieving these goals simultaneously through a range of interventions. They emerged during the 1980s as an alternative to conventional conservation approaches, which in developing countries typically involved establishing protected areas that banned most forms of resource use (Hughes and Flintan 2001). Exclusionary protected areas often attracted the hostility of local populations who, deprived from using natural resources for livelihoods, switched to predatory resource uses, thus limiting the conservation effectiveness of these areas. The ICDP approach was motivated by a concern with social justice issues arising from the impacts of exclusionary protected areas on the livelihoods and rights of local people and, more decisively, by a realisation that such areas would not be viable or effective at conserving biodiversity over the long term without the support of local populations.

ICDPs propose to alleviate pressure on protected areas by providing economic and other benefits to local populations in the form of alternative sources of income and improvements

in infrastructure and services such as roads, communal transport, schools and health care facilities (Wells 1994). They are usually implemented in buffer zones around protected areas. Integrated conservation and development as an a general approach has also been applied to other contexts, notably to communally managed lands. Community-based natural resources management, community-based conservation and extractive reserves are some examples of initiatives sharing similarities with ICDPs. Initially, ICDPs were promoted mainly by conservation NGOs; were largely experimental; involved relatively modest amounts of funding; and were implemented without much government involvement and support. Gradually, the popularity of ICDPs increased and international donors began to show interest in funding more ambitious projects, implemented by national governments, sometimes in collaboration with NGOs. During the 1990s, a significant proportion of international funding for biodiversity conservation was aimed at ICDPs and similar community-based conservation initiatives (Wells et al. 1999, Gram 2000).

Outcomes of ICDPs

Most assessments of ICDPs have concluded that there is little evidence of these initiatives either enabling biodiversity conservation or leading to long-term, sustainable improvements in well-being. Two main sets of problems appear to limit the success of ICDPs, one related to the rationale behind ICDPs and the other to implementation issues. These are often related and mutually reinforcing. On the conceptual side, the linkages between conservation and development objectives, which are central to the ICDP concept, are generally poorly understood. It has been suggested that it is too simplistic to assume that promoting development around protected areas will take the human pressure off these areas. As Wells and colleagues argue (1999), making limited short-term investments in local development will not necessarily translate into sustainable use over the long term. In areas afflicted by extreme poverty, people have been found to continue harvesting resources clandestinely from within protected areas while at the same time taking advantage of the new economic opportunities introduced by projects (Langholz 1999). The tendency, it seems, is for people to add rather than substitute. It may also be that the links between economic benefits and the commitment of communities to conservation need to be better enforced.

The economic incentives provided by projects have often been insufficient to persuade people to adopt alternative livelihoods and change their behaviour. Moreover, some activities such as

hunting sometimes have a cultural significance which cash will not substitute (Gibson and Marks 1995). Paradoxically, if projects are successful at providing economic opportunities and improving infrastructure, they can induce migration from poorer regions into the project area, therefore increasing pressure on natural resources (Wells et al. 1999, Noss 1997, Barrett and Arcese 1995, Wells et al. 1992). ICDPs have often given insufficient attention to community dynamics, which has led to benefits not being distributed equitably, reproducing or further reinforcing socio-economic inequalities within communities (Flintan 2000). Some authors have also suggested that ICDPs focus on the wrong threats to protected areas, which are imposed not by local people but by national development policies that promote large-scale transformations in the landscape (Kiss, 1999, Wells et al. 1999). More fundamentally, there is a mismatch over the scale at which conservation must occur in order to maintain the viability of ecosystems and the scale of ICDPs. While ecosystem conservation must often be realised at the landscape scale, ICDPs are typically small-scale, encompassing relatively small areas (Ferraro 2001).

ICDPs are appealing because of their comprehensive and integrated nature. However, this also makes them difficult to implement. Interventions aimed at different things are typically brought under the same project. Projects require high levels technical and institutional capacity as well as financial resources; support of different actors; and ongoing co-ordination and negotiation among multiple (and often competing) stakeholders. They are both management and resource intensive. Wells and colleagues (1999) found that implementing agencies often lack the capacity to implement conservation and development activities. Hough (1999), for example, noted cases where responsibility for development-oriented activities was taken up by protected area managers, who lacked adequate expertise in community development. Moreover, projects are designed in a way that the activities promoted are often heavily dependent on external technical assistance and financial resources. Once projects end, communities often do not have the capacities or resources to manage and sustain those activities (Kiss 1999). The integration between communities and other actors, including donors, government and NGOs, may be fragile and dependent on project cycles and availability of international funding.

The relationships and degree of integration between the different institutions involved in ICDPs can significantly constrain or enable their implementation. Failure to include all relevant stakeholders in project design, lack of communication between institutional levels,

and inappropriate institutional development at all organisational levels, from communities to government agencies, have constrained ICDPs from working better (Gezon 1997). For example, although community participation is regarded essential in the planning and implementation of ICDPs, many projects provide only nominal opportunities for communities to have a real say in projects let alone in protected area management (Salafsky et al. 2001). Integration-related problems extend well beyond the institutions directly involved in ICDPs. One of the reasons that have contributed to the lack of success of ICDPs to conserve biodiversity is weak integration with local, provincial and national planning. In other words, projects are too localised, isolated and are not supported by the broader policy and institutional framework. One study of ICDPs in Indonesia, for example, found that ICDPs lacked integration with sectoral policies that condition the viability of community-based conservation (Wells et al. 1999).

An important lesson that is often missing from assessments of ICDPs is that integration between conservation and development objectives may not always be possible or even desirable. There are indications that integration of different aims within a single project framework may not be a good practice. It appears that success may be enhanced by addressing each of these objectives separately, through parallel but tightly linked interventions (Newmark and Hough 2000). At a conceptual level, integration is often viewed as a necessary condition for conserving ecosystems and improving human well-being. In practice, however, what is often required is not so much integration but improved co-ordination between different institutions and activities. Although conservation and development should not conceptualised as separate, the linkages between the two should perhaps form the basis of integrated plans, which could then inform disaggregated yet interlinked actions that contributed to the achievement of strategic objectives. This may require greater flexibility, inclusion and willingness to experiment, learn and adapt then what is common in conventional approaches to integrated conservation and development.

5. Cases from Nepal and Brazilian Amazonia

A number of countries have progressive policies towards integrating conservation and development. We examine efforts to implement buzzer zones around protected areas in Nepal's Terai region and extractive reserves in Rondônia, Brazilian Amazonia. These represent significantly different approaches to integrating conservation and development. In

Terai, the aim is to make conventional protected areas more people-oriented primarily by providing development opportunities to local people in exchange for a commitment to conservation. The focus is still on minimising human disturbance in the protected areas by allowing only limited resource harvesting and supporting development activities in the buffer zones. Extractive reserves, in contrast, are protected areas designed not to exclude, but to include people and enable them to make a decent living within the reserve. Despite fundamental differences in their approach to integrate conservation and development, these initiatives demonstrate similar types of difficulties when it comes to the institutional design for their implementation and management. Putting in place institutional arrangements that work has proved very difficult in both cases.

Integration between ecosystems, institutions and stakeholders in Nepal's Terai

In Nepal, the Parks and People Project (PPP) has since 1994 promoted the integration of conservation and development in the buffer zones of all five protected areas in the Terai region. The PPP has three objectives: to provide new sources of income for local residents, so as to reduce their reliance on park resources; to devise compensation mechanisms for local communities in exchange for the loss of access to park resources; and to change the local users' incentives and perceptions of the park by forming user groups that can participate in park management. Some of the activities promoted by the PPP for integrating conservation and development include: sustainable forestry and agriculture; animal husbandry and livestock; natural forest regeneration; alternative income schemes; nature-based tourism; and credit schemes. In addition to these buffer zone activities, limited resource extraction from the protected area is permitted, in particular cutting of grass for thatch, fodder and other uses. The PPP initiative has been implemented by a partnership consisting of the Department for Wildlife and Conservation (DNPWC), the King Mahendra Trust for Wildlife Conservation, and the World Wildlife Fund (WWF). The PPP is partly funded by the United Nations Development Programme (HMGN and UNDP 1994, DNPWC 2003).

Nepal's Royal Bardia National Park (RBNP) is one of the protected areas providing a focus for the PPP. Grass cutting in the park by local people is one of the key elements of the buffer zone implementation, and one of the activities promoted by the PPP. Grass cutting is a compensation for the loss of access to other products from the protected areas, and a way of reducing conflicts between local people and parks authorities. However, there have been

many difficulties in reconciling the management of resources inside the protected area and in the buffer zone with the complex and dynamic ecology and the diverse social and economic interests of local communities and other actors involved. Brown (2003) characterises these difficulties as emerging from a misfit between the dynamics of the ecosystems and the institutions that aim to manage them. Three main aspects of this misfit are outlined below.

Firstly, the management approach seeks to suppress disturbance of ecosystems. The use of resources within the park is controlled and restricted to certain times of the year, this being justified on the grounds of sound ecological principles. Limited grass cutting and a ban on logging and grazing are examples of such controls. Historical evidence, however, suggests that human intervention plays a critical role in shaping the landscape and some of the habitats RBNP seeks to conserve, particularly the grassland ecosystems or phantas (Peet et al. 1999). Management interventions have been prescribed without there being a sound understanding of the interactions between natural and human-induced disturbances, and associated spatial and temporal dynamics as well as complexity of the mosaic of grassland and forest ecosystems.

Second, interventions have been justified with the urgency and threat of extinction of a small number of emblematic rare species, particularly the rhino and the tiger. Attempts have been made at managing a complex set of ecosystems and habitants to conserve these species, despite the fact that little is known about how the spatial and temporal dynamics of the landscape impacts on species conservation and viability. Third, the focus is on short-term management of protected area resources to meet externally defined ecological objectives, rather than long-term harmonisation of the displaced residents in order to achieve co-existence with the protected area and its species. For example, the grass cutting scheme was implemented mainly as a means to meet externally defined conservation goals more effectively, not as a result of a genuine concern with addressing local needs.

These aspects of misfit between ecosystems and institutions demonstrate that conservation and development interventions still fail to recognise the linkages between the dynamics of ecosystems and social practices and institutions. Adopting an integrated perspective of ecological and social systems whereby environmental, social and economic goals are mainstreamed in policy interventions is a desirable goal, but highly complex to implement. In practice, it may not be possible to give equal weighting to all goals and trade-offs are often

unavoidable. However, the decisions regarding which goals to prioritise are rarely inclusionary. In RBNP, environmental conservation goals prevail in the decision-making process while development remains marginal and subjugated to whether it contributes to meeting conservation objectives (Brown 2003).

These difficulties are further compounded by misfit between different stakeholders and institutions. Stakeholders in RBNP range from indigenous people and migrant farmers to government conservation agencies and international conservation groups. Some of these stakeholders are able to influence policy and management decisions while others are not, and they have quite different understandings of the issues affecting RBNP and how they should be addressed (Brown 2003). Management in RBNP is dominated by conservationist interests that use ecological science in its most basic form to justify conservation-oriented management goals. There is little integration between knowledge systems, or willingness to draw on indigenous and local knowledge and worldviews.

The PPP has aimed to provide means for local participation in management through Village Development Committees, but the impacts of these institutions can be problematic, particularly because they have been shown to be biased towards community elites (Agrawal and Verughese 2000). Projects that are based on an inadequate understanding of community dynamics and differentiated livelihoods, needs and priorities, are likely to fail to meet both conservation and development objectives (Brown 2003). Projects require interdisciplinary understandings and more holistic and integrated analysis of socio-ecological systems. Interdisciplinary approaches and teams, however, are still not a common practice in initiatives aiming to integrate conservation and development.

Vertical and horizontal integration in extractive reserves

Since 1990, extractive reserves have become an important means to promote conservation and development in resource systems traditionally inhabited and managed by local populations in Brazil. They are protected areas established by the government, which guarantee the rights of traditional populations to harvest natural resources for livelihoods (Schwartzman 1989, Allegretti 1990). The establishment of these reserves was first proposed in the mid-1980s by the rubber tappers, a people whose livelihoods are based primarily on the extraction of rubber and other forest products and small-scale agriculture (Hecht and

Cockburn 1989). Rather than being imposed from the outside like conventional protected areas, extractive reserves were a solution put forward by local users themselves to address their needs. At first, the rubber tappers were interested primarily in gaining property rights to their forest landholdings in order to avoid being forced out by cattle ranchers seeking to take possession and clear the forest for the establishment of ranches. During the development of the formal proposal for extractive reserves, NGOs and supportive government sectors suggested making environmental conservation a key goal alongside with property rights and development, as a means to widen the concept's political appeal (Keck 1995). Whereas conventional protected areas begin with a concern for conservation to which development objectives are sometimes added to form ICDPs, plans for extractive reserves were set off by development concerns that were then 'greened' to result in an approach seeking to integrate both development and conservation.

Extractive reserves have gained the support of a wide range of actors interested in their potential to promote environmental conservation and sustainable development in Amazonia. Donor-funded initiatives have been an important source of financial support and political motivation for the creation and implementation of extractive reserves. The Pilot Programme for the Conservation of the Brazilian Rain Forest (PP-G7) is one of the most important and includes a number of innovative sub-programmes and projects, including one aimed at supporting extractive reserves, the RESEX Project. The PP-G7 was officially launched in 1992 and became operational in 1994. The programme is funded by the G7 Group of Industrialised Countries, the European Union, and counterpart funding from the Brazilian government, through a fund managed by the World Bank called Rainforest Trust Fund (the bulk of funding comes from the European Union, Germany, United Kingdom and Netherlands). Currently into Phase II, PP-G7 is expected to continue until 2010. The Rondônia Natural Resources Management Project (PLANAFLORO) is another important initiative that included extractive reserves in its objectives. PLANAFLORO became operational in 1993 and its implementation was phased out in early 2000. The project included a sub-component aimed specifically at supporting the creation and implementation of extractive reserves in regions with suitable socio-ecological conditions.

In extractive reserves, the ecosystems and management institutions are better fitting since the rubber tappers have been allowed to continue harvesting resources for livelihoods, mostly following traditional methods that contribute to conservation and are largely consistent with

the dynamics of the forest. Some practices, such as hunting, have impacted negatively on biodiversity but the tradeoffs are regarded as acceptable since overall forest cover is largely maintained. Some of the stakeholders and institutions involved in extractive reserves have been able to work together effectively, while others demonstrate difficulties to collaborate. Thus, there is a mix of fit and misfit when it comes to the integration between different stakeholders and institutions. For example, NGOs and grassroots organisations have established fruitful alliances to promote the creation and implementation of extractive reserves within the PLANAFLORO framework. NGOs have helped to empower the rubber tappers and enable their participation in policy advocacy networks with a wider reach, both of which proved vital to address some of the political and institutional barriers that constrained the creation of extractive reserves in Rondônia (Brown and Rosendo 2000a). However, the alliance between NGOs and rubber tappers has not been sufficient to overcome structural constraints to improving incomes and living standards of reserve inhabitants (Brown and Rosendo 2000a).

Political and institutional barriers are a symptom of misfit between institutions (Brown and Rosendo 2000b). The ambiguous position of the government of Rondônia in relation to extractive reserves, for example, represented an important constrain to the more widespread and effective implementation of these and other approaches promoting community development coupled with environmental conservation and sustainable resource use. On the one hand, it accepted the creation of extractive reserves as one of the objectives of PLANAFLORO, a project that represented a large influx of investment to a stagnant economy. On the other, there was strong opposition within powerful sectors of the government itself to any measure that placed restrictions on deforestation, which was considered vital and even equated with economic development. Extractive reserves and other protected areas meant placing a barrier on the expansion of conventional economic activities such as logging and cattle ranching (Rosendo 2002). Problems of fit are also visible in the way the government has played its role in reserve co-management. Despite having assumed responsibility for the co-management of extractive reserves, the Rondônia government has lacked a consistent programme to implement and develop these areas. Moreover, it has been largely ineffective at protecting reserves from loggers and land grabbers, which place constant pressure on the reserves and their inhabitants.

Extractive reserves also imply interventions aimed at promoting horizontal integration, in this case between reserve residents. A key requirement for the creation of extractive reserves is establishment of associations formed by reserve residents, which take responsibility for the communal management of the reserves and collaborate with government, NGOs and other actors. However, organising reserve inhabitants for the purpose of managing extractive reserves collectively has been an uphill task (Hall 2000). Historically developed vertical patron-client relationships with landowners and merchants remain a very powerful influence and the newly established associations have often facilitated the emergence of new forms of paternalism and patronage. For example, in some reserves, the president of the association has taken the role of patron, to which people often turn for favours in exchange for political support (Hall 1997, Rosendo 2003). Thus, instead of horizontal relationships of co-operation, interventions to establish institutions for collective action are resulting in a stratification of society whereby leaders and aspiring-to-be leaders compete for political support in exchange for short term benefits, which in many cases cause the financial destabilisation of the newly created associations.

6. Addressing institutional constraints to integration

The analysis of the RBNP in Nepal demonstrated that management institutions have difficulties in dealing with dynamic ecosystems and fail to accommodate diverse stakeholders and interests. This misfit between institutions and ecosystems and between management institutions and other stakeholders constrain the achievement of conservation and development in an integrated, mutually reinforcing way. So far, management decisions have been driven by conservation interests while the needs and aspirations of local people have remained marginal to the management process. Full integration between conservation and development goals is unlikely to be possible or feasible and trade-offs are inevitable. However, in RBNP there are no processes to analyse and negotiate trade-offs, a process which would necessarily involve all stakeholders. Integrating and making trade-offs between different goals requires experimental approaches and learning. Brown (2003) suggests that adaptive management may enable a more effective integration of conservation and development. Adaptive management is a process whereby institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing cycle of learning by doing (Folke et at. 2002). It assumes incomplete knowledge about ecosystem complexity and treats management as experiments from which managers can learn, readjusting management

practices and institutions accordingly. However, for adaptive management to be effective in situations such as RBNP, 'management efforts require more inclusionary process, in which stakeholders are involved in all stages of project design, implementation and evaluation, and can see management as rational and fair' (Brown 2003:486).

Approaches such as extractive reserves, where development concerns are more intrinsic to conservation efforts, the integration of conservation and development appears to have greater potential for success. There is a better fit between social and ecological dimensions or between institutions and ecosystems because people are considered to form part of the landscape and their role in maintaining ecological viability is explicitly recognised in the extractive reserves concept and management institutions. Reserve management is guided by resource use plans prepared together with communities that aim to harmonise scientific-based environmental legislation with traditional knowledge and norms of resource use. Thus, an element of integration of different kinds of knowledge is also involved. An important challenge will be to maintain this fit, especially setting up working common property management institutions capable of regulating resource use. So far, the experience with setting up associations and other institutions to facilitate the process of community organisation to manage reserves as common property resource systems has been fraught with difficulties (Rosendo 2003, Cardoso 2002, Hall 1997). Extractive reserves address some of the common misfits between ecosystems and institutions, but not necessarily between institutions.

The creation, implementation and management of extractive reserves calls for integration between different stakeholders and institutions, both horizontal and vertical. The legal framework for extractive reserves requires reserve residents to create associations, which become the collective action institutions in charge of reserve management together with government agencies. NGOs and donors are also typically involved in collaborating with government and grassroots organisations to enable reserves to fulfil their conservation and development goals. Potential for integration across scales is manifest in the way institutions operating at different scales, raging from local communities to the World Bank, are brought together for enabling the creation and subsequent implementation of extractive reserves. This means a complex institutional architecture, encompassing different types of institutions at different levels and with different scales of operation, from community collective action to government and multilateral institutions. While this may be essential for dealing with the

complex challenge of integrating conservation and development it also makes integration between the various governance institutions and frameworks involved difficult, leading to institutional misfit problems as highlighted by Brown and Rosendo (2000b).

Even when there are more enabling conditions for integrating conservation and development, the challenge of effective implementation remains and is aggravated by the fact that different stakeholders see integrated conservation and development initiatives as means to achieve quite different ends, which may not be compatible. Integrating conservation and development requires deep structural changes and new ways of working. The negotiation of goals and roles need to become more central to projects. Tools to negotiate trade-offs in conservation and development situations are already available and have demonstrated encouraging results (Brown et al. 2001). However, it is also essential to develop and organise capacity both for the application of participatory, inclusionary decision-making and priority setting tools and for the implementation of agreed goals and actions. Monitoring and learning is equally crucial. This includes tracking and reviewing implementation to ensure learning and adaptation, which in turn should enable goals and roles to be refined, renegotiated if necessary, and further developed. Ultimately, there is no blueprint that can be applied to all situations requiring the integration of conservation and development. Sets of principles such as those provided by adaptive management are a useful starting point but need to be tailored to fit the specificities and context of the problems they are aimed at.

7. Conclusion

What are the limits to integration? The constraints to more effective integrated conservation and development are often seen as being related to lack of understanding regarding the linkages between conservation and development, insufficient technical and managerial capacity of implementing agencies, inability and unwillingness to involve all stakeholders, and isolation from wider planning processes. While we recognise that these limitations are certainly important, we argue that the underlying constraints to more effective integration between conservation and development are primarily institutional. Negotiation of trade-offs needs to become more central to the design and implementation of integrated conservation and development initiatives. More effective stakeholder inclusion is essential to reach legitimate and equitable decisions. Improved capacity at all levels, from communities to government and NGOs, is also vital for the effective implementation of agreed actions,

strategies and projects. Management needs to be more flexible and adaptive and isolated projects must link up more effectively with wider planning processes at the provincial and national levels. However, improving the outcomes of integrated conservation and development often boils down to finding ways to promote appropriate institutions and institutional change to support these processes of institutional building and change.

References:

Agrawal, A. and G. Varughese, 2000: Conservation's visions: poverty, participation and protected area management in Nepal's Terai. In: *Presented at 'Constituting the Commons: Crafting Sustainable Commons in the New Millennium' the 8th Conference of the International Association for the Study of Common Property; May 31-June 4; Bloomington, Indiana*.

Allegretti, M.H., 1990: Extractive reserves: an alternative for reconciling development and environmental conservation in Amazonia. In: *Alternatives to deforestation. Steps towards sustainable use of the Amazon rain forest*, A.B. Anderson (ed.), Columbia University Press, New York, 252-264.

Barrett, C.B. and P. Arcese, 1995: Are integrated conservation-development projects (ICDPs) sustainable? On the conservation of large mammals in Sub-Saharan Africa. *World Development*, **23(7)**, 1073-1084.

Berkes, F. and C. Folke, 1998: Linking social and ecological systems for resilience and sustainability. In: *Linking social and ecological systems: management practices and social mechanisms for building resilience*, F. Berkes and C. Folke (eds.), Cambridge University Press, Cambridge, UK, 1-25.

Berkes, F., 2002: Cross-scale institutional linkages for commons management: perspectives from the bottom up. In: *The Drama of the Commons*, E. Ostrom, T. Dietz, N. Dolsak, P.C. Stern, S. Stonich, and E.U. Weber (eds.), National Academy Press, Washington DC, 293-321.

Blaikie, P. and S. Jeanrenaud, 1996: *Biodiversity and human welfare*. UNRISD, School of Development Studies/Overseas Development Group, Discussion Paper, Geneva and Norwich.

Brown, K. and S. Rosendo, 2000a: Environmentalists, rubber tappers and empowerment: the politics and economics of extractive reserves. *Development and Change*, **31**, 201-228.

Brown, K. and S. Rosendo, 2000b: The institutional architecture of extractive reserves in Rondonia, Brazil. *Geographical Journal*, **166(1)**, 35-48.

Brown, K., 2003: Integrating conservation and development: a case of institutional misfit. *Frontiers in Ecology and Environemnt*, **1(9)**, 479-487.

Brown, K., E. Tompkins, and W.N. Adger, 2001: *Trade-off Analysis for Participatory Coastal Zone Decision-Making*. Overseas Development Group, University of East Anglia, Norwich.

Cardoso, C.A.S., 2002: *Extractive reserves in Brazilian Amazonia: local resource management and the global political economy*. Asgate, Aldershot, UK.

DNPWC (Department of National Parks and Wildlife Conservation), 2003: *Project activities. wwww.dnpwc. gov.nep/pactivities.htm. Viewed 12 Aug 2003*.

Ferraro, P.J. and R.D. Simpson, 2001: Cost-Effective Conservation: A Review of What Works to Preserve Biodiversity. *Resources for the Future Newsletter*, **1443(Spring Issue)**, 17-20.

Flintan, F., 2000: *Investigating the imbalances of gender and ICDPs: past and present research*. Paper presented at the CARE-Denmark International Seminar on Integrated Conservation and Development: Contradiction of Terms? Copenhagen, Denmark, 4 - 5 May.

Folke, C., S. Carpenter, T. Elmqvist, L. Gunderson, C. Holling, B. Walker, J. Bengtsson, F. Berkes, J. Colding, K. Danell, M. Falkenmark, L. Gordon, R. Kasperson, N. Kautsky,

A. Kinzig, S. Levin, K.-G. Mäler, F. Moberg, L. Ohlsson, P. Olsson, E. Ostrom, W. Reid, J. Rockström, H. Savenije, and U. Svedin, 2002: Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations. In: *Scientific Background Paper on Resilience for the process of The World Summit on Sustainable Development on behalf ofThe Environmental Advisory Council to the Swedish Government, April 16 2002. Available online at: http://www.sou.gov.se/mvb/pdf/resiliens.pdf*.

Gezon, L., 1997: Institutional Structure and the Effectiveness of Integrated Conservation and Development Projects: A Case Study from Madagascar. *Human Organization*, **54(4)**, 462-470.

Gibson, C. and S. Marks, 1995: Transforming rural hunters into conservationists: an assessment of community-based wildlife management programs in Africa. *World Development*, **23(941-957)**.

Gibson, C.C., M.A. McKean, and E. Ostrom (eds.), 2000: *People and forests: communities, institutions and governance*. MIT Press, Cambridge, Massachusetts.

Gram, S., 2000: Indigenous people - between development and forest conservation. *Forests, Trees and People Newsletter*, **42**, 18-19.

Gunderson, L.H. and C.S. Holling (eds.), 2002: *Panarchy: Understanding Transformations in Human and Natural Systems*. Island Press, Washington DC.

Hall, A., 1997: *Sustaining Amazonia: grassroots action for productive conservation*. Manchester University Press, Manchester.

Hecht, S. and A. Cockburn, 1989: *The fate of the forest: developers, destroyers and defenders of the Amazon*. Penguin Books, London.

HMGN and UNDP (His Majesty's Government of Nepal and the United Nations Development Programme), 1994: *Parks and People project document*. HMGN, Kathmandu, Nepal.

Hough, J.L., 1994: Institutional constraints to the integration of conservation and development: a case study from Madagascar. *Society & Natural Resources*, **7**, 119-124.

Hughes, R. and F. Flintan, 2001: *Integrating conservation and development experience: a review and bibliography of ICDP literature*. IIED, Biodiversity and Livelihoods Issues No. 3, London.

Kates, R.W., W.C. Clark, R. Corell, J.M. Hall, C.C. Jaeger, I. Lowe, J.J. McCarthy, H.J. Schellhuber, B. Bolin, N.M. Dickson, S. Faucheux, G.G. C, A. Grubler, B. Huntley, J. Jäger, N.S. Jodha, R.E. Kasperson, A. Mabogunje, P. Matson, H. Mooney, B. More III, T. O'Riordan, and U. Svedin, 2001: Sustainability science. *Science*, **292**, 641-642.

Keck, M.E., 1995: Social equity and environmental politics in Brazil: lessons from the rubber tappers of Acre. *Comparative Politics*, **27(4)**, 409-424.

Kiss, A., 1999: Making community-based conservation work. *Paper presented at 'Society for Conservation Biology Annual Meeting', College Park, MD*.

Langholz, J., 1999: exploring the effects of alternative income opportunities on rainforest use: insights from Guatemala's Maya Biosphere Reserve. *Society and Natural Resources*, **12**, 139-149. London, England.

Mahar, D. and R.R. Schneider, 1994: Incentives for Tropical Deforestation: Some Examples from Latin America. In: *The Causes of Tropical Deforestation*, K. Brown and D. Pearce (eds.), UCL Press, London, 159-171.

Mahar, D.J., 1989: *Government Policies and Deforestation in Brazil's Amazon Region*. World Bank, Washington DC.

Millennium Assessment, 2003: *Ecosystems and human well-being: a framework for assessment*. Island Press, Washington, Covelo, London.

Newmark, W.D. and J.L. Hough, 2000: Conserving wildlife in Africa: integrated conservation and development projects and beyond. *BioScience*, **50(7)**, 585-592.

Noss, A.J., 1997: Challenges to nature conservation and development in Central African forests. *Oryx***(31)**, 180-188.

OECD, 2002: Improving policy coherence and integration for sustainable development: a checklist. *OECD Observer, Policy Brief, October 2002*. Available online at: http://www.oecd.org/dataoecd/61/19/2763153.pdf.

Olsson, P., C. Folke, and F. Berkes, 2003: Adaptive co-management for building resilience in social-ecological systems. *Manuscript submitted to Environmental Management, April 20 2003. Available online at http://www.beijer.kva.se/*.

Ostrom, E., 1990: *Governing the commons: the evolution of institutions for collective action*. Cambridge University Press, Cambridge.

Peet, N.B., A.R. Watkinson, D.J. Bell, and B.J. Kattel, 1999: Plant diversity in the threatened sub-tropical grasslands of Nepal. *Biological Conservation*, **88(193-206)**.

Rosendo, S. 2002. Extractive reserves in Rondônia, Brazilian Amazonia: the challenge of collaborative management. Presented at the Third European Congress of Latinamericanists, Amsterdam, 3-6 July 2002

Rosendo, S. 2003. Evolving participatory institutions for tropical forest management: adaptations and change in the context of extractive reserves in Brazilian Amazonia. *CSERGE Working Paper EDM 03-11*.

Salafsky, N., H. Cauley, G. Balachander, B. Cordes, J. Parks, C. Margoluis, S. Bhatt, C. Encarnacion, D. Russel, and R. Margolouis, 2001: A Systematic Test of an Enterprise Strategy for Community-Based Biodiversity Conservation. *Conservation Biology*, **15(6)**, 1585-1595.

Scheffer, M., F. Westley, W.A. Brock, and M. Holmgren, 2002: Dynamic interaction of societies and ecosystems - linking theories from ecology, economy and sociology. In: *Panarcht: understanding transformations in human and natural systems*, L.H. Gunderson and C.S. Holling (eds.), Island Press, Washington DC, 195-240.

Schwartzman, S., 1989: Extractive reserves: the rubber tappers' strategy for sustainable use of the Amazon rainforest. In: *Fragile lands of Latin America: Strategies for sustainable development*, J.O. Browder (ed.), Westview Press, Inc, Boulder, Colorado, 150-63.

Wells, M., 1994: Biodiversity conservation and local development aspirations: new priorities for the 1990s. *Rural Development Forestry Network Paper 18a*. Available online at: http://www.odifpeg.org.uk/publications/rdfn/18/rdfn-18a.pdf

Wells, M., K. Brandon, and L. Hannah, 1992: *People and Parks: linking protected area management with local communities*. The World Bank, WWF and USAID, World Bank, Washington.

Wells, M., S. Guggenheim, A. Khan, W. Wardojo, and P. Jepson, 1999: *Investing in biodiversity: a review of Indonesia's Integrated Conservation and Development Projects*. World Bank, East Asia Region, Washington, DC.

World Bank, 1996: *World Bank participation sourcebook*. World Bank, Washington DC.

Young, O.R., 2000: *The institutional dynamics of environmental change: fit, interplay and scale*. Institute on International Environmental Governance, Dartmouth College, Hanover, USA.

Young, O.R., 2002: Institutional interplay: the environmental consequences of cross-scale Interactions. In: *The drama of the commons*, E. Ostrom, T. Dietz, N. Dolsak, P.C. Stern, S. Stonich, and E.U. Weber (eds.), National Academy Press, Washington DC, 263-292.

Table 1: Main features of selected integrated approaches

Approach	Main drivers addressed	Elements of integration	Actors involved	Means/instruments for implementation	Scale of implementation
Agenda 21	Unsustainable resource use; Population growth; Technological development; Global markets; Institutions for decision making;	Social and ecological systems are interdependent; Incorporation of social, economic and environmental goals in decision making; Linking scales of intervention and multiple actors at all levels	International community; International institutions (UN system; multilateral institutions; bilateral aid donors); National governments; business sector; Civil society; Individuals	Provision of financial resources; technology transfer; capacity building, etc. International legal instruments (international conventions); National and local strategies and action plans	Multiple scales, from local to global.
National Environmental Action Plans (NEAPs)	Changes in land use/cover threatening biodiversity; Institutional framework for environmental protection	Integration of environmental goals into national planning	National governments; International donors (i.e. World Bank) NGOs	Policy and legislative measures; Capacity building	National
Integrated Coastal Zone Management (ICZM)	Habitat destruction; water contamination; coastal erosion; resource depletion	Integration of objectives and instruments to meet objectives; Integration of all relevant policy areas, sectors, and levels of administration; Integration of the terrestrial and marine components of the target territory;	Government; Population; Business sector, NGOs; International donors; NGOs	Multiple instruments, including a mix of law, economic instruments, voluntary agreements, information provision, technological solutions, research and education. Instruments to enable co-ordination (i.e. joint working groups) and participation (focus	Local, regional, transboundary

		Stakeholder involvement		groups, workshops, public hearings etc). Adaptive management	
Integrated Conservation and Development Projects (ICDPs)	Habitat destruction and fragmentation; Population pressure	Integration of objectives; Community involvement; Collaboration between stakeholders	Variable, but may include government, NGOs, communities and private enterprises	Multiple instruments but reliance on economic incentives	Mainly local
Sustainable Forest Management	Land use/cover change (deforestation); Property rights; Trade and market influences; Forest governance institutions	Integration of multiple objectives; User involvement; Stakeholder collaboration	Local users, government, NGOs, enterprises	Assigning property rights to users; Economic incentives; Technological innovations; Co-management	Local