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Innovations for conservation and development

KATRINA BROWN

School of Development Studies, University of East Anglia, Norwich NR4 7TJ

E-mail: k.brown@uea.ac.uk

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This paper examines attempts to integrate the objectives of biodiversity conservation and social and economic development through a variety of approaches associated with different forms of protected areas and generally labelled as 'integrated conservation and development'. It examines how the linkages between conservation and development are conceptualized, and the types of policy prescriptions and associated models and practice of integrating conservation and development. It identifies misconceptions about four key aspects that are common in conventional integrated conservation and development approaches. These difficulties involve the conceptualization of *community*, *participation*, *empowerment* and *sustainability*. Integrated conservation and development projects have often floundered as a result of over-simplification of these factors. It assesses attempts made to overcome these common misconceptions through examining the experiences of two innovative approaches to integrating conservation and development in the Caribbean and in Amazonia. It concludes that fundamental changes are necessary to institutions and management and decision-making strategies to address these issues and to effectively meet conservation and development objectives.

KEY WORDS: Caribbean, Amazonia, conservation and development, protected areas, empowerment, participation, institutions

Conservation and development: conflicts, trade-offs or synergy?

Protected areas, in different forms, will continue to play a major role in the conservation of biodiversity world-wide for the foreseeable future. However, experience has shown that traditional, top-down exclusionary approaches to protected area ('fortress conservation' or fences and fines approach) are often not effective in reaching conservation objectives. These approaches alienate local resource users and are perceived as a drain on the scarce resources of many countries. In essence, they are not sustainable, and are not conducive to notions of sustainable development in that they do not further social equity and may impoverish and disadvantage poor rural communities (Wells 1992). Recognizing these problems, new approaches to the designation and management of protected areas, primarily in terms of attempts to integrate protected areas into the economic and social context locally, regionally and nationally, have been designed and implemented. These approaches are based on different understandings of the conceptual linkages between conservation and development, and have been implemented in many different countries, in many different guises. This paper reviews these understandings and some of the policy prescriptions they promote in the following sections. Limits to current approaches are revealed and two examples of integrated conservation and development (ICD) initiatives, extractive reserves in Brazilian Amazonia, and a marine protected area in the Caribbean, are used to explore how innovative institutions and deliberative processes could support more successful integration of conservation and development.

Linking conservation and development

The literature linking conservation and development presents a number of different perspectives on the relationship between biodiversity conservation and development in terms of wealth generation and livelihood security. Broadly speaking, the conservation-orientated literature traditionally viewed local community welfare and development as directly conflicting with the objectives and practice of biodiversity conservation. Indeed, development was often identified as the problem and a

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main causal agent of biodiversity loss. In the past two decades, however, there is evidence of a major paradigm shift in conservation thinking, resulting in what some researchers have termed a 'new conservation' (Hulme and Murphree 1999). Others, such as Blaikie and Jeanrenaud (1997) recognize that contemporary conservation policy and practice is *undergoing rapid transformation and comment that* policies which once saw people as a threat now regard people as potential partners in sustainable development strategies.

These shifts are reflected in contemporary discourses on conservation and development. Blaikie and Jeanrenaud (1997, 61) identify three conservation paradigms: the classic approach; populist approach; neo-liberal approach. The classic approach sees local people as a direct threat to biodiversity; the populist approach sees participation and empowerment of local people as a key to finding solutions to more sustainable use of biodiversity, whereas the neo-liberal approach sees institutional, market and policy failures as undermining biodiversity, and the solution in adding economic value to biodiversity. The securing of economic benefits to incentives for conservation or so-called 'sustainable' use is a prevalent discourse (Adger *et al.* 2001). This can be seen as part of a broader dominant neo-liberal paradigmatic view of both conservation and development. However, alternative or contesting views are also discernible and Brown (2002) shows how the debates on biodiversity and development have become enmeshed in wider discussions of globalization; both biodiversity and rural peoples' livelihoods are seen as being threatened by the process of globalization, questioning the role of science and the concept of 'progress' itself.

Development perspectives have often identified conservation as a threat to human welfare and highlight the exclusion of local people from protected areas as a denial of rights to resources and as undermining livelihoods. Historical links to colonial administrations *are prevalent* in explanations of the impacts of present day exclusive protected area conservation strategies, often in Africa, but also in Asia (Anderson and Grove 1987) and charges of neo-colonialism are also made. A recurrent view is that not only are many of these schemes poorly conceived, but they fail on both fronts; unable to effectively conserve biodiversity and bringing high costs to local people. For example, Schroeder provides a comprehensive review of environmental intervention in Africa, concluding that initiatives to conserve biodiversity have 'served to extend external control over African populations and resources within sometimes dubious social, political and economic consequences' (1999, 361).

New conservation is characterized by Hulme and Murphree (1999) by significant changes in the way three key issues are viewed. First, new conservation brings a profound shift in the societal locus of conservation from the state to the local, with a focus on participation of local communities in conservation. Second, new conservation adopts *recent insights from ecology concerning the understanding* of the dynamics and disequilibria of different ecosystems, and rejects simplistic notions of wilderness and pristine environments in acknowledging the role of human intervention in shaping biodiversity (see also Adams and McShane 1992; Gomez Pompa and Kaus 1992; Zimmerer 1994). Third, new conservation is a manifestation of neo-liberal ideology, moving away from preservation of biodiversity through protectionism to conservation through use, to the extent that much of the rhetoric of new conservation sees the market as the salvation of biodiversity.

New conservation stresses complementarities and trade-offs rather than conflicts between conservation and development. Salafsky and Wollenberg (2000) have recently proposed a conceptual framework of the integration of human needs and biodiversity. They identify three dominant understandings of this linkage: the first assumes no linkage, the second an indirect linkage and the third, direct linkages. Salafsky and Wollenberg (2000) detail the conservation strategies based on the three concepts of these linkages. An assumption of *no linkage* between livelihoods and conservation leads to a strategy based on protected areas which exclude livelihood activities. This assumes a conflict between livelihood activities and biodiversity strategy and forms the basis of much historical and traditional conservation worldwide. Protected areas have strictly enforced boundaries and no consumptive use of biological resources within the boundary is permitted. These areas account for four of the six protected area classifications of the World Conservation Union (IUCN 1994). This is the classic 'fortress conservation' or 'fences and fines' approach. An approach based on *indirect linkages* between conservation and development prescribes conservation strategies focused on developing alternative sources of income or livelihood as a means of substituting for biodiversity resources. Commonly this involves the development of buffer zones, or biosphere reserves. However, as Langholz (1999) has shown, destructive practices may be accelerated by increasing income generating opportunities under these strategies. Recognizing *direct linkages* recommends that developing dependent relationships between biodiversity and surrounding people so that stakeholders benefit directly from biodiversity will

Table 1 Links between livelihoods and conservation

Assumed linkage between livelihoods and conservation	Prescribed conservation strategy	Features/problems	Examples
No linkage	Strict protected areas – no consumptive use	Difficult to enforce because of conflicts with local people Poaching, impoverishment	Yellowstone National Park, USA Serengeti National Park, Tanzania
Indirect linkage	Economic substitution – buffer zones, biosphere reserves	Difficult to enforce due to complexity Biophysical dimensions poorly understood Local people not empowered to resist external threats May provide incentives for further exploitation of biodiversity	Royal Bardia National Park, Nepal Maya Biosphere Reserve, Guatemala
Direct linkage – livelihoods drive conservation	Incentives for conservation – wildlife and non-timber forest products harvesting, ecotourism	Require profound changes in property rights, laws, institutions Inequalities amongst communities Economic and ecological viability questionable	CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) programme, Zimbabwe Extractive reserves, Brazil

Source: derived from Salafsky and Wollenberg (2000)

provide incentives for conservation. This is more closely allied to new conservation as discussed above. Livelihoods thus drive conservation rather than simply being compatible. These conceptualizations of the linkages between conservation and livelihoods and the conservation strategies they prescribe are summarized in Table 1.

In reality of course, the divisions between the conceptual underpinnings and the policy and management outcomes are far less straightforward. Most protected areas employ a mixture of the different strategies as policies change over time, and also individual projects adopt different approaches simultaneously. Different agencies interpret the linkages in different ways and when combined with different policy objectives, these result in a range of prescriptions and management strategies. Brown (1998) has shown how these assumptions about the linkages and the causes of biodiversity loss are differentiated according to different conservation and development actors and how they lead to different management strategies in the case of Royal Bardia National Park in western Nepal. Five different scenarios for conservation of biodiversity in protected areas are identified and are characterized in Table 2. The first two scenarios correspond to the 'no-linkage' approaches described by Salafsky and Wollenberg (2000). They identify the local people as the root cause of loss of biodiversity in a neo-Malthusian explanation of environmental degradation (Adger *et al.* 2001) and these assumptions result in a traditional protectionist and exclusionary conservation strategy, enforcing protected areas and controlling access. The second two scenarios characterized in the table identify poverty as an underlying cause of problems and are closest to the views that postulate indirect linkages between livelihoods and biodiversity. Local people therefore have to be compensated, by providing limited access to certain resources, investing in alternative income-generating activities, creating buffer zones. The final scenario views the problem differently and defines a more direct link between biodiversity and livelihoods; only through increasing people's access to biodiversity resources so that they take on greater value and make a larger contribution to livelihoods and well being will there really be an incentive to conserve. This then turns conventional conservation thinking on its head; it invites local people to manage resources.

Table 2 Policy discourses and management strategies for conservation and development

Perception of the 'problem'	Suggested 'solution'	Features of management strategy
Too many people – over exploitation of resources and conflicts	Strong protectionism and exclusion of people from resources	Stop access to park resources, strengthen enforcement of boundaries
Too many people – trade-offs, compromise, managing conflict necessary	Limited access to restricted resources	Controlled access to certain resources at limited times, resulting in considerable encroachment and poaching
Pressure on resources primarily caused by poverty	Buffer zone	Investment in community development and provision of alternatives outside park
Poverty, lack of alternative opportunities	Conservation with development	Devolution of power to local people, involvement of community in park management Revenue-raising and income-generation projects through tourism and wildlife utilization Investment in alternative biomass provision outside protected area
Lack of access to resources and clearly defined extraction	Extractive reserve	Greater access to range of products from protected area Joint management/co-management Sustainable utilization

Source: developed from Brown (1998)

However, each of these different explanations and conceptualizations of the 'problem' of conservation of biodiversity and protected areas is articulated by different actors and each offers different management 'solutions' (Brown 1998). What, in reality, transpires is a process of negotiation and compromise to define and implement a management strategy. Of course, the different actors and interest groups, or stakeholders, have different access to power and can affect the decision-making and planning process differentially, as discussed in the following sections. From the conceptual framework developed here we can identify conflicts, potential trade-offs and complementarities between conservation and development and these are further discussed through the example below. The objective of policy is to minimize or reconcile the conflicts and maximize complementarities and identify possible synergy: potentially, interventions which conserve biodiversity and enhance livelihoods.

'New conservation' in practice

Three main applications of so-called new conservation can be identified as outlined in Table 3. These are, first, integrated conservation and development projects or ICDPs, which have been implemented around existing protected areas since the early 1980s; second, community conservation initiatives; and third, wildlife utilization projects, which emerged in the 1990s. Each of these applications assumes a linkage between conservation and development, each has a slightly different agenda or discourse. Each recognizes the need for involvement or participation of people in conservation efforts, but they promote or prescribe different strategies to bring this about.

However, there are a number of difficulties in the application of new conservation. These ICD approaches make over-simplified assumptions about four key issues and these misconceptions have often undermined these attempts and meant that in many instances they have been unable to meet either conservation or development objectives. The four issues are connected, and they are: defining communities; involving communities as partners or participants; ideas about empowerment; and assumptions about sustainability of IDC approaches.

Communities

A series of difficulties are identified in the ways these ICD approaches conceptualize local people as 'communities'. A number of studies have criticized the simplistic understanding of communities in ICD projects, whereby communities are seen

Table 3 'New conservation' in practice

Approach	Assumed linkage/premise	Agenda	Principles	Difficulties
Integrated conservation and development projects – ICDPs Started 1980s	Direct and indirect linkages	'People-orientated conservation' but still based on protected areas – remains conservation-driven	Need to get people 'involved' in protected areas Assumes conservation and development are complementary Conservation as 'community outreach'	Based on existing protected areas
Community-based conservation – 1990s	Direct linkage	'People-based conservation' reflected in populist conservation and development discourses	Participation as a key process Bottom-up and grassroots approaches	Assumes a simplistic homogenous community Who participates, how? Doesn't address fundamental causes of biodiversity loss
Wildlife utilization and extractive reserves – 1990s	Direct linkage	'Use it or lose it' Neo-liberal agendas – making biodiversity pay, plus empowerment	Recognition of community rights Benefit sharing	Requires explicit clarification of property rights Economic feasibility of projects often suspect Difficult to define sustainable offtake or harvesting levels

Source: Author

as small, homogenous and without internal conflicts, and are assumed to be able to act as democratic and consensual units (Leach *et al.* 1997). Agrawal and Gibson (1999, 640) show how the construction of a 'mythic community' fails to recognize and attend significant and important differences, and Brosius *et al.* (1998, 165) refer to 'imagined communities' as employed in the policy discourses as well as the implementation of ICD approaches. Rather the range of different actors who have influence over and who are affected by management of natural resources in a conservation area may be much broader, and will be socially differentiated in a number of ways, including ethnicity, gender, religion, caste, and in economic and political terms. For example, Chakraborty (2001) shows how forest user groups in Nepal tend to reflect existing hierarchies in society and thus ICD approaches that engage with these groups assuming they are representative or democratic are likely to be biased in favour of the richer and more powerful. The design and implementation of ICD interventions must come to grips with the social and economic differentiation of these societies instead of assuming a cosy and benign community. Furthermore, many ICD approaches (including ICDPs, community conservation and wildlife utilization, as shown in Table 3) assume that people who live adjacent to protected areas and biological resources are the key actors to be involved in conservation initiatives, that local or proximate populations are critical stakeholders. Whilst this might well be the case, in many circumstances very powerful actors are not in the immediate vicinity and they may significantly influence the way in which resources are used. For example, Gillingham (2001) shows that external stakeholders influence the management of resources in Mamirauá Sustainable Development Reserve in Brazil through powerful relations of patronage with local residents and users. These other stakeholders have to be taken into consideration and strategies for engagement with them planned. Therefore a more conceptually useful way of understanding the actors who influence and are impacted by ICD interventions demands a more rigorous stakeholder analysis that can identify which actors are key stakeholders.

Participation

Participation, meaning involvement of relevant stakeholders, is a crucial feature of each of the ICD approaches outlined in Table 3, and effective participation is seen as a necessary ingredient of these projects. Pimbert and Pretty (1997, 309) provide a typology of participation as employed in conservation projects that shows how many strategies fail to actively engage local people. Participation is often employed as part of a top-down management process that includes people in passive forms of cooption and consultation, rather than as active agents. Such forms of participation do nothing to address power imbalances or underlying conflicts, and as Castro and Neilson (2001) demonstrate using examples of co-management from Canada, India and Bangladesh, may even exacerbate them. In some instances, passive participatory approaches have been used to pay lip-service to development calls for community involvement, and Few (2001) *identifies a form of participation in conservation* planning as 'containment', where public involvement is managed strategically in order to avoid conflict and dissent and actually to exert control over knowledge and action. The blanket adoption of participatory approaches to development has similarly led to calls for greater critical analysis (Cleaver 1999) and participation is now being questioned and interrogated as development rhetoric and practice to the extent that a recent book has highlighted the 'tyranny' of participatory approaches (Cooke and Kothari 2001). The misconceptions about communities outlined above compound difficulties in enabling effective participation of appropriate stakeholders in ICD interventions.

Empowerment

The populist and people-centred discourses on development and conservation have stressed the need for empowerment of local people. Empowerment is generally understood as a 'process by which people, especially poor people, are enabled to take more control over their own lives and secure a better livelihood with ownership of productive assets as one key element' (Chambers 1993, 11). The concept therefore has political dimensions, in terms of rights to resources, and socio-economic dimensions, in terms of sustainable livelihood security. Empowerment is seen as both a means (to conservation and to better development) and as an end in itself (Brown and Rosendo 2000a, discuss how these two elements are conceptualized in conservation approaches). Many authors, however, contend that the simplistic assumptions about community and participation in conservation and development projects overlook complex issues of power and empowerment or make assumptions about who can empower whom. For example, Brosius *et al.* (1998) show how issues of empowerment, sovereignty and citizenship, and the power relationships between and within institutions and individuals, need to be more carefully considered in community-based conservation. Once again, interventions to empower stakeholders can often exacerbate disparities and may marginalize some sections of society. Sustainable strategies to reconcile conservation and development in the long term clearly have to go beyond mechanisms of reconciling conflicts locally. Local people have to be empowered not just to take decisions and influence policy makers, but to implement decisions. However, assumptions that stakeholders can be empowered through projects and without changing more fundamental political and economic factors are misplaced, and the wider socio-political context has to be carefully evaluated and understood.

Sustainability

Important questions have been raised concerning the sustainability of these ICD interventions, both in terms of biodiversity conservation and of livelihoods (Ite and Adams 2000; Wainwright and Wehrmeyer 1998). A number of authors have criticized the effectiveness of ICD approaches in terms of conserving biodiversity. This may be related to difficulties in defining levels of so-called sustainable utilization and designing complex harvesting schedules to account for fluctuations in wildlife populations and environmental variation (Barrett and Arcese 1995). Other authors highlight the economic limits to these strategies and their ability to contribute significantly to sustainable livelihoods (Browder 1992; Southgate *et al.* 1996; Batagoda *et al.* 2000). In either case, the ecological, economic and social sustainability of ICD approaches is not assured and relatively poorly understood.

I argue that the over-simplification of these important aspects of ICD approaches has led, in many instances, to a failure of projects to engage effectively with the appropriate people, and to address the processes that lead to poor management of natural resources, including biodiversity. The misconception of these issues means that ICD initiatives often cannot address the reasons why people resist conservation efforts, or why they unsustainably exploit resources. The next two sections of this paper outline how transforming management processes and institutions may go some way to overcome some of these impediments to the effective implementation of ICD approaches.

Table 4 Diverse stakeholders in Buccoo Reef Marine Park

	Stakeholder groups	Interests and livelihood links	Degree of influence over decisions (before project)
Primary stakeholders – directly impacted by management decisions	Fishers	Consumptive use of BRMP resources, direct livelihood link	Low
	Diver tour operators	Non-consumptive use of BRMP resources, direct livelihood link	Low
	Reef tour operators	Non-consumptive use of BRMP resources, direct livelihood link	Low
	Tourists – local, national and international	Non-consumptive use of BRMP resources, few livelihood links	Low
	Park managers	Direct management role, indirect livelihood link	High
Secondary stakeholders – indirectly impacted by management decisions	Hoteliers	Indirect use and links	Limited
	Informal businesses – hawkers, taxi drivers	Indirect use and links	Low
	Environmental planners, and personnel from other government departments	Indirect management role (depending on department)	Limited
	Conservation groups – local, national and international	Indirect link – chief interest in conserving biodiversity	Limited

Source: Author

They discuss, in turn, an approach to engage stakeholders in protected area management in the Caribbean, and an innovative institutional ICD approach in Amazonia. The innovations in decision-making and management processes in Buccoo Reef Marine Park in Tobago attempt to address the diversity and dynamics of local communities and stakeholders in conservation and development, and employ a number of methods to bring about effective participation of different groups. In Brazil, the experience of extractive reserves, which represent an innovative ICD institution, is used to explore the complexity of empowerment and sustainability.

Developing deliberative inclusionary processes: Buccoo Reef Marine Park

A characteristic of biodiversity-rich ecosystems is of course the wide range of biological resources they contain, and these often consist of a number of economically and culturally valuable resources that are exploited by different users. We often find then a complexity of actors, often competing for resources, perhaps in conflict and displaying significant disparities in political and economic power and access to resources. This is far from an idealized and simplified picture of a community. Such a situation of multiple uses and users is typically found in forest ecosystems and tropical grasslands, and is also found in many coastal zones. It is certainly true in the case of the Buccoo Reef Marine Park in south-west Tobago in the eastern Caribbean. This protected area includes coral reef, sea grass lagoon and fringing mangrove, and beach and coastal land above the high-tide line. Many of these resources are intensively used by a number of different stakeholders. Some resources – such as reef fish – form the basis for livelihoods and subsistence for local people. In addition, tourists and visitors come from Trinidad and Tobago and from many other countries and the marine park is the most visited tourism attraction on the island. Table 4 shows the diversity of stakeholders and their interests. To further complicate management, the ecological processes at work at the land–water interface are often poorly understood; they are very dynamic and the different sub-systems are interconnected. As a result, the uses and the users of these

Table 5 Elements of trade-off analysis

Techniques	Objectives
Stakeholder analysis	Identify full range of stakeholders and their interests, influence and impacts
Envisioning exercises with different stakeholder groups	Develop scenarios of future development options – discuss in focus groups
Estimate environmental, economic and social impacts of development scenarios using locally defined measures using range of quantitative and qualitative techniques, surveys	Explore stakeholder perceptions of change, discuss all information, get stakeholder feedback
Focus groups, PRA in small groups	Define different stakeholder priorities for decision-making – identify basis for consensus-building
Consensus-building techniques in plenary workshop	Bringing all stakeholder groups together to identify priorities for action
Organizing for change – forming the Bacoo Reef Stakeholder Group	Institutionalizing participatory approaches to decision-making and management, access funds, and implement decisions

Source: Author

resources are often seen to be in conflict, and finding agreement and support for management strategies is highly problematic.

Agrawal and Gibson (1999) have proposed that a key to the success of community based natural resource management strategies lies in the need to develop and implement reasonable processes of decision-making that take account of different actors' interests, and that are legitimate, accountable and inclusive. These issues have been addressed in a recent action research project that developed an approach to decision-making that aimed to be inclusive and consensus-based (see Brown *et al.* 2001). This approach was termed 'trade-off analysis'. This approach used techniques such as focus groups, Participatory Rural Appraisal, formal and informal surveys, and consensus-building to engage the diverse stakeholders as shown in Table 4. The project worked with individual stakeholders for a considerable time in order to build up trust and confidence. It used envisioning techniques to facilitate stakeholders to discuss their visions of sustainable futures and their priorities for the protected area. It specifically asked stakeholders about their views on the trade-offs between ecological, social and economic criteria, and used information and measures that they had defined as important. Different methods and techniques were employed for different stakeholders as appropriate. The elements of trade-off analysis are outlined in Table 5.

Despite early assumptions about the conflicts between the stakeholders themselves, when they were asked to envision a desirable future for their island, there was a high degree of agreement. Likewise, diverse stakeholders found much common ground in terms of the relative importance of ecological, social and economic criteria. Although having quite different interests in the resource, the different actors could agree on the criteria or ground-rules by which decisions could be made. This formed the basis for consensus-building, during which stakeholders identified long-, medium- and short-term priorities for action and also discussed how decisions could be implemented.

The key lessons from this process of decision-making in support of protected area management are: First, the need to recognize multiple stakeholders and interests, and not to assume a unified local community. In trade-off analysis, stakeholders were analyzed according to their power and influence, and the impact of management decisions on their activities and welfare. Second, that validating diverse knowledge and voices allows different perspectives to be articulated. Third, the need to share knowledge and information, including technical and other forms of information, is crucial. These two aspects – respecting stakeholder knowledge and sharing information – are critical contributions to a process of empowerment. Fourth, inclusiveness in terms of giving all stakeholders a role lends legitimacy to the decision-making process.

Although the 'trade-off analysis' approach was able to support diverse stakeholders in setting priorities for co-management of the protected

area, the stakeholders themselves were not fully empowered to implement the decisions they made. As a result of the process, the stakeholders themselves formed an organization that could forge partnerships with government agencies and NGOs, but the wider institutional framework was not wholly supportive. Potential impediments included the lack of coordination between different government departments and lack of clearly defined property rights concerning protected area resources (Tompkins *et al.* 2000). Stakeholders were enabled to make decisions, but were not empowered to implement them themselves nor to sufficiently influence others to implement them, and thus further institutional development and innovation were necessary as a next step in more effectively integrating conservation and development in Tobago. The following section discusses the experience of an institutional development established specifically to bring about the inclusion and empowerment of local communities in the case of forest conservation in Amazonia.

Enabling empowerment: extractive reserves in Rondônia

Extractive reserves represent an innovative approach to conserving biodiversity whilst supporting livelihoods of forest dwellers. In Amazonia, large areas of rainforest are set aside for use by traditional extractivist communities (rubber tappers and other resource-dependent societies) to continue small-scale extraction of forest products, whilst maintaining the biological diversity of the forest. The reserves are predicated on the assumption that extractivist communities can sustain their way of life and their livelihoods through these activities, and the large-scale conversion of forests will be resisted. Thus, a direct linkage between conservation and livelihoods is assumed.

The establishment of the extractive reserves came about as a result of long and arduous campaigns by the rubber tappers, who formed alliances with international environmental and development organizations, and resisted powerful institutions such as the World Bank. Since 1990, the Brazilian government has legalized extractive reserves over an area of nearly one million hectares in one Amazonian state, Rondônia, alone. The partnerships between traditionally impoverished and disempowered sections of society, international NGOs and the Brazilian government have empowered the rubber tappers and established legal rights for them to utilize the forest. The strategic alliances the rubber tappers have formed with local and international NGOs have been critical in achieving political empowerment and establishing the extractive reserves (Brown and Rosendo 2000a). The effectiveness of such alliances have been well documented as a means by which local communities are able to negotiate against powerful vested interests, and may be particularly significant when key government agencies are fundamentally opposed to the grassroots level initiatives (Silva 1994). However, the institutions, their interests and the alliances and coalitions are dynamic and their priorities, interactions and relationships are not static, therefore making the long-term support by powerful groups uncertain.

Politically, therefore, extractive reserves have been successful. However, doubts remain as to the long-term economic viability of their way of life. Figure 1 shows that the rubber needed to meet household subsistence needs is not produced in every month of the year; some months there is a critical shortfall. Rubber tappers are at the mercy of highly volatile international pricing of the rubber they produce and have few alternatives in terms of where they can sell their products, and where they can buy household goods. In other words, they may be politically empowered in terms of gaining rights to products and to land, but they are not economically empowered. This seriously undermines the long-term sustainability of extractive reserves as a means of reconciling conservation and development objectives. In order for the rubber tappers to become empowered, further transformation of institutions – including markets – is required. The extractive reserves themselves represent an innovative institutional development and a significant departure from conventional protected areas and thus an important progression in terms of explicitly merging conservation and development objectives. However, they have not been able to address more fundamental processes that impair both the extent to which the rubber tappers can be empowered and the long-term viability of the reserves themselves.

Conclusions: transforming institutions for conservation and development

Attempts to integrate conservation and development have been implemented since the early 1980s in the guise of ICDPs, community conservation and wildlife utilization. These approaches have been labelled new conservation by some researchers. However, the application of these approaches has encountered many difficulties, and these in many instances can be linked to a failure to adequately understand the complexity of communities, the difficulties in bringing about effective participation, over-simplifying assumptions about empowerment, and to not fully considering the sustainability implications of ICD interventions.

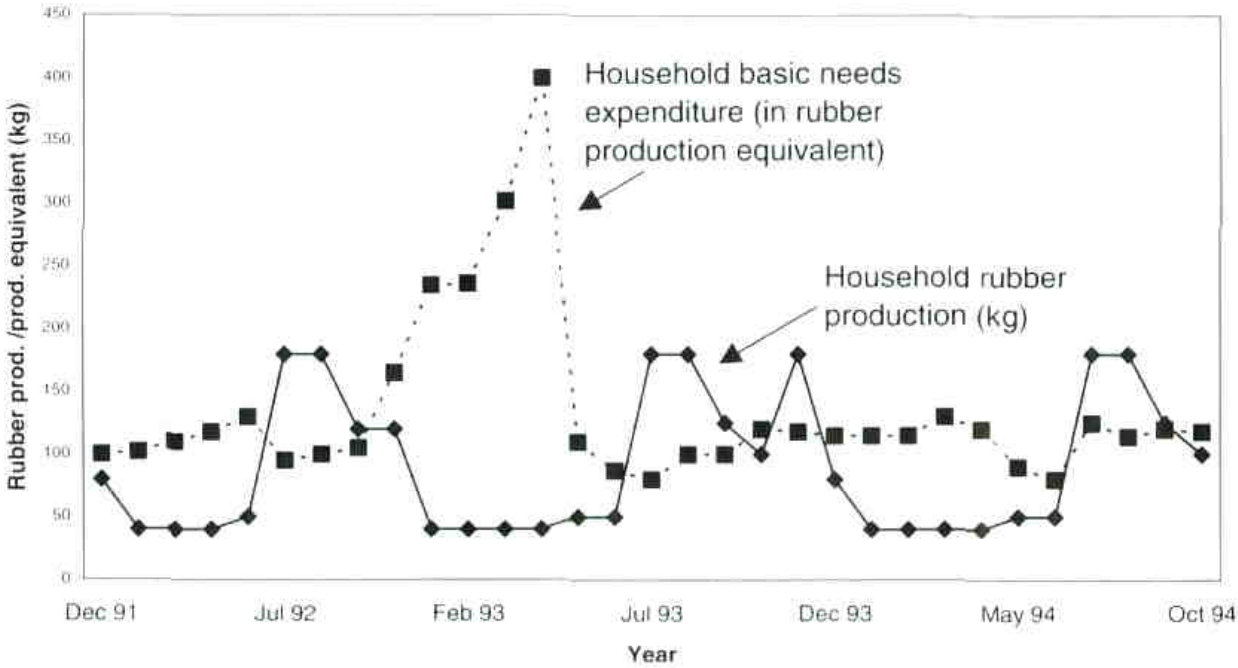

Figure 1 Rubber production required to meet rubber tappers' subsistence needs
Source: Brown and Rosendo (2000a)

Recent innovations have gone some way to overcome these difficulties and we continue to learn from the experiences of many different ICD initiatives throughout the world. The case study of Buccoo Reef Marine Park has demonstrated that internal mechanisms that recognize and accommodate the diversity of stakeholders and heterogeneity of local communities, and that are inclusive, in that they engage all stakeholders, can be developed. However, ensuring participation and equitable decision-making processes is only a first step; as Agrawal and Gibson (1999) observe, there needs to be commitment to enforce, fund and implement even legitimate and democratic decisions. Empowerment is often proposed as the means to bring about these objectives. The example of extractive reserves in Brazil shows that empowerment is a multi-dimensional concept and cannot be addressed easily through externally driven interventions. Property rights are critical to the empowerment process, but sustainable resource management cannot be maintained unless livelihoods are secured; both political and economic aspects of empowerment must be met simultaneously.

Many of the factors that influence this are beyond the control of local stakeholders. In the case of the rubber tappers, they have little influence over the price they receive for rubber they produce. Rubber tappers employ a number of different means to influence the broader institutional, social and economic setting. Strategic alliances with powerful international organizations have been successfully used by rubber tappers in order to campaign for the designation of extractive reserves (Brown and Rosendo 2000b). Other strategies, such as collusion and cooption, are also frequently adopted to negotiate resource management and influence decisions, as observed in other resource contexts (Conkin and Graham 1995). It is clear that successful initiatives integrating conservation and development will not be sustainable in the long term without wider institutional support and backing, through change in markets, legislation and policy frameworks (Tompkins *et al.* 2000).

New institutions are thus necessary. These institutions include new legislation and policies, *reorganization of government and organizations in* civil society, and new partnerships between organizations. For example, organizing government departments so that environmental conservation, economic development and social services can be coordinated. In many countries, the remit of different departments put these issues in direct conflict, and there are few opportunities to bring technical personnel together across institutional and organizational boundaries. Such impediments can seriously undermine all other efforts to integrate conservation and development. It is clear that the participation and empowerment of local people alone cannot meet these challenges, but that a radical restructuring of decision-making processes

and institutions at local to national level are necessary if we believe that the dual objectives of conserving biological diversity and enhancing human welfare can be complementary rather than in conflict.

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