



## Reconciling Conservation and Development: Are Landscapes the Answer?

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### ABSTRACT

The landscape scale is being used for complex initiatives that have the dual objective of conserving biodiversity and alleviating poverty in developing countries. Working at landscape scales greatly expands the level of ambition of conservation organizations. The skills and competencies needed are different to those that conservation organizations have conventionally deployed. Influencing landscape patterns will be gradual and require medium to long-term commitments. Given the lack of evidence for the effectiveness of these approaches in developing countries they should be used cautiously and in many cases should complement and not replace a focus on more conventional biodiversity protection. Working at a landscape scale does not reduce the need for setting clear conservation goals. Important elements for success are the recognition of the dynamic nature of landscapes and of changing societal perspectives on biodiversity. The underlying drivers of change must be addressed and the broad context understood. Landscape conservation should be based on broadly negotiated landscape scenarios and a long-term effort to build constituencies and bring about social change. Landscape approaches must be constructivist and recognize uncertainty and unpredictability.

*Key words:* biodiversity; constructivist conservation; landscapes; scenarios.

### THE EMERGENCE OF THE LANDSCAPE APPROACH TO BIODIVERSITY CONSERVATION

IN DEVELOPED COUNTRIES, BIODIVERSITY GOALS are achieved through a mix of total protection complemented by a broad spectrum of environmental restrictions on the use of nonprotected land (Bennett *et al.* 2006). Conservation interventions are made across the entire landscape in areas and conservation is just one among several management goals (Philipps 2002). The composition of the portfolio of conservation approaches differs according to a country's stage of economic development, population density and culture.

Similar landscape approaches are now used to achieve conservation goals in developing countries where there is a need to address the trade-offs between conservation and local livelihoods (Sayer & Campbell 2004). These approaches are based on the assumption that the landscape is the appropriate scale for reconciling these trade-offs. However previous integrated conservation and development models that aspired to achieve win-win outcomes have been criticized for not delivering effectively on either alleviating poverty or on conserving biodiversity (McShane & Wells 2004). This paper discusses the extent to which the landscape scale really offers new options for reconciling the trade-offs.

In developed countries there is a considerable body of established best practice for landscape-scale conservation (Sayer & Maginnis 2005, Lindenmayer *et al.* 2008, Salt & Lindenmayer 2008). Landscape initiatives in the developed world have explicit biodiversity goals. They may seek to minimize the opportunity costs for other land-users but they are not in general driven by economic development goals.

The dual goals of landscape approaches to conservation in the developing world expand the level of ambition of conservation organizations—they seek to achieve impact on competing objectives through multiple interventions over very large areas. They aspire to apply the science of landscape ecology to understand interactions across sectors and land ownership patterns. They aim to provide a basis for interventions that result in the whole landscape having higher value for both the economy and biodiversity than the sum of its parts (Lafortezza *et al.* 2008).

If landscape scale interventions are really aiming to reconcile and optimize conservation and development goals their performance must be assessed in terms of gains for conservation set against development gains or benefits foregone (Sayer *et al.* 2006). Simulation models that quantify benefit flows from different land-use configurations (Sandker *et al.* 2009) and evaluation based on the sustainable livelihoods framework (Sayer & Campbell 2004) provide potential ways forward but are still only used experimentally. Consequently there is little empirical evidence to substantiate either the conservation or livelihood benefits that are achieved by landscape-scale initiatives. Many so-called landscape program appear little different to the integrated conservation and development projects that have dominated the conservation scene for the past three to four decades (Garnett *et al.* 2007) and whose performance has been widely criticized (Oates 1999, McShane & Wells 2004).

Salt & Lindenmayer (2008) and others have made the case for 'what' characteristics conservation landscapes should have to achieve biodiversity objectives but there is no widely accepted conceptual framework for linking these biodiversity objectives with those for poverty alleviation. Even if an ideal landscape configuration for these contrasting objectives could be designed there is little attention given to 'how' this might be achieved in developing country situations with weak institutions, high demand for land and only slowly emerging constituencies for conservation. Landscape approaches have continued to focus on plans and regulation and have not addressed the challenges of the changes in individual

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stakeholder choices that would be needed to achieve these outcomes.

The management approach of conservation organizations is often rooted in the command and control culture of traditional protected areas. In this situation the conservation organization has clear responsibility for the area and its goals predominate over those of any other stakeholder. However, landscape approaches are applied in situations with multiple stakeholders and often-conflicting goals. This requires that conservation organizations deploy a new set of skills and approaches including many that draw upon other bodies of professional practice. Conservation at a landscape scale is ultimately a process of compromise and social change and it cannot be achieved through the conventional command and control approaches of protected area management agencies. The development literature and recent field experience of World Wildlife Fund and International Union for Conservation of Nature (IUCN) landscape initiatives (IUCN 2007) suggests that achieving conservation at a landscape scale is possible but difficult. Additional sets of concepts and approaches need to be deployed if conservation organizations really want to have an impact on the broader landscape.

SET CLEAR CONSERVATION GOALS.—The conservation goals for landscape approaches are often set in very general terms (IUCN 2007). They attempt to optimize mosaics of natural and near natural habitats such as managed forests or agro-forests to favor both biodiversity and development outcomes. But any restrictions on economic activities that are made to favor biodiversity will incur costs for local people and making these trade-offs explicit will only be possible if conservation goals are set in clear and measurable terms. This is one of the fundamental arguments in Kai Lee's classic work on ecosystem approaches (Lee 1993) and the issue is discussed in relation to natural world heritage sites with resident human populations in Sayer *et al.* (2000). Simberloff *et al.* (1992) have pointed out that the need to establish the opportunity costs for wildlife corridors. Landscape approaches often appear to be motivated by a belief that they can achieve win-win outcomes that optimize both biodiversity and economic development. Conservation organizations might better take a more pragmatic approach and maintain a sharp focus on their biodiversity goals. These should be addressed within a broad understanding of development issues while recognizing the limited ability of conservation to deliver significant poverty alleviation outcomes.

RECOGNIZE THAT LANDSCAPES ARE DYNAMIC AND CONSERVATION IS A MATTER FOR SOCIETAL CHOICE.—Much conservation is based on idealistic plans that are not rooted in the realities of continuing landscape change (Sayer *et al.* 2008). Conservationists must accept that change is inevitable and must invest more in understanding that change and knowing how it can be influenced (Gunderson & Holling 2002). We need less emphasis on rigid plans and more on 'muddling through' (Lindblom 1959). We need to work toward general over-arching goals and not attempt to impose rigid predefined blue-prints (Lee 1993). Conservationists thrive on plans but as Easterly (2006) and others have argued 'planning' has to give way to 'seeking' to achieve societal change. The concept of constructi-

ivism originally applied in the field of education (*e.g.*, Fosnot 1996) provides an attractive conceptual approach for achieving conservation in complex landscapes (*e.g.*, Steins & Edwards 1999). Constructivism entails starting from the present situation and building gradually and adaptively toward a socially acceptable compromise (Hagmann *et al.* 2003).

Societal perceptions of biodiversity will change and new technologies and markets will provide new options for land use and this in turn will require constant revision of conservation goals. Conservation, like politics, has to be the art of the possible. Building resilience to change may be more important than seeking some specified end point (Walker & Salt 2006). Conservationists cannot control landscapes—there are too many others whose behavior impacts on the landscape. Rigid plans are less useful than long-term engagement that seeks to understand the processes of change and influence them in favor of biodiversity (Sayer *et al.* 2008).

EXPLORE SCENARIOS.—The Millennium Ecosystem Assessment (2005) analyzes major drivers of landcover change and explores global scenarios for the future contexts under which conservation may have to operate. Conservation organizations might be expected to seek to align with these scenarios or at least to adapt their program to the one that they consider most likely. However conservation interventions often focus on local or short-term symptoms and ignore the major drivers of environmental or developmental change. Exploring scenarios is particularly effective when working at a landscape scale. A variety of informal and formal techniques are now available ranging from simple visualization of scenarios (Sayer *et al.* 2006) to more structured simulation modeling (Sandker *et al.* 2009). These tools enable conservationists to work with stakeholders to explore options and identify biodiversity scenarios that maximize benefits and minimize costs to local economies and thus have broad support among the people most directly concerned. The discussion of past landscape change and its causes can be valuable in focusing attention on the major drivers of change and avoiding a preoccupation with short-term symptoms.

UNDERSTAND THE BROADER CONTEXT OF PROTECTED AREAS.—Too much attention is given to maximizing the extent of protected areas and not enough to their long-term viability and to the matrix within which they exist (Hayes & Ostrom 2005, Locke & Dearden 2005). In the developing world protected areas are often established to counter the threat of land conversion. Conservationists try to maximize protected areas instead of optimizing them so as to reduce the opportunity costs that they incur for society. The fact that small- to medium-sized protected areas can maintain a lot of biodiversity has been well documented (Zuidema *et al.* 1997). And the reality is that existing protected areas in tropical developing countries are often neglected and are degrading (Curran *et al.* 2004). Basic biology dictates that protected areas should be large and connected but attempts to expand and link protected areas in regions where people are poor and land pressures are high are often unrealistic. It has long been argued that the funding for the

1 establishment of corridors might be better used to achieve more prag-  
 2 matic and realistic conservation objectives (Simberloff *et al.* 1992).

3 We must accept that a world of 9 billion middle class people is  
 4 unlikely to be able to afford even the 12 percent of land allocated to  
 5 protected areas that IUCN claims we have today. A balance must be  
 6 sought in conservation investments between maintaining a mini-  
 7 mum set of core protected areas and seeking a more conducive ma-  
 8 trix within which they can exist. This is where the landscape  
 9 approach can provide its greatest added value. This requires that  
 10 the function of a landscape as a habitat for species and communities  
 11 has to be examined far more rigorously. The preferred biodiversity  
 12 landscape has then to be reconciled with the requirements for other  
 13 land uses and empirical evidence must be established for the benefit  
 14 flows from different configurations of the landscape. We have to  
 15 achieve more conservation objectives in diverse and productive mo-  
 16 saics composed of close-to-nature agricultural and forestry systems  
 17 (Sayer & Maginnis 2005). But it may be dangerous to switch re-  
 18 sources to these ambitious landscape scale interventions before the  
 19 integrity of the core protected areas has been secured.

20 The added value of landscape approaches should come from  
 21 enhancing biodiversity values in managed agricultural, forestry and  
 22 urbanized landscapes. However, many conservationists still see for-  
 23 estry as a threat to biodiversity, yet numerous studies suggest that  
 24 small investments in improved forest management can yield greater  
 25 biodiversity gains than similar investments in protected areas (Me-  
 26 ijaard & Sheil 2007). Even industrial plantations have biodiversity  
 27 values and appropriate management can enhance these (Brockerh-  
 28 off *et al.* 2008). Most conservation organizations are neutral on  
 29 questions of agriculture yet agricultural land use is clearly going to  
 30 be a major determinant of the future of land use in the tropics. The  
 31 recent International Assessment of Agricultural Science and Techno-  
 32 logy for Development (<http://www.agassessment.org/>) argues  
 33 convincingly for diversified, small scale family farms using low in-  
 34 puts. Such farms will have more varied crops, more trees and will  
 35 support more biodiversity but they will occupy more space to  
 36 achieve the same yields as intensive agriculture. Conservation orga-  
 37 nizations should be engaging more actively in the debate about the  
 38 solution to the food crisis in the tropics—at present many conser-  
 39 vation organizations are silent on the issue.

40 RECOGNIZE THE LIMITATIONS OF CONSERVATION INSTITUTIONS TO PRO-  
 41 JECT THEIR INFLUENCE ACROSS THE BROADER LANDSCAPE.—The insti-  
 42 tutions, incentives and knowledge needed to conserve biodiversity  
 43 in complex, multifunctional landscapes are often lacking in the tropics.  
 44 This may be the single greatest obstacle to the pursuit of land-  
 45 scape approaches. Landscape approaches require coordinated action  
 46 by different land-owners or users and by institutions operating in  
 47 different sectors. Conservation agencies in the developing world  
 48 have little capacity to influence these broad development processes.  
 49 It may be unrealistic for them to attempt to do so in situations  
 50 where there is only weak civil society support for conservation and  
 51 weak sectoral and judiciary institutions. Where these preconditions  
 52 are not met it may be unwise to attempt landscape approaches  
 53 (Oates 1999).

ENGAGE FOR THE LONG-TERM TO ACHIEVE BROAD-BASED SOCIAL  
 CHANGE.—Any landscape approach must be based on a multistake-  
 holder dialogue to explore scenarios and give legitimacy to choices  
 (Salt & Lindenmayer 2008). Building constituencies and capacity  
 for landscape scale conservation will be a long process. It will have  
 to be rooted in constructivism and muddling through (Sayer *et al.*  
 2008). All of the issues discussed in this paper will have to be ad-  
 dressed in parallel and over the long-term. Simple and quick solu-  
 tions such as those promised by payments for Reducing Emissions  
 from Deforestation and Degradation (REDD) have little chance of  
 succeeding. They address conservation problems as technological  
 challenges and under-estimate the difficulties of achieving the social  
 and institutional changes that must underpin progress. Conserva-  
 tion should not be based on the idealistic models of conservation  
 biologists but on a recognition that biodiversity is just one of many  
 conflicting values of land. Conservation approaches must be attrac-  
 tive to local stakeholders. Sheil and Boissière (2006) argue that a  
 middle ground can be found between the goals of interna-  
 tional conservation and the biodiversity interests and values of  
 local people.

## CONCLUSIONS

There is potential to have a substantial impact on conservation tar-  
 gets by working at a landscape scale but there are some major ca-  
 veats. First, the landscape approach should complement but not  
 replace approaches more narrowly focused on protected areas. Pro-  
 tected areas are vital components of conservation landscapes and  
 they need specialized institutions for their management. In situa-  
 tions where conservation institutions are weak it is sensible to make  
 their mandates as simple as possible. It may be dangerous to over-  
 load them with the multiple layers of responsibility, which lie out-  
 side of their areas of core competence.

Landscape initiatives should complement and not replace the  
 conventional focus on protected areas. Landscapes cannot be  
 molded through sectoral command and control approaches. Change  
 will require a process of neutral facilitation working over a  
 long time horizon towards scenarios agreed upon through multi-  
 stakeholder processes. Landscape approaches will be less dependent  
 on formal rules and planning and more concerned with negotiating  
 trade-offs, exploring options and building support for change. Pro-  
 tected area agencies may work best if they take a positivist approach  
 with clearly defined objectives and logical frameworks for achieving  
 them. However the landscape approach has to be based upon con-  
 structivism and ‘seek’ or ‘muddle through’ to a better long-term  
 situation whose precise nature cannot at present be known.

The scenarios developed under the Millennium Ecosystem As-  
 sessment provide a conceptual framework for understanding these  
 issues. Conservation groups seem to have either ignored these sce-  
 narios or treated them as an intellectual abstraction. In reality the  
 scenarios provide a rich resource for reflecting on conservation pri-  
 orities. The programmes of most international conservation  
 organizations, even those claiming to take landscape approaches,  
 are in fact closer to the centrally planned ‘positivist’ Global Or-  
 chestration scenario. In contrast, the Adapting Mosaic scenario is

'constructivist' and is consistent with landscape approaches. It provides a vision of a future world that combines many of the features that I have argued in this paper and represents the most pragmatic way forward for conservation landscapes.

## LITERATURE CITED

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