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Eco-regional conservation and development in Madagascar: a review of USAID-funded efforts in two priority landscapes

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The need for eco-regional or landscape-scale conservation and development has been widely recognised in Madagascar, yet implementation remains problematic. The approach was initially driven by biodiversity-conservation concerns, without enough emphasis on sustainable development, especially agriculture. Current challenges include consensus building for eco-regional visions, strengthening partnerships with government institutions, and negotiating land-use trade-offs within focal landscapes. Increased attention to revenue generation from agriculture and forest products, as well as enhanced communication and widespread participation by all stakeholders, should augment the success of broad-scale conservation and development programmes.

Conservation et développement écorégionaux à Madagascar : une synthèse des efforts financés par USAID dans deux paysages prioritaires
La nécessité de conservation et de développement à l'échelle régionale ou des paysages a été largement reconnue à Madagascar, mais sa mise en œuvre reste problématique. L'approche a été dans un premier temps impulsée par des entreprises de conservation de la biodiversité sans mettre suffisamment l'accent sur le développement durable, en particulier l'agriculture. Parmi les défis actuels figurent l'établissement d'un consensus pour les visions écorégionales, le renforcement des partenariats avec les institutions gouvernementales et la négociation des concessions sur le plan de l'affectation des terres au sein des paysages prioritaires concernés. Le surcroît d'attention accordée à la génération de revenus grâce aux produits agricoles et forestiers, ainsi que l'amélioration de la communication et la participation large de toutes les parties prenantes, devraient intensifier le succès des programmes d'envergure de conservation et de développement.

Conservação eco-regional e desenvolvimento em Madagascar: uma revisão dos esforços financiados pela USAID em dois cenários prioritários
A necessidade de conservação e desenvolvimento eco-regional ou de escala de paisagem tem sido amplamente reconhecida em Madagascar, embora a implementação permaneça problemática. A abordagem foi inicialmente direcionada pela preocupação com a conservação da biodiversidade sem ênfase suficiente no desenvolvimento sustentável, especialmente a agricultura.

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Entre os desafios atuais estão o desenvolvimento de consenso para visões eco-regionais, fortalecendo parcerias com instituições governamentais, e negociando permutas de uso da terra dentro das paisagens focais. Uma maior atenção para a geração de renda da agricultura e de produtos florestais, e também uma maior comunicação e participação generalizada de todos os stakeholders, devem aumentar o sucesso de programas de conservação de grande escala e de desenvolvimento.

Conservación y desarrollo ecorregional en Madagascar: un estudio sobre dos proyectos financiados por USAID

Es ampliamente conocida en Madagascar la necesidad de impulsar la conservación y el desarrollo ecorregional a gran escala; sin embargo, la puesta en práctica ha sido difícil. En un principio, el interés por la conservación de la biodiversidad estimuló este método pero no se prestó la adecuada atención a otros aspectos como el desarrollo sustentable y, en especial, a la agricultura. Los retos actuales incluyen la construcción de consensos en torno a estrategias ecorregionales, el fortalecimiento de alianzas con instituciones gubernamentales y la negociación sobre las ventajas y desventajas del cambio en el uso de la tierra en escenarios específicos. Incorporando factores como la generación de ingresos agrícolas y forestales, las mejoras en la comunicación y la mayor participación de todos los actores, es probable que aumente el éxito de los programas de conservación y desarrollo a gran escala.

KEY WORDS: Environment; Labour and livelihoods; Sub-Saharan Africa

Introduction

Brief history and terminology of the eco-regional concept

Environmentalists conceived several approaches to broad-scale conservation in the 1990s. Prominent among these were eco-regional conservation, developed by the World Wide Fund for Nature (WWF) and The Nature Conservancy, and the 'living landscapes' approach promoted by the Wildlife Conservation Society (WCS). This new paradigm was partly a response to perceived shortcomings of integrated conservation and development projects (ICDPs), namely that they were often too small in geographic scale to ensure the survival of populations of threatened species and maintenance of ecological processes; and secondly that they did not adequately address the root causes of habitat degradation and species loss. The conservation community thus strove to look beyond the boundaries of protected areas, tackling threats and pressures in the larger landscape and beyond.

Communicating and clarifying the size of these broad-scale endeavours to the general public is often problematic and compounded by the inconsistent terminology. WWF defines an eco-region as a large area of land or water that contains a geographically distinct assemblage of natural communities that (a) share a large majority of their species and ecological dynamics; (b) share similar environmental conditions; and (c) interact ecologically in ways that are critical for their long-term persistence (Dinerstein *et al.* 2000). Other practitioners prefer the use of the terms 'landscape' or 'priority area'. It is useful to note that there is really no fixed size or range of sizes for an eco-region, a landscape, or a priority area; various authors use the terms differently (Loucks *et al.* 2004). Eco-region sizes can range from 35,000 to 142,000 km^2, whereas references to landscapes as small as 3 km^2 and as large as 30,000 km^2 can be found. These areas are usually composed of a mosaic of sites and more than one protected area (Aldrich *et al.* 2004).

Overall rationale for the Eco-regional Conservation and Development (ERC&D) approach

It seems clear that in order to achieve sustainable development and biodiversity conservation over large areas – eco-regions or landscapes – development and conservation concerns must be addressed together. There are many reasons for linking the two. First and foremost is the fact that natural areas within a given landscape have an effect on or influence the human-transformed parts of the landscape, and *vice versa*. For example, water, which is a key resource for agriculture and other human activities, often flows from natural forest areas in a landscape. Similarly, energy for human use is often generated by hydroelectric plants that depend on wise management and minimal disturbance of natural areas. It may be more cost-efficient in the long run to undertake development (production forestry, for example) and conservation actions together within a large-scale programme; this will allow for a more economical use of funds and staff and will favour synergies (Aldrich *et al.* 2004). In short, altered areas and natural areas are connected in many ways, and it is unwise to separate or dissociate the two.

Successful broad-scale conservation or development efforts also depend on exemplary planning and co-ordination. One cannot move ahead with conservation activities without knowing the plans and trends for land use adjacent to (and even sizable distances from) the targeted biodiversity-rich areas. Landscape or eco-region management is also facilitated by a holistic vision and accompanying land-use plans that consider and anticipate current and future development tendencies; a conservation vision that ignores these elements is likely to be doomed to failure. One intriguing concept that illustrates the large-scale links between conservation and development is the establishment of economic development poles or corridors, in order to encourage migration away from biodiversity-rich natural areas in a landscape, and, at the same time, to reduce pressure on these areas. A final concern that is critical for coherent actions over a large region is the need for strong co-ordinating institutions. It is well and good to stress the inseparable nature of conservation and development, but without an organisation that can facilitate partnerships, ensure checks and balances, and constantly promote the overall land-use plan or landscape vision, actors will eventually revert to circumscribed activities.

The Malagasy context

Madagascar is one of the world's top biodiversity hotspots, with the majority of its flora and fauna found nowhere else on earth. For example, approximately 99 per cent of amphibians and 90 per cent of reptiles are endemic (Glaw and Vences 1994). Conservation of this unique biodiversity is of the utmost importance. However, habitat for Madagascar's plants and animals is quickly disappearing. It is estimated that the island has lost 90 per cent of its original forest cover (Green and Sussman 1990). Although rates have recently slowed, 50,000 ha of Malagasy forests disappeared annually between 2000 and 2005 (MEEF *et al.* 2009). To compound matters, most people in Madagascar are poor and depend to a large extent on natural resources for their livelihoods. UNDP (2007) ranks Madagascar 143rd out of 179 countries on its human-development index; and 107th out of 135 developing countries with regard to poverty.

Initial adaptation and application

Madagascar was one of the first developing countries to design and implement a National Environmental Action Plan (NEAP). Starting in 1990, NEAP activities commenced at the field level; they were organised into three phases that spanned, roughly 1990–1995, 1996–2002,

and 2002 to the present. During the first phase (Environmental Program 1, or EP1), several international NGOs employed an ICDP approach to biodiversity conservation, generating mixed results. Among the many lessons learned, cited by McCoy and Razafindrainibe (1997), participants noted the need for longer project cycles in order to change behaviour, as well as the imperative to expand planning and application to a regional scale. There was also an admission that community-level appraisals were cursory, leading to flawed analysis, and that the root causes of the main pressures on protected areas received inadequate consideration. Moreover, there was a general perception that the conservation organisations that managed the majority of the ICDPs were not well suited to addressing the socio-economic needs of the rural population in the larger landscape.

These concerns influenced the second phase of the NEAP: the ICDP paradigm was virtually abandoned as development and conservation activities expanded in scope and endeavoured to address the origins of biodiversity loss.[1] In short, there was widespread recognition that biodiversity conservation could not be achieved by addressing threats in a narrow peripheral area adjacent to Protected Areas (PAs): efforts needed to address socio-economic pressures in the larger landscape (USAID 1997; USAID 2004; World Bank 1996). Consequently, the United States Agency for International Development (USAID) designed the Landscape Development Interventions (LDI) project, which operated in three large areas or eco-regions in Madagascar, two of which had forest corridors at their core. This broad-scale approach to development and conservation was continued during the third phase of the NEAP via the Ecoregional Initiatives (ERI) programme (see Table 1 for a synopsis of NEAP phases and associated USAID projects). During the same period, WWF implemented an eco-regional conservation programme in the spiny forest eco-region, and WCS used elements of a landscape approach in the Masoala and Makira areas.

Although there was recognition of the need for a broad-scale or eco-regional approach to development and conservation, targeted implementation in priority landscapes was limited. Among the multilateral and bilateral donors, USAID seems to have been the only institution that fully embraced the approach. This may be partly attributed to the influence of major environmental NGOs, such as WWF (Medley 2004). Although World Bank documents (World Bank 1996; 2007) reference the concept, it can be argued that the second phase of the Environmental Program (EP2) and current EP3 interventions were and are somewhat scattered and dispersed, not necessarily directed at priority landscapes. For example, the project appraisal for EP3 states that interventions will occur in 530 rural communes, representing 55 per cent of the area of the country (World Bank 2004).

The ERI experience

Context

Building on the LDI experience, the ERI programme began field activities in and around natural forest corridors in the Fianarantsoa and Toamasina regions on the eastern side of Madagascar in

Table 1: Timeline of Madagascar's NEAP and associated USAID projects

Period	NEAP Phase	USAID projects
1990–1995	EP1	ICDPs
1996–2002	EP2	LDI
2002–2008	EP3	ERI

the second half of 2004 (see Figure 1). The overarching goal of the programme was similar to that of LDI: transforming traditional farming systems in order to reduce slash-and-burn agriculture (the cause of greatest pressure on natural forests), thus indirectly conserving the forest corridors. Compared with LDI, greater emphasis was placed on community-based forest management and the eco-regional approach.

Many contextual elements carried over from the LDI epoch, including continued pressure on forest resources, fragile co-ordinating institutions, and the need to scale up interventions. Yet several new circumstances appeared or were more accentuated at the start of the ERI programme. Foremost among these were the expansion of the Malagasy Protected Area System and the proposal of both the Fianarantsoa and Toamasina forest corridors as new PAs. Overall, many of the new PAs were much larger – in the order of 500,000 ha – than existing reserves. This sparked a debate on the category or zoning of these new PAs: should they be

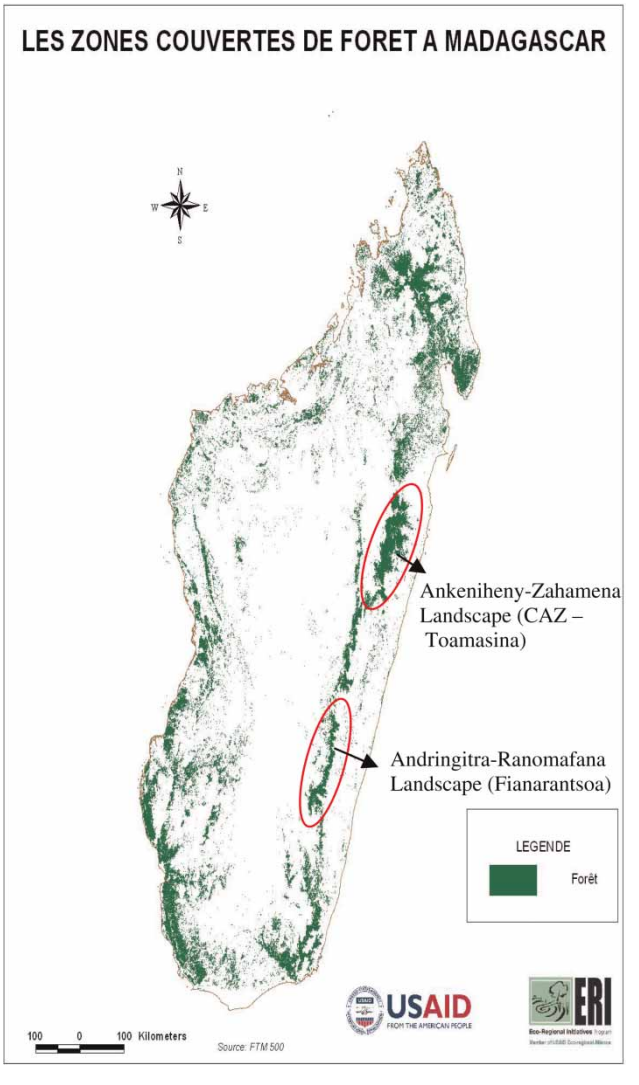

Figure 1: Location of ERI landscapes

strictly protected areas or multiple-use areas that included an overarching biodiversity-conservation goal? The scrutiny was partly fuelled by concerns about balancing conservation with economic development.

The ERI period also witnessed a growing frustration and scepticism regarding community-based natural-resource management (NRM). Many stakeholders, often urban-based elite, expressed doubt about the ability or capacity of local associations to manage sustainably or in a sound manner the resources that had been transferred to them (pers. obs.). Much of this concern was due to the fact that many natural-resources management-transfer agreements (usually relating to forests) had been initially supported by NGOs or projects, but, once the agreement was signed, much of the support vanished and associations were left to their own devices. Yet, at the same time, there was a growing recognition that environmental governance was a major problem and needed to be improved (Raik and Decker 2007). Some argued that this improved governance needed to start at the local level.

There was an expectation that ERI would scale up or replicate successful interventions, including those developed during the LDI era. With limited resources, one of the only options for expansion was via other stakeholders and leveraged funds and partnerships. This proved extremely difficult, due to the fact that ERI largely worked in isolated, rural areas that lacked other development NGOs, or where potential partners were unwilling to operate (due to higher costs, low population densities, and the difficulty of finding qualified personnel willing to work in these areas).

Results, constraints, and discussion

The key to sustainable development and arguably conservation in the ERI landscapes is agriculture. The livelihood of the vast majority of the rural population is based on agriculture, and the traditional practice of shifting cultivation constitutes the main pressure on biodiversity. Building on LDI's farmer-to-farmer approach and producer-group structure (known in Malagasy as the *Koloharena* movement), ERI made great progress towards perpetuating agricultural intensification in some parts of the landscapes. Subsequent forest-cover change analysis conducted by Conservation International and JariAla (another USAID-funded project) seemed to suggest that forest loss was reduced in USAID target landscapes, compared with other areas of the country (MEEF *et al.* 2009). In other areas of the eco-regions, the *Koloharena* producer-group and co-operative model was in its infancy or entirely lacking at the start of the ERI programme. The main constraints included a lack of the human resources – field agents or partners – needed to promote the agricultural intensification paradigm on a large scale, and insufficient revenue generation from agricultural production needed to sustain farmer-based agricultural extension. The income-generation or commercial problem was compounded by the fact that many areas where the programme operated were extremely isolated, lacking the necessary infrastructure to link producers to markets.

A coalition of stakeholders, supported in large part by the ERI programme, produced significant results regarding development of an eco-regional vision. For example, using WWF expertise and building on Conservation International's efforts to identify priority biodiversity areas within the landscape, the regional co-ordination body for the Toamasina corridor – PlaCAZ (*Plateforme pour la Gestion du Corridor Ankeniheny Zahamena*) – finalised the sustainable-development vision for the greater Ankeniheny-Zahamena forest corridor in early 2007. This was the culmination of a process that spanned more than a year and included consultations with stakeholders in the five Districts that overlap with the Ankeniheny-Zahamena forest corridor.

As can be imagined, the process was not without difficulties. Communicating the somewhat abstract concept of eco-regional conservation proved problematic: many stakeholders think and act locally and cannot cope with initiatives that go well beyond their traditional spheres of intervention. In the government domain, commune-level and regional authorities were often unenthusiastic about a model that seemed to be driven by biodiversity-conservation concerns while relegating rural development interests to a lower tier. Overall, garnering support and internalisation of the vision, as well as achieving a consensus, was (and remains) problematic. Partly in response to these difficulties, the PlaCAZ endeavoured to shift the focus of the vision to sustainable development.

At the same time, parallel, large-scale initiatives were on-going. Efforts to establish the new *Corridor Ankeniheny Zahamena* (CAZ) and *Corridor Fandrina Vondrozo* PAs continued. ERI and other stakeholders made an effort to use this opportunity to promote integrated land-use planning and avoid dissociating the new CAZ PA from the surrounding landscape. Commune-level maps were developed which identified potential agricultural investment zones in areas adjacent to the proposed PA. These zones were discussed as part of the public consultation process linked to the creation of the PA.

The *Régions* – new governmental administrative units established in 2004 – also began efforts to develop land-use plans known as SRAT (*Schéma Régional d'Aménagement du Territoire*). ERI and PlaCAZ participated (and continue to participate) in this process, striving to promote the link between conservation of the forest corridor and agricultural intensification. Additionally, the idea of a belt of sustainable-use forest zones, embedded in the new PA and managed by local community associations, was introduced during workshops on the regional plans.

In collaboration with other USAID-financed projects, ERI also attempted to promote an integrated rural development approach at the commune level. This was important for several reasons, including the fact that biodiversity conservation is usually not a priority for rural communities, yet the links between nature or natural capital, health or human capital, economic growth, and good governance are evident to these communities. The integrated approach was also critical to achieving internalisation or ownership of large-scale eco-regional or sustainable-development visions. Yet promotion of this approach was hampered by the perennial lack of resources and partners, and by the fact that there are gaps in the gamut of interventions offered by the USAID partners, namely in the educational and infrastructure sectors. Another implicit obstacle was that the approach was perhaps too ambitious: projects were unable to focus on their own internal objectives and activities and, at the same time, work on integrated development and co-ordination with other projects.

Lessons, challenges, and perspectives

The need for development activities and land-use planning

For those outside the environmental community, the broad-scale conservation paradigm can be viewed as an exercise in integrated, sustainable land use. This begs the question: shouldn't conservationists also place it in this context? This concern is especially pertinent in developing countries such as Madagascar, where poverty alleviation and socio-economic development are the top priorities, not only at the national level (Government of Madagascar 2006), but also among the rural population (Programme ERI Toamasina 2006). In this setting, it is important to avoid the perception that biodiversity conservation is more important than human development. It is likely that medium- and long-term broad-scale biodiversity-conservation results will be much easier to secure if they are part of sustainable development plans and initiatives.

The new regional land-use plans, or SRATs, developed and promoted by the Ministry of Decentralisation and Territorial Development, represent an immense opportunity for broad-scale conservation. With a bit of lobbying, environmental concerns should become one of the main pillars of the SRATs; after all, sustainable development cannot occur without sound management and conservation of natural resources. In the Ankeniheny-Zahamena landscape this is happening already, as efforts are underway to incorporate the PlaCAZ's vision for sustainable, eco-regional development into the SRAT for the Alaotra-Mangoro *Région*. On the other hand, the task of convincing powerful economic initiatives such as the nickel-mining *Projet Ambatovy* to align with and contribute to the realisation of the plan seems more challenging (pers. obs.). The SRATs also seem to be an ideal spatial tool or process for achieving many of the objectives of basic planning documents for development in Madagascar – for example, the Madagascar Action Plan, commonly known as the MAP. Integrated spatial planning tools exist and can be applied so that benefits from biodiversity, environmental services, and improved use of natural resources accrue to local communities and to the larger *Régions*.

The challenge then becomes taking the broad-scale development vision and negotiating and implementing sustainable land use and biodiversity-conservation outcomes on a smaller scale – while at the same time maintaining links to the overall, large-scale vision. In Madagascar, the rural commune scale lends itself to this type of planning and implementation. One of the keys is developing agricultural intensification zones that will eventually obviate the need for continued, extensive slash-and-burn techniques. The importance of agriculture is underscored by the fact that it is the main component of rural livelihoods for much of the population. One complicating factor linked to these agricultural intensification zones is land tenure. Trade-offs and compensation will have to be negotiated with traditional landowners in the intensification zones and with households farming at the forest margins. For example, families farming along the forest fringes in designated agroforestry or permaculture zones must be provided with land in the intensification zones for staple-crop production as compensation for giving up this type of farming next to the forest; this will be critical for successful and sustainable local and broad-scale development. Economically attractive agricultural development on unused or underused land is another important element of commune-level land-use planning.

In order to ensure support and involvement during implementation by the rural population and support organisations, sustainable land-use planning at the local level must be highly participatory. Traditional leaders need to be involved, and a clear explanation and justification of the process must be provided; this will, it is hoped, solve the engagement problem that has been a challenge for commune-level planning. In short, the rural population – people – must be part of the solution and not viewed as the problem. Trust needs to be developed, and the population must sense that their development concerns are being addressed; biodiversity concerns can subsequently be discussed and plans made to incorporate these aspects. If this sequence is followed, the success of viable, local partnerships and long-term, positive, conservation outcomes seem much more likely.

A final consideration regarding sustainable land use is population growth – a grave threat to both conservation and development. It is clear that current population levels and traditional practices exceed the carrying capacity of the land in many areas of Madagascar. Efforts to achieve positive development and conservation outcomes need to be coupled with family-planning programmes. If they are not, population growth may quickly negate any gains.

Scaling up

Applying best practices and improved techniques to a larger geographic area – commonly referred to as scaling up – continues to be a serious challenge for practitioners of broad-

scale rural development and conservation. Local, site-specific successes have been observed, but mechanisms to generalise these achievements to the larger landscape need to be strengthened. As a minimum, there must be some sort of extension and communication structure that can reach a large number of households or a large percentage of the rural population; but this structure (arguably consisting of many permanent, field-based extension agents and a large number of strategically placed demonstration sites) requires resources, both human and financial, and these resources are often scarce. Programmes or projects may have some resources that can be dedicated to extension, but rarely does a single programme or project have sufficient funds to operate at a landscape or eco-regional scale. A commonly proposed solution is to leverage support from other sources, yet the transaction costs, including lobbying for alignment with a broad-scale vision, are often insurmountable: agencies running projects or programmes conceived outside the eco-regional conservation paradigm are often unable or unwilling to change course and contribute directly to broad-scale programmes that they did not initiate. Some maintain that scaling up cannot occur until certain enabling conditions are in place, such as key policy and economic changes, equitable institutions that can distribute wealth, and local people identifying, understanding, and adopting decisive behavioural changes.

The importance of replicating improved agricultural practices or facilitating agricultural experimentation and innovation at a landscape scale should not be underestimated (but often is): again, agriculture is the principal livelihood component of the vast majority of Madagascar's rural population, and shifting cultivation or slash-and-burn agriculture is usually the greatest threat to natural habitat and biodiversity. Unfortunately, at present there is no operational agricultural extension service in Madagascar. Faced with this vacuum and the obvious need to expand coverage of agricultural intensification techniques, the LDI and subsequent ERI programmes have promoted a farmer-to-farmer extension service. Although great strides have been made towards ensuring the sustainability of this system, the challenge of paying its recurrent operational costs remains. The current premise is that commercially oriented producer groups or co-operatives can generate enough revenue to pay part-time farmer extension agents. Some would argue that this is a utopian vision: worldwide, no operational, agricultural extension service exists without government subsidy (Thévenot 2006). Another concern is that extension agents must evolve from delivering ready-made technologies and practices to becoming facilitators of experimentation, innovation, and adaptation (Sayer and Campbell 2004); this concern can partly be addressed through the Farmer Field School approach. Local community leadership, ownership, and participation are also keys to successful dissemination of best practices at a larger scale. Moreover, local behaviour changes must be linked to positive environmental results in order to realise eco-regional visions. Finally, the delivery or dissemination mechanism for best practices is critical and should be included in sustainable development or eco-regional vision-implementation plans (Sayer and Campbell 2004).

Beyond the traditional view of expanding spatially, there are those who propose a different way of scaling up: ensuring that complementary rural development domains are present within the same spatial area – often, specific zones within the larger landscape. This has been achieved to a limited extent in the USAID eco-regions of Fianarantsoa and Toamasina. (It should be noted that USAID is at the forefront of promoting an integrated, synergistic multi-sector approach to rural development and conservation, but that this approach or concern is less evident among other stakeholders contributing to Madagascar's environmental action programme.) Projects and initiatives concerned with conservation, agriculture, economic growth, health, and governance have achieved considerable spatial overlap and have been able to co-ordinate – at least partly – field-level interventions. At best, however, only half of the landscapes have been covered by the full array of rural development domains. Efforts to attain greater coverage have been hampered by pre-defined operational zones, a lack of

permanent, field-level personnel for many of the projects, and an unwillingness or inability to work in the more hard-to-access areas of the landscape (usually the high-priority biodiversity areas adjacent to and overlapping with the natural forest).

It is also important for broad-scale development and conservation practitioners to realise that challenges, solutions, and implementation exist at multiple scales within and beyond the landscape; these scales are not only spatial but also temporal and institutional. One of the keys, perhaps, to a successful eco-regional programme is ensuring linkages, co-ordination, and synchronisation between these scales (Sayer and Campbell 2004); this includes building and maintaining good relations – especially respect and trust – between the actors and institutions operating at the various scales. Ideally, this will be likely to include financial incentives or subsidies for best practices at a local scale in landscapes that have global biodiversity value. McShane and Wells (2004) have presented a convincing case for working at multiple scales and especially for co-ordinating the broader policy scale with the more local, field-intervention scale.

Despite their challenges, leveraged partnerships are probably one of the keys to realising best land-use practices at a landscape scale. In order to accumulate a critical mass of eco-regional partners, two elements seem necessary. First, the sustainable-development or eco-regional vision – including its objectives and *modus operandi* for attainment – must be endorsed by all of these partners. Realistically, this means that all of the key actors must be full participants in the development of the vision. This also points to the need for an overarching, multi-stakeholder co-ordinating structure (such as the PlaCAZ) which plays a leadership and advocacy role (and ideally has decision-making power). Second, concerns relating to biodiversity conservation and sustainable NRM must be incorporated into on-going and future rural development planning initiatives – for example, the SRAT programme currently being implemented in the Alaotra Mangoro *Région*.

Stakeholder relations

Consensus building and co-ordination among a range of diverse stakeholders is perhaps the most difficult aspect of broad-scale development and conservation. It is critical that vision establishment is highly participatory and given the necessary time to ensure agreement and backing. Unfortunately, these considerations have not always been adequately heeded in Madagascar. Visions have been produced by conservation groups and their allies, leaving a wide swathe of sustainable-development stakeholders only marginally involved. The result has been a lack of support for the vision, making implementation and co-ordination difficult at best, and significantly raising negotiation and transaction costs.

Another challenge is in communicating the basic concept of, and need for, eco-regional conservation. In the past, the paradigm has been presented in terms of biodiversity conservation, rendering identification and participation problematic for stakeholders concerned with rural development and poverty alleviation. Part of the solution is to put substantial emphasis on sustainable development from the outset. Yet even this emphasis does not overcome the challenges of communicating a somewhat abstract concept: co-ordinated development and conservation across a very large area, and the fact that the origins of local impacts and influences often come from afar. Most stakeholders tend to think and act locally, not considering the ramifications beyond their limited operational zones. This underscores the need for careful, repeated explanations and a persistent communication campaign, so that stakeholders understand the justification for broad-scale efforts and are willing to contribute to a vision and goals that surpass small- or medium-scale interventions. Exchange visits beyond local spheres could facilitate understanding and implementation of the overall vision.

The need for widespread agreement on the vision is also crucial for the subsequent implementation phase, because no single organisation can achieve the vision alone. Building and maintaining partnerships is required in order to advance towards common goals throughout the eco-region or landscape. This, in turn, points to the imperative of an institution (or a coalition of organisations) that will lead and co-ordinate efforts that contribute to the common goals and vision.

In Madagascar, the question of which is the most appropriate institution to play the lead co-ordination role does not have a clear answer. During the second phase of the NEAP, multi-stakeholder platforms were established and received mentoring. Most of these platforms are now defunct, with the exception of the two regions – Fianarantsoa and Toamasina – where LDI and ERI worked. The sustainability of these co-ordinating bodies has yet to be secured, partly due to the fact that there are recurrent operating costs, and other costs. In fact, it can be argued that these bodies need significant resources in order to fulfil their roles. Transaction costs – lobbying and maintaining interest and agreement – are often high, due to the varied and often divergent agendas of key actors. Moreover, there is a need to bring all the stakeholders – 100 to 150 groups or representatives – together at least once a year; but the costs are often prohibitive. Due to this constraint, alternatives to large, annual meetings should be considered; these could include smaller, local meetings, focus groups, or steering-committee meetings.

Besides sustainability, the appropriateness of these platforms has recently been questioned. Some argue that government institutions are best placed for playing the lead co-ordinating role for broad-scale development and conservation. In Madagascar, the advent of the *Régions*, which are analogous in size to priority conservation landscapes or eco-regions, calls into question the need for the platforms established during EP2. The *Régions* have a mandate to co-ordinate development initiatives within their boundaries, and many have recently embarked on integrated land-use planning initiatives. The main obstacle, however, is a lack of capacity: to date, the *Régions* have only a skeletal staff and a small budget; in short, they are not yet equipped to fulfil their designated functions. Another potential pitfall related to government-led broad-scale development and conservation is the tendency of the state to co-opt successful initiatives and results for political gain. In any case, the government is in many respects the most important stakeholder for broad-scale development and conservation, due to its decision-making powers with regard to land use. There are many examples beyond Madagascar where the government plays the lead role or will play the lead role in the future (see, for example, Dudley 2006).

Direct economic benefits from forest resources

In developing countries, one of the greatest challenges is how to achieve conservation among a rural population living in poverty and largely dependent on natural resources for their livelihoods. Long-term success or failure of broad-scale biodiversity conservation in these countries probably depends on the ability of these programmes to facilitate the generation of direct economic benefits for the rural population. The forested landscapes of Madagascar are no exception: it is difficult to imagine how purist, 'no touch' protection of large areas of forests, coupled with the exclusion of local people, could succeed. (One possible exception is direct-payment schemes: pure protection may succeed if local people are *paid* not to touch the forest.) Unfortunately, until recently, many conservationists and policy makers did not pay sufficient attention to the implications of burdening a poor population with the costs of biodiversity conservation – in essence, they were expecting a free lunch (Hockley and Andriamarovololona 2007).

Rather, a much greater emphasis is needed on developing forest-management regimes that achieve conservation via sustainable use, including low-level extraction and the sale of forest

products. This should probably constitute a major pillar of broad-scale development and conservation in the short and medium terms. (That said, as sustainable extraction levels are unknown, this strategy must be coupled with significant areas of fully protected zones.) In parallel, efforts should commence to develop alternative, minimum-impact forest-based enterprises such as eco-tourism and payments for environmental services. These activities could then replace the extractive pillar in the medium and long terms.

Linked to this is the question of governance. Madagascar, like many other developing countries in the tropics, has developed and adopted policies and laws during the past 15 years that allow for transfer of forest-management responsibility from the state to local communities. This is logical, pragmatic, and defensible, as it directly implicates those living closest to the resource in its day-to-day management; it also provides an opportunity for forest-derived economic benefits for local communities and thus provides a link to development and poverty-alleviation concerns.[2] Currently, a large proportion of Madagascar's remaining forests is proposed for PA status. Taking into account past trends and thinking, co-management regimes for these new PAs are being widely proposed.

Generating revenue via local-level forest management is not without obstacles. First, with regard to governance, some sort of unifying structure is probably needed to ensure coherence of the management regimes. Otherwise, there will be a risk of widely divergent practices and negative impacts on biodiversity among the many scattered and isolated managing communities. Second, specific areas of the forest may be better suited to revenue-generation activities, due to characteristics such as accessibility and populations of targeted species.[3] In order to distribute benefits evenly among local communities who co-manage large forest corridors and to assure coherence of the management regimes, a federation of managing community associations has been proposed: Hockley and Andriamarovololona (2007) provide an in-depth analysis of the economics of local forest management and a solid justification for the proposed federation. Another role and basis for the federation is marketing: this unifying structure could market, for example, the eco-tourism potential of the large forest corridor to a wide array of clients and prospective partners.

Towards a new adaptation of ERC&D in Madagascar and beyond

As we near the end of Madagascar's NEAP and the current cycle of USAID programmes, the moment is opportune to adapt the eco-regional conservation paradigm once again. Numerous improvements have been suggested in this article for the broad-scale conservation and development approach. A summary of the key points needed to ensure the success of eco-regional conservation and development in Madagascar follows.

Given the continued poverty of Madagascar's rural population, sustainable development, not biodiversity conservation, should be the driver of broad-scale development and conservation initiatives. The fact that development, and not conservation, is the priority of local communities lends additional credence to this point. At the very least, biodiversity conservation and sustainable development need to receive equal emphasis in landscape-scale programmes. Moreover, agriculture as the foundation of the population's livelihood strategy must continue to receive unrelenting attention. These concerns are likely to be applicable to other tropical developing countries.

Efforts to achieve a consensus on the sustainable-development or eco-regional vision and to attain widespread support, backing, and endorsement must be strengthened. This can be realised through a dynamic and vigilant co-ordinating body that conducts frequent communication campaigns to explain the advantages of broad-scale development and conservation and to advocate for contributions to, or alignment with, the vision. Explanations should include the reasons why

both conservation and development are needed, as well as the short- and long-term costs, benefits, and risks. The consensus can also be achieved via widespread participation in the development of the vision. Perhaps the time has come to re-convene stakeholders in a given target landscape, in order to revise significantly and adapt current development and conservation visions; this would also provide an occasion to ensure harmonisation of the visions with national and regional development plans. These efforts should lead to a more solid coalition of partners working towards a common vision.

Communication should not be limited to major cities and towns in the landscape but must reach villages adjacent to biodiversity-rich areas. Not only should the vision be explained to local communities, but a dialogue on its implementation must commence or be strengthened. This will inevitably lead to the process of negotiating land-use trade-offs – a critical process which has received scant attention to date. These elements will render broad-scale development and conservation initiatives more participatory and should contribute positively to establishing co-management regimes for the new, large PAs at the heart of many priority landscapes.

More precision in the vocabulary linked to broad-scale conservation would be helpful. The use of the term 'eco-region', initially coined by conservationists and defined by biological criteria, is confusing to many rural-development practitioners. 'Landscape' seems more appropriate, as well as greater emphasis on integrated land use or integrated landscape development. A simple definition of ERC&D would also help in communication and advocacy efforts; a suggested definition is offered below:

> ***Eco-regional conservation and development:*** *a broad or landscape-scale, integrated natural-resource-use approach that aims to achieve co-ordinated, sustainable development and biodiversity conservation, thus ensuring a balance between humans and other forms of nature.*

Economic concerns must also garner continued awareness. The commercial aspects of agricultural production cannot be neglected, including maintenance and improvement of the rural transport system. Solutions aimed at ensuring that economic benefits from forest services or products arrive at the local community level need to be found. In short, those living next to the forest resource and co-managing it must be remunerated for bearing the short-term costs of biodiversity conservation – and reminded that the long-term benefits will be significant.

Perhaps most importantly, ERC&D practitioners must redouble their efforts to partner with government institutions. Ideally, this would result in the government leading ERC&D efforts; as a minimum, the new *Régions* must endorse sustainable-development or eco-regional visions. Again, the current SRAT initiatives, coupled with national objectives, seem to be an ideal opening to ensure inclusion of key elements of the vision in government land-use plans. It also represents an opportunity to communicate and advocate for the vision and, eventually, to achieve endorsement. At the very least, proponents need to make certain that environmental concerns are incorporated into government sustainable-development plans and initiatives. Linked to this, a spatial vision, translated to an integrated land-use or landscape-development plan, is critical to achieving ERC&D goals. Site-specific and commune-level actions must occur and must be aligned with the broader vision. To transform the adage: one needs to act locally and think at the landscape level.

Notes

1. Alternatively, it can be said that the ICDP approach was not abandoned but rather subsumed within the landscape approach.

2. It should be noted that, despite much potential, implementation of forest-management transfer has been problematic and results have not always been positive; this is due to a variety of reasons that go well beyond the scope of this article.
3. There are many other obstacles to generating revenue from local forest management. Chief among these are low capacity of rural forest-management associations, difficulties in transporting products to markets from isolated areas, and significant competition for a limited number of eco-tourists.

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