



Ecoagriculture and the collaborative management of rural landscapes

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Abstract

Landscape approaches to territorial development provide a helpful framework for addressing the challenges of multi-functional, multi-objective rural landscapes. Global trends to decentralize government functions and allow more local autonomy offer promising opportunities for management at the landscape scale, however, gaps in knowledge and expertise remain challenges for rural stakeholders. “Ecoagriculture”, through the use of the Landscape Measures Initiative, provides a range of resources and tools for enabling multi-stakeholder collaboration to enhance landscape performance in the three key components of “ecoagriculture”: biodiversity conservation, agricultural production, and livelihood security. This paper describes the steps of the collaborative process of rural landscape management as well as five core competencies needed for stakeholders to successfully understand, negotiate, design, and implement ecoagriculture strategies, and evaluate changes in their landscapes. A case study from the Kijabe landscape in Kenya shows how some tools were used and the core competencies were developed through engaging in the multi-stakeholder management process. Based on experiences in Kijabe and in other multi-functional landscapes, EcoAgriculture Partners proposes a comprehensive platform for building capacities for successful collaborative management of rural landscapes. This comprehensive platform is presented as a set of three capacity-building engagements that together strengthen stakeholder skills, knowledge and exchange within and among landscapes, as well as leadership development to mobilize support for local management of ecoagriculture landscapes.

Key Words: landscape management, multi-functional landscapes, capacity building, multi-stakeholder process

Introduction

Landscape approaches to territorial development provide a framework for addressing the challenges of bringing together multiple sectors and dimensions within a landscape to negotiate integrated planning and management. Rural communities, in many cases, are the stewards of our natural resources as well as the producers of our food. However, the unrecognized contribution of this stewardship of environmental services, and a subsequent absence or inadequacy of compensation of rural communities for their stewardship has resulted in growing pressure on the natural resources that support agricultural systems and food security.

Rapidly changing global economies, perceived impacts of climate change, and the constant flux of international policy under globalization require the development of approaches that function and are resilient to these changing contexts. Such approaches demand that we move beyond traditional sectoral management, to systemic and adaptive management (Miranda 2003). Landscape approaches meet the

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standards of systemic, multi-objective management and are particularly well suited to the Latin American context where the broader trend to decentralize government has resulted in a degree of local autonomy for managing local landscapes (Eakin & Lemos 2006). The element of scale implied in landscape development models allows for the influence of biophysical, political and socioeconomic boundaries (Milder 2010). At the same time, it demands that local actors collaborate on solutions that effect environmental, social, and political systems beyond the immediate surroundings of their local community.

Five key characteristics define the landscape approaches (Milder et al. 2010) that provide the foundation for ecoagricultural landscape management. First, landscape approaches address **multi-functionality at a landscape scale**, while recognizing the ambiguity of physical boundaries within dynamic systems. Second, these approaches acknowledge the **complexity of landscapes** as compositions of biophysical, sociopolitical, and economic systems where relationships between sectors support and influence outcomes. Third, they promote **multi-objective management** that identifies the varied uses of a landscape and engages stakeholders in the prioritization of management objectives. Multi-objective management also accepts the daunting task of measuring often incommensurable indicators to track progress toward a relatively more sustainable system. Fourth, landscape approaches assume that **adaptive management**, which allows managers to refine management strategies and interventions based on the outcomes of prior interventions, is the best model for promoting stakeholder-guided management in the face of real world challenges. Fifth, stakeholders within a landscape management approach participate in a **social learning process** which relies on the exchange of knowledge, dialogue, negotiation, and communication of outcomes, and where stakeholder participation in the give and take of multi-objective planning results in effective management.

Ecoagriculture and the Landscape Measures Framework

Ecoagriculture arises out of the landscape approaches as one which establishes biodiversity and ecosystem functions as the foundation for agricultural production and sustaining rural livelihoods. Increasing threats to biodiversity, particularly in hotspots, have heightened awareness about the urgency of conservation management. However, there is a strong overlap between biodiversity threatened landscapes and land under production to produce food, fuel and fiber for growing rural and urban populations (McNeely & Scherr 2003, Scherr & McNeely 2008). Ecoagriculture strives for biodiversity conservation, sustainable agricultural production, and livelihood security through the strengthening of supportive institutions (Figure 1). It is predicated on the idea that a concerted effort to achieve these goals does not necessarily result in tradeoffs as traditional paradigms of conservation and agricultural intensification have assumed, rather synergies exist which allow stakeholders in a landscape to manage for multiple objectives through intentional and negotiated management strategies (McNeely & Scherr 2003; Scherr & McNeely 2007; Buck et al. 2007).

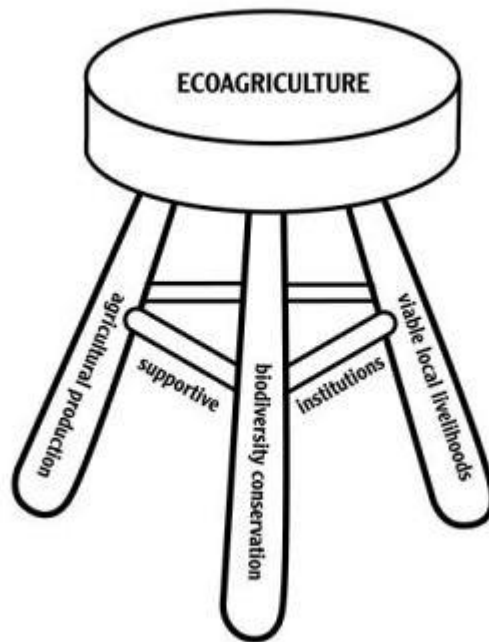


Figure 1. Ecoagriculture envisioned as a three-legged stool (from Scherr& McNeely 2007)

While ecoagriculture provides a model for managing multi-functional landscapes, there must be some means of identifying and measuring selected indicators of landscape performance according to criteria determined by diverse actors. The Landscape Measures (LM) framework, developed by EcoAgriculture Partners, seeks to help ecoagriculture practitioners identify and measure the social, economic, and ecological outcomes of landscape-scale management practices. The LM framework is being developed to support local stakeholders to work together with public, private and civic institutions to develop locally-appropriate evaluation methods and indicators that jointly assess outcomes on biodiversity conservation, sustainable production and rural livelihoods (Buck et al. 2006). The collaborative process of setting goals, criteria, indicators and the means of measuring outcomes (Milder et al. 2010) can be expressed as a cycle with distinct, yet overlapping phases, for assessing change in rural landscapes (Figure 2).

Communities begin with **understanding and assessing** their landscape. This part of the process includes understanding the spatial arrangement of the landscape as well as an understanding of resource assets and flows within the landscape. Land use maps are often helpful at this stage for understanding baseline management practices. Inventories of other resources may be performed to provide the baseline data for tracking changes in biodiversity, agricultural production, non-agricultural incomes, and local institutions, amongst other resources. This is also the stage in which communities begin to identify stakeholders and their positions within the landscape.

The stage of **landscape negotiation** starts with a dialogue between stakeholders to express issues, interests, and priorities for the landscape. Landscape performance assessment and analysis tools like the “Twenty Questions” presented later, offer opportunities for both powerful and under-represented stakeholders to voice their interests and discuss the varied uses of the landscape by other local or

external stakeholders (Milder et al. 2010). The creation of alternative scenarios and participatory mapping are helpful tools for engaging stakeholders and beginning to create a collective vision of the landscape.



Figure 2. The Landscape Measures Wheel, outlining the steps in collaborative stakeholder management for ecoagriculture landscapes

Landscape design begins with the set of priorities established in the negotiating process and continues the stakeholder-guided process of planning specific changes, the interventions to be made, by whom, and when. Design is often thought of as the territory of technical experts and experienced landscape managers. While access to technical expertise is important during the design process, tools are available for communities to understand how to design landscapes to achieve specific outcomes. Design includes activities such as the diversification of crop varieties, delineation of protected areas in a forest or watershed, and designation of areas for ecotourism. Institutional and organizational design is also an important component of overall landscape design because it will be the structure used to access external resources, markets, policy makers, and funders, as well as the platform on which stakeholder involvement and negotiation can continue.

The next phase is the **action and implementation** of ecoagricultural strategies and interventions. During this stage individuals and institutions take responsibility for the changes negotiated by stakeholders earlier on and begin the process of shaping their goals, programs, and initiatives to fit into the collective vision of the landscape. The mobilization of actors from multiple sectors and dimensions of the landscape (e.g. youth groups, cooperatives, women's groups, governing officials) has proven crucial to effective implementation of the Landscape Measures approach in the past.

As changes begin to occur, actors participate in **landscape evaluation** by tracking changes, using the chosen indicators. Through the evaluation process stakeholders deepen their understanding of the landscape and are able to make judgments about the impacts of their management strategies. Stakeholders may also evaluate the relevance and cost-effectiveness of the indicators and measurement tools at this point. Outputs from the evaluation process become key inputs in the next cycle of collaborative landscape management.

This initiative seeks to help ecoagriculture practitioners measure the social, economic, and ecological outcomes of landscape-scale management practices, as well as develop tools for multi-stakeholder groups to plan landscape activities and set measurable goals and targets. A common framework is being developed to support local stakeholders to work together with public, private and civic institutions to develop locally appropriate evaluation methods and indicators that jointly assess outcomes on biodiversity conservation, sustainable production and rural livelihoods.

Tools for the collaborative management of rural landscapes

To help reduce the complexity of the landscape measures process, the Landscape Measures Initiative has provided a web-based resource center to increase the accessibility of ideas and tools for landscape assessment. The Landscape Measures Resource Center (LMRC) is rooted in the premise that measurement enhances management. Learning to measure how landscapes perform in delivering food, biodiversity and livelihood outcomes is anticipated to endow management systems with the capacity to sustain these multiple functions while reducing or reversing the degradation of natural resources. The LMRC links elements of the landscape assessment process to a variety of tools and resources that enable the practice of landscape measurement.

The type and number of tools employed in a collaborative approach is based on the characteristics and goals of the particular landscape. This paper highlights a handful of the tools available in the LMRC that have been useful in the landscape measures process that EcoAgriculture Partners has engaged in with several partnering organizations, particularly in the case of Kijabe Environmental Volunteers (KENVO) in Kijabe, Kenya: 1) Landscape Performance Scorecard & "Twenty Questions" analysis (spidergram), 2) Institutional Performance Scorecard 3) Participatory mapping, and 4) Ground-based photo monitoring.

1. The Landscape Performance Scorecard (LPS) is designed to help keep track of the status of the landscape. The scorecard is based on the twenty questions for assessing landscape performance. A data capture form provides a means for analyzing data from the scoring exercise and presenting the

information that is generated. The ‘twenty questions’ that comprise the items on the LPS are linked to descriptions of landscape performance. The twenty questions analysis (spidergram) graphically shows the size of the gaps among five to ten organizational performance areas. The chart displays the important categories of landscape performance measured in the LPS and makes visible concentrations of strengths and weaknesses based on the stakeholders’ evaluation of the performance criteria. It is therefore essential that the initial evaluation include varied perspectives and broad participation to provide an overall realistic and useful picture of performance.

2. The Institutional Performance Scorecard is designed to aid leaders of a landscape measures initiative in assessing the potential of the institutional environment to foster an integrative approach to landscape planning and management. The institutional scoring tool is based on the premise that how the institutional environment for planning and management performs will be an important predictor of how the landscape performs in delivering conservation, production and livelihood benefits. The institutional scorecard exercise consists of three parts. The first involves identifying the specific organizations that have a presence or influence in the landscape of interest. The second involves engaging people who are knowledgeable about the institutional environment in the area in scoring relevant attributes of these organizations. Part three engages participants in thinking about the findings and discussing what they mean for their landscape.

3. Participatory map making encourages stakeholders to think spatially about their landscape, a core capacity in landscape management, while giving them an opportunity to express changes and spatial arrangements they would like to see. Map making has been used as a way to tie development or environmental interests and schemes, often concerned with the spatial configuration of resources, to stakeholders’ “priorities, perceptions, and preferences” regarding their landscapes (Vajjhala 2006).

4. Ground-based photo monitoring is a forward-sampling tool for examining ecological changes in landscapes. Three features are critical to the success of ground-based photo monitoring as a tool for measuring the impacts of conservation and land-use projects (Lassoie et al. 2006). First is the use of high quality photography techniques and the efficient management of the resulting images and metadata. Second is the design of an analytical framework for identifying and measuring visual indicators of change that are tied to a comprehensive conservation planning scheme. Last is the design of a sampling methodology that accounts for the ecological variation inherent in the region. This methodology, originally established for ecological and development land-use agencies, can be easily adapted to serve as a landscape-monitoring tool for ecoagricultural practices and outcomes.

Key to effective ecoagriculture management is the engagement of marketing and policy schemes to diversify and create new sources of capital and income in the landscape, and an enabling policy environment. While proponents of the ecoagriculture approach recognize the role that market and policy tools must play in successful management, they have not yet established an accessible set of these tools available in the LMRC. Even so, successful ecoagriculture initiatives will support activities to understand and promote innovative product and ecosystem service markets that have the potential to improve the economic viability of ecoagriculture and to mobilize strategic policy actions that integrate

ecoagriculture objectives into local, national and international policy frameworks, and promote coordination between agriculture, conservation, and rural development policies.

Even with the ecoagriculture approach well defined and innovation widespread in terms of tools and strategies, consultations with ecoagriculture practitioners in 2009 concluded that there are major gaps in knowledge and capacities to make these multi-stakeholder processes, agricultural production practices and conservation strategies efficient, effective and sustainable. Indeed the lack of capacity building and access to technical knowledge and expertise is still a major source of inequity in rural communities, seriously limiting their ability to self-manage (Eakin & Lemos 2006).

EcoAgriculture Partners, an organization committed to mobilizing and operationalizing the ecoagriculture approach, has a program to address these gaps in knowledge and capacities by working with communities in ecoagriculture landscapes that want to undertake an intentional collaborative effort to manage their landscapes for conservation, agricultural production, and rural livelihoods. EcoAgriculture Partners has worked in landscapes across the world, particularly in Africa, to connect communities to management tools and technical expertise, to foster landscape negotiation, and to facilitate capacity building courses with leaders from ecoagriculture landscapes.

Core competencies for practicing ecoagriculture

Through this work EcoAgriculture Partners has identified five core competencies that appear to be essential for bringing together diverse actors, exchanging both experiential and technical knowledge, and implementing integrated strategies at different scales and locations within a landscape. These will serve as the organizational framework for developing a capacity-building platform with a dynamic learning curriculum to overcome gaps in know-how about effective landscape management:

Landscape literacy. The aim of landscape literacy is to learn how to think spatially and ‘read’ a landscape by examining physical features and socioeconomic characteristics, as well as how to think about resource assets and flows based on their locations within a landscape. Landscape literacy is an essential prerequisite for effective communication between various stakeholders. Tools that help foster landscape literacy include maps and 3-dimensional spatial models; hand in hand with these tools goes the need to develop competencies to read and produce these tools and communicate about them to other stakeholders.

Landscape deliberation and negotiation. Landscape deliberation and negotiation is about improving governance of landscape management. It involves building trust among stakeholders and developing agreements that all concerned will respect. This can be done through visioning, scenario generation, tradeoff-analysis, conflict management, and other methods. Guidance is needed on forming and sustaining institutional ‘platforms’ for landscape action that reflect local conditions and values.

Landscape design. Landscape design involves determining optimal locations and configurations for changes in practice, for example in crop and varietal selection, soil and livestock management, or riparian restoration. Normally, landscapes are not designed; rather they simply happen, leading to sub-

optimal outcomes. When practiced at all, landscape design commonly is the domain of technical experts who are most often disconnected from local communities. Most existing tools for landscape design are created for developed-country contexts. Yet simple simulation tools can enable stakeholders to communicate effectively with other stakeholders about the spatial targeting of practices and features that are likely to affect adjacent practices as well as the overall capacity of the landscapes to deliver desired outcomes. Practitioners need easier means to access existing scientific and technical information, and experience of other land managers, to identify relevant innovations.

Collaborative implementation. Different sectoral institutions in an ecoagriculture landscape typically need at least to align or coordinate activities with one another, if not actually integrate efforts. Efficiency and effectiveness of landscape approaches depend on securing financial inputs in fair and strategic ways, ensuring effective communications among stakeholder groups, collaborating in training and curriculum development, and sustaining relationships over time.

Landscape assessment and tracking. Assessing and monitoring the performance of landscapes across multiple dimensions requires selecting and measuring indicators that are relevant and credible to all stakeholders involved. EcoAgriculture Partners has developed an easy-to-use Landscape Measures approach for mosaic landscapes, and is exploring cost-effective ‘integrative’ indicators that track multiple dimensions of landscape performance at once.

Leadership is critical to success. Leaders in ecoagriculture landscape initiatives need a broad, inspiring and inclusive vision; strong communication; networking and political skills; and commitment to engage in the process over the long-term. Institutions grounded in the landscape—farmers’ organizations, local NGOs, local government, local businesses and local universities—must play central leadership roles, though they typically have limited access to the knowledge and expertise needed to play those roles well.

Experience of landscape management in Kijabe, Kenya

EcoAgriculture provided support to partners and multi-stakeholder groups to apply certain components of the LM approach in six ecoagriculture “learning landscapes”: Kijabe, Kenya; Mubuku, Uganda; Kabale, Uganda; Talamanca, Costa Rica; Finger Lakes, USA; and Copán, Honduras. Assistance was mainly for multi-stakeholder landscape planning, landscape mapping, market opportunity assessments, biodiversity assessment in agricultural areas, documentation of ecoagriculture practices, and community knowledge sharing. A number of the tools highlighted above were developed or refined in these landscapes to facilitate the multi-stakeholder process, including the Landscape Scoring Tool, Ground-Based Photo-Monitoring, Institutional Performance Scorecard, Landscape Market Assessment, and Getting Started in Payments for Ecosystem Services.

EcoAgriculture also launched the Ecoagriculture Leadership Course, which has been implemented five times in East Africa and Mesoamerica. These 6-10-day leadership courses are offered in conjunction with regional partners (including CATIE, IICA, RUTA, and UICN in Central America) and bring together participants from the diverse sectors that need to work together for ecoagriculture landscape

development. The courses include modules on challenges for aligning production, livelihood and ecosystem objectives in agricultural regions; ecoagriculture landscape strategies, assessing landscape performance across sectors; collaborative approaches for multi-stakeholder engagement; design of landscape interventions; implementing cross-institutional initiatives; new and innovative market opportunities for ecoagriculture producers; policies to support ecoagriculture at local and national levels; and tracking and monitoring impacts at landscape scale. Alumni of the courses founded and joined ecoagriculture working groups in Kenya, Uganda and Central America, which have continued to work together to support ecoagriculture in those locations.

Comprehensive platform for capacity building

As part of its Landscapes and Leaders Program, EcoAgriculture Partners proposes a comprehensive platform for capacity building to facilitate and strengthen multi-stakeholder processes at different levels of the ecoagriculture landscape. The cross-cutting objective is the integration of conservation, food production, and livelihood issues and interests in rural landscapes; and access to knowledge, information and tools to effectively incorporate all three of these “legs of the stool” into landscape visioning, negotiation, plans, investments and policies.

The comprehensive platform offers experiential training to strengthen capacities in the five core competencies of the Landscape Measures framework at three levels: multi-landscape/territory, multi-sectoral in the landscape, and specific “on demand” training. The goal of the multi-landscape/territory leadership course is to bring together diverse actors from different ecoagriculture landscapes or territories within a region to begin to develop the social networks and institutional structures for creating ecoagriculture change at a large scale, as well as building the personal and collaborative leadership skills needed to mobilize stakeholders in their respective landscapes. This course is designed to be similar to the 6-10 day leadership courses previously offered in East Africa and MesoAmerica. An outcome of the multi-landscape leadership course is the formation of cross-sectoral Working Groups and Task Forces to work collaboratively within and across landscapes on mobilization of local support, strategic alliances, and financial resources; and capacity building. The Working Groups have also designed ecoagricultural strategies and innovations, promoted knowledge exchange and access to expertise, and participated as “trainers” in capacity building at landscape and multi-landscape levels.

The second type of capacity building offered through the comprehensive platform takes place at the landscape/territory level and brings together local actors from diverse sectors of a landscape, including formal and non-formal institutions, and especially representatives of indigenous groups, youth, women, and other typically under-represented populations. This workshop would build the capacities and competencies that facilitate the multi-stakeholder dialogue and negotiation, and start these actors on the path to understanding their landscape and establishing a collective vision for an ecoagriculture

Kijabe Case Study

KENVO is an organization whose primary focus in landscape management was forest rehabilitation and the engagement of local people in forest rehabilitation, to improve habitat for biodiversity and to ensure supplies of forest resources for local people. Stemming from the successes in their forest rehabilitation initiative, KENVO decided to broaden its focus to include the involvement of local actors that were putting pressure on the forest through agriculture and the unsustainable harvesting of forest resources, and to develop strategies for intensifying agriculture in ways that would also preserve biodiversity. The Kijabe experience demonstrates how tools were used and how they evolved to meet the needs of local actors and build the capacities they needed for collaborative landscape management.

Among the first tools implemented was a survey of agricultural biodiversity that established a baseline for conversations about preserving biodiversity in the landscape and created awareness about the interconnectedness of the agricultural landscape to the conservation efforts going on in the forest. The exceptional local biodiversity, particularly avian biodiversity, attracted the attention of international conservation organizations that provided the funding for involving diverse actors in the collaborative management process.

The Landscape performance scorecard was a tool used early on in the Kijabe experience to bring together multiple stakeholders to dialogue about the multiple dimensions of landscape management. This tool helped to create a common perception of the status of the landscape with respect to the three goals of ecoagriculture. The tool was designed to motivate the stakeholders to think in creative ways about collaborative management and it was successful. Together they agreed it would be important to assess opportunities for intensifying agriculture in ways that would preserve biodiversity and provide livelihood security.

At the same time, stakeholders used the institutional performance scorecard to assess the status of local actors and where the gaps were in stakeholder involvement. Together they determined which public, private and civic stakeholders were active, which needed to be brought in and which needed to be created to have the network of supportive institutions they needed to manage their landscape. The stakeholders also discussed where the conflicts in the landscape were and how they could be addressed.

Next, stakeholders participated in a scoping exercise to assess opportunities for investment in agricultural intensification that create livelihood security with co-benefits for conservation. As shown in the case study on the LMRC website, the scoping exercise deepened the understanding developed by the landscape performance analysis by identifying concrete opportunities in the landscape that allowed for agricultural intensification with co-benefits for livelihood security and conservation. This led to local adoption of aquaculture, apiculture, and native tree nurseries which brought stability to household incomes with co-benefits for agricultural and forest biodiversity.

It became apparent that maps were needed in order to continue to engage stakeholders in the collaborative management process, and people needed to be trained in how to read and communicate the spatial information available in maps. Local actors needed to learn the importance of the location of landscape management interventions and how spatial configuration affects the outcomes of management practices. The exchange of knowledge and expertise with the outside community was crucial for establishing the initial land use maps that were used to strengthen the spatial understanding needed for stakeholders to participate in the planning and implementation of ecoagriculture interventions in their landscape.

landscape. This workshop would introduce actors to specific tools for landscape assessment and would help build local leadership for collaborative management. A desired outcome is the formation of a diverse group of stakeholders committed to engaging their communities and organizations in ecoagriculture activities that use and develop strategies and tools for rural landscape management. An immediate outcome for the group is to develop and agree upon a process and plan on how to seek needed support from both within and without the landscape to implement these strategies.

Training in specific capacities or the use of certain tools in customized, “on demand” training sessions is the third level of capacity building in the comprehensive platform. This format responds to organizations, public or civic institutions or community groups who identify specific gaps in knowledge or skills and, accordingly, solicit training to fill these specific needs. This short term, customized intervention provides a cost-effective option for communities already engaged in ecoagriculture that desire support in some facet of their multi-objective approach. This is ideal for communities where leaders want to motivate and mobilize actors within a specific sector of the landscape, for instance, agroforesters interested in accessing new carbon markets, communities interested in monitoring water quality changes in their streams and wells, schools interested in promoting agrobiodiversity in school gardens, and local government interested in learning facilitation and other multi-stakeholder engagement skills.

Conclusions

This comprehensive platform provides multi-dimensional, multi-sectoral options for leaders and local actors that seek to build capacities in the the five core competencies to see effective rural landscape management in their ecoagriculture landscapes. It is a starting place for addressing the challenges of territorial development, where the responsibility and desire to self-govern and manage landscapes is hindered by gaps in local knowledge and expertise. As part of a broader continuing network, participants in any part of the comprehensive platform benefit from the experiences, innovations, and tools developed and used by ecoagriculture practitioners across and within landscapes. Over time, stakeholders will experience and share the benefits and synergies that result from collaborative, multi-functional management within their landscapes. At the same time, building local capacity is the foundation for meeting the challenges of conserving biodiversity, feeding growing populations, and sustaining rural livelihoods.

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