Landscape-Scale Conservation in the Congo Basin

Lessons Learned from the Central African Regional Program for the Environment (CARPE)

Edited by David Yanggen, Kenneth Angu and Nicodème Tchamou

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Preface

This publication is, in fact, the second volume of CARPE Lessons Learned. The first volume was based on early experiences and constituted a preliminary assessment of the state of the environment in the region. Now, after more than ten years of CARPE implementation, it seemed timely to provide the conservation community with lessons learned concerning CARPE's applied conservation approaches. The Central African Regional Program for the Environment is an ambitious program operating in nine countries spanning the entire Congo Basin. The 12 prioritized landscapes where CARPE partners implement improved natural resource management activities cover over 80 million hectares, an area substantially larger than the US State of Texas. CARPE partner institutions have used satellite imagery to map forest cover and deforestation over the entire Congo Basin. Given the vast scope of the program, it was inevitable that a "Lessons Learned" publication would likewise be ambitious in scope. This publication contains 27 case studies of applied conservation as well as seven overview articles synthesizing the results of the groups of case studies, which cover different thematic areas. The publication's case studies are organized into three sections: land-use planning, environmental policy and governance, and monitoring of natural resources, which parallel the structure of CARPE's three core components. The case studies therefore present a comprehensive review of the program's activities. The emphasis on case studies and overview articles is intended to provide direct insights from the actual experiences of CARPE's partner institutions. This publication is therefore an authentic and practical guide to implementing conservation program in the Congo Basin. The emphasis on lessons learned is aimed at synthesizing for the reader the key pieces of advice the authors can provide to others concerning the best practices for implementing conservation projects in the region. As such, this publication presents the sum accumulated knowledge of CARPE partner institutions acquired during the implementation of the program. It is hopefully a rich and practical guide to carrying out applied conservation that we believe will be of immeasurable utility for conservationists in the Congo Basin and around the world.

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Introduction

David Yanggen, Kenneth Angu and Nicodème Tchamou

Why lessons learned?

To introduce this collection of studies, a logical first question to ask is why produce a "lessons learned" publication? The initial impetus for this initiative was an observation by an external evaluation of CARPE that there was relatively little sharing of information within the programme between numerous actors and sites concerning the conservation strategies undertaken and the results achieved (Weidemann Consortium, 2006).[1] The evaluation concluded that this lack of information exchange was a threat to the success of CARPE as a large-scale regional programme, a view that was confirmed by programme partners during the CARPE Phase IIB Inception workshop that was held in Yaoundé in February 2007.

CARPE is a large and complex programme. It has a regional mandate which covers nine countries of the Congo Basin (Cameroon, Republic of Congo, Democratic Republic of Congo, Gabon, Rwanda, Central African Republic, Equatorial Guinea, Burundi, and Sao Tomé and Principe) and involves field-based conservation activities in 12 remote and geographically dispersed landscapes. The 12 landscapes cover over 80 million hectares – roughly the size of the US State of Texas – and include 37 protected areas, 68 community zones and 43 extractive zones (predominantly forest concessions). To add a further layer of complexity, CARPE has directly involved 27 different partner institutions. Finally, communications and the transportation infrastructure in Central Africa are arguably less developed than in any other major world region.

In this context, it is often difficult for participants, both individuals and institutions, to share the results of their activities as well as to learn from the experiences of others. This lessons learned initiative is therefore important because it provides a feedback mechanism so that all the programme's participants can benefit from one another's experiences and thereby improve their respective conservation interventions. In addition, the generation of lessons learned encourages the CARPE partners themselves to engage in an analytical reflection concerning their own activities and thus encourages a process of learning and adaptation during the implementation of the programme.

However, the target audience for these lessons learned is not uniquely direct CARPE participants. Documenting lessons learned will also allow other institutional actors operating in the Congo Basin to learn from these experiences. CARPE partners work in close collaboration with national government institutions. A goal of the programme is to prepare an exit strategy whereby national government institutions and civil society organizations progressively take over activities led by CARPE partners. These lessons learned, by documenting the experiences of the programme, are a part of that exit strategy to help ensure that national institutions can carry on and build upon the work of CARPE after the programme ends. Finally, the editors of this publication believe that many of the lessons learned will be useful to the broader international conservation community as many of the issues faced in the Congo Basin are found worldwide.

Structure of the CARPE lessons learned publication

The structure of the publication parallels that of the programme itself. The overall objective of CARPE is to reduce the rate of forest degradation and loss of biodiversity. In order to achieve this objective, CARPE is structured into three integrated components called "intermediate results" (IRs). These are as follows: IR1 – sustainable management of natural resources, IR2 – natural resource governance, and IR3 – natural resource monitoring. These three components correspond to the three sections of the Lessons Learned book.

All three sections are composed of case studies. Each case study follows a similar basic three-part structure: introduction to the zone and/or thematic area, methodological/strategic approach, and lessons learned. This publication is not a theoretical

1 Weidemann Consortium. 2006. "Mid-Term Assessment of the Central African Regional Program for the Environment: Final Report", (available online at http://carpe.umd.edu/resources/Documents/Weidemann_CARPE_Eval_17Feb06.pdf/view?set_language=en).

discussion of approaches to conservation. Each case study is based on the empirical experience of CARPE partners implementing applied conservation activities on the ground.

IR1, also known as the CARPE Landscape Programme, corresponds to field-based sustainable natural resource management in 12 prioritized landscapes. The fundamental approach to improved natural resource management for IR1 involves land-use planning, i.e., the design and implementation of management plans for each landscape as well as for protected areas, forest concessions and community zones within each landscape.

Section one is therefore divided into four sub-sections: land-use planning for landscapes, protected areas, forest concessions and community zones. Each of these sub-sections is comprised of three case studies plus a "synthesis article". Each synthesis article discusses the specificities of land-use planning in the category of zone in question and then synthesizes the commonalities found within the three case studies in order to draw some general conclusions. A fifth cross-cutting sub-section is included in this section and involves strategies for promoting livelihoods as a means of supporting conservation objectives. This livelihoods sub-section also includes three case studies and a synthesis article.

CARPE's natural resource governance programme (IR2) has two principal components: environmental policy and legal reform, and a programme of small grants to civil society actors to engage in conservation activities. Section two of the publication is therefore divided into two sub-sections addressing these two components. As in Section one, each sub-section is divided into a series of case studies and a synthesis article.

The last section corresponds to CARPE IR3 and involves the monitoring of natural resources. This section is different from the other two in that it involves four cross-cutting non-site-specific case studies on different aspects of natural resource monitoring. Non-site-specific means that they are pertinent to the entire programme and therefore there is only one case study for each and no synthesis article. These studies include: GIS and satellite mapping of forest cover, forest concession monitoring, wildlife monitoring, and USAID's monitoring and evaluation system for CARPE itself.

A last critical element of this Lessons Learned publication is the involvement of people. CARPE explicitly promotes a "people-centred approach to conservation". Given the widespread and acute poverty prevalent in the Congo Basin, conservation can only succeed if populations find viable alternatives to current natural resource use patterns that degrade the environment.

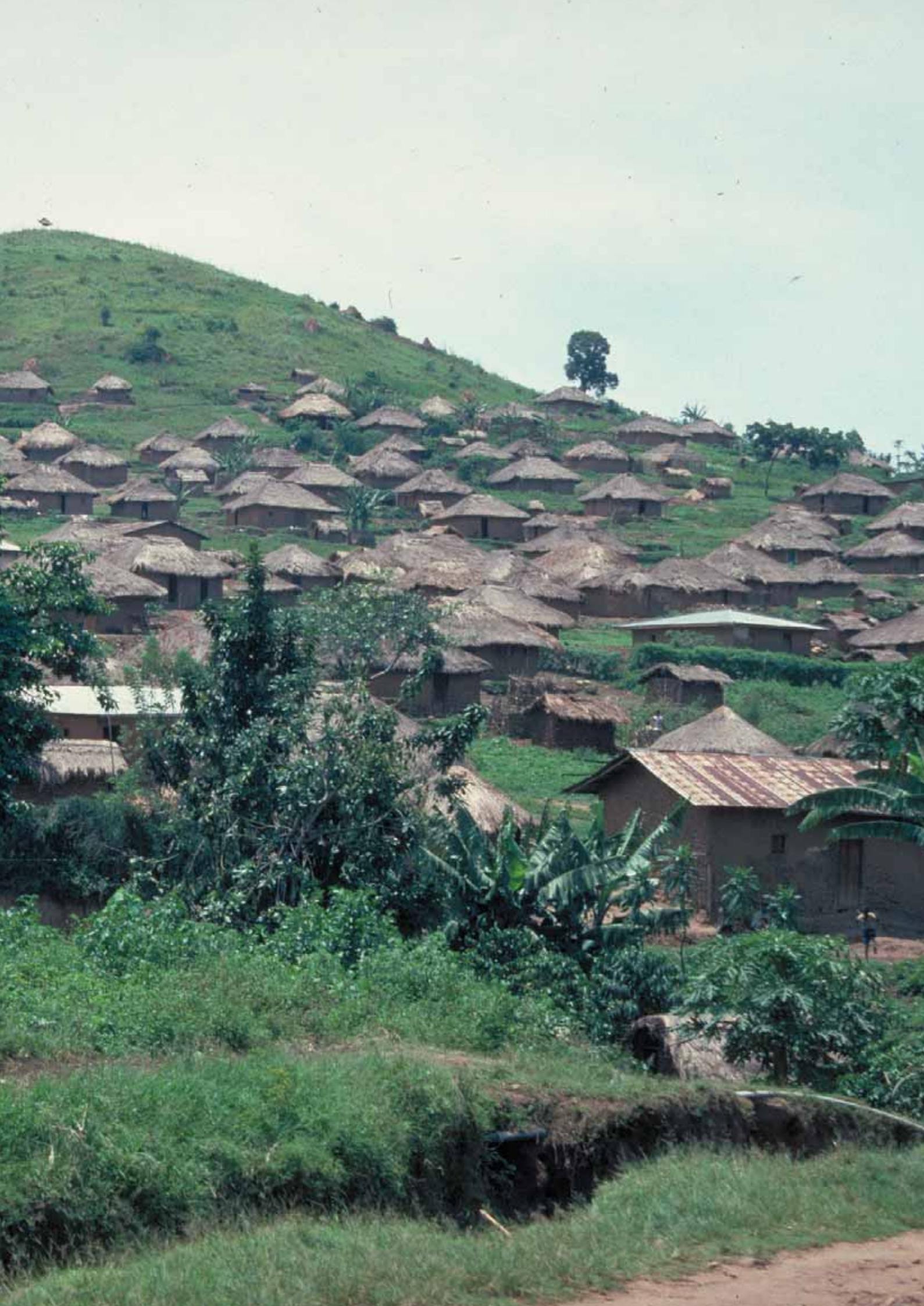
There is no specific section on people; rather, the involvement of people in conservation is systematically incorporated throughout the entire publication. A few of the most salient examples are as follows. The community zone land-use planning sub-section discusses methods to support local populations' efforts to use forest resources sustainably. Similarly, the forest concession sub-section presents strategies for reconciling the economic development potential of logging for local communities and the private sector with conservation goals. The livelihoods case studies likewise present strategies for promoting alternative economic activities that improve local communities' welfare while reducing negative impacts on the environment. The sub-section on small grants discusses how the provision of funding to national and local NGOs and community-based organizations (CBOs) to undertake environmental projects can enhance the capacity of civil society in Central Africa to promote conservation. Finally, land-use planning at all levels must include an explicit public participation strategy that includes pertinent stakeholders such as local communities, traditional authorities, local government, NGOs, CBOs and national government.

A final point relates to the strategy for disseminating this publication. A lesson learned is only truly learned by others in so much as it is available and read or otherwise communicated to interested parties. There are three key constraints to a

widespread and effective dissemination strategy. The first is the high cost of printing and distributing large numbers of hard copies of this publication to programme partners and other interested stakeholders across Central Africa and other countries. This publication strategy will therefore take a dual approach of both printed copies as well as a strong emphasis on publication on the CARPE and other related websites. A second constraint involves language. In order to facilitate the widest possible distribution, the Lessons Learned has been published in both French and English.

The third and final constraint involves the very length of the publication (several hundred pages). Most potential readers will not have the time to read this entire publication from cover to cover and in some cases, particularly in the Central African region, may have internet access constraints to downloading the entire publication. It is therefore designed in a modular fashion. This implies that all the individual components are not only coherent parts of an overall whole, but are also stand-alone documents in their own right. Readers with a particular interest in conservation related to field-based natural resource management, governance or monitoring can read just that relevant section; or, for example, in the case of Section one, a reader can read only about land-use planning for a particular category of zone, an individual case study or a synthesis article. This multi-tiered stand-alone modular structure facilitates readers' ability to read only the amount and thematic area they are directly interested in and therefore provides greater access to the lessons learned pertinent for their work.

SECTION ONE:
LAND-USE PLANNING



Chapter 1

Land-use Planning at the Landscape Scale: Central African Regional Program for the Environment (CARPE)

James P. Beck

1. Introduction[1]

1.1 Overview

This chapter provides an overview of landscape-scale land-use planning and lessons learned from the implementing partners of the US Agency for International Development (USAID)/Central African Regional Program for the Environment (CARPE) in the development and implementation of Integrated Land-use Plans for the Congo Basin Forest Partnership (CBFP) Landscapes.

The CARPE programme works closely with its partners to improve Central African natural resource management capacities, contributing to national and regional objectives. Field efforts are concentrated on 12 landscapes, chosen and delineated across the Congo Basin as CBFP/CARPE areas of focus due to their particular importance and unique value to forest and biodiversity conservation. Actions are guided by participatory land-use planning (LUP). Landscape LUP is an integrated process composed of discrete parts (land management plans, macro-zone plans, annual work plans) joined to form a rational, logical management approach.

The landscape LUP framework promoted by CARPE prioritizes three types of zones (macro-zones) to be delineated within the landscapes: Protected Area (PA), Community Based Natural Resource Management (CBNRM), and Extractive Resource Zones (ERZ). Each macro-zone should benefit from a management plan. These macro-zone plans link directly to the overall landscape plan and must articulate how they reflect, support and will contribute to the landscape's desired conditions and objectives, as well as how they will address site-specific issues and needs. The objectives of the three macro-zones of a landscape should therefore be harmonized, and not in conflict, with the objectives of the overall landscape.

1.2 Purpose of landscape planning

Landscape planning seeks to outline and implement planning processes so that: 1) the long-term ecosystem function of the forest and biodiversity present within landscapes is ensured; 2) the supply of products and income sources that local communities in the landscape have traditionally depended upon continues; 3) extractive zones within landscapes are contributing to the country's economy without negatively influencing local populations or the health of the ecosystem; and 4) in-country natural resource management capacity is strengthened.

1 Adapted from: US Forest Service. 2008. "US Forest Service Guide to Integrated Landscape Land Use Planning in Central Africa". Washington, DC: USFS. http://carpe.umd.edu/Plone/resources/carpemgmttools.

Planning is the process in which stakeholders (community members, scientists, government representatives, private businesses, non-governmental organizations (NGOs), traditional authorities, etc.) come together to debate and discuss how to manage lands for the benefit of current and future generations, and to ensure ecological sustainability of lands and resources. The purpose of planning is to develop management and governance strategies that respond to a scientific understanding of natural and social systems as well as changing societal conditions and values. Effective planning processes promote decisions that are informed, understood, accepted and able to be implemented.

Planning can be complex depending upon the number of issues internal and external to the planning area. Planning requires risk assessments and forecasts about anticipated and uncertain future events and conditions. Consequently, even the best plan will need to be altered to adjust to improving data and information; changing social, economic or other conditions; evolving threats; or feedback from monitoring efforts. Therefore, plans are **adaptive** in nature, and amendments or entire revisions will be an outcome of monitoring and evaluation efforts.

Central to planning is the recognition that in most cases not all of the desired data on the landscape and its resources will be available in detail. This is true around the world, regardless of the financial and human resources available to the management authority. Nevertheless, landscape planning must proceed with the view that the plan can call for additional data collection and be revised with that newly acquired data to make better informed decisions. Therefore, it is important not to delay plan development due to a perceived lack of complete data.

Plans around the world vary substantially in their content, level of detail, and complexity. When working through the planning process, it is important to keep in mind that, often, simpler plans are more effective plans. The likelihood that the plan will be more widely read and understood by local stakeholders, as well as the likelihood of their engagement in the process, will increase if the plan is relatively concise, focuses on what is important for resource conditions, and is light on jargon, both scientific and legal.

Landscape-level planning differs from macro-zone planning in that it plans at a larger, spatial scale and can assess broader, wide-ranging trends, influences and impacts. A broad, wide-ranging perspective is needed to adequately understand and assess ecological sustainability and to identify resource use opportunities that contribute to economic and social sustainability. Experience has demonstrated that planning for ecological sustainability requires larger areas. For example, wide-ranging wildlife species often do not confine themselves to particular geopolitical boundaries and therefore in order to plan for the conservation of such species, a broader understanding of ecological health is needed through analysis of impacts, trends and influences. Using landscapes will enable not only the development of comprehensive plans for the conservation of species and ecosystems, but also allow the cumulative effects of current and future management actions to be measured.

1.3 Landscape planning in the CARPE context

Integrated landscape land-use plans developed for the CARPE programme demonstrate how CARPE implementing partners have: 1) assessed and analyzed activities, resources and uses on the entire landscape; 2) developed and formulated long-term desired conditions and objectives for the landscape; 3) identified current planning and resource protection priorities and future trends; 4) consulted, collaborated and integrated stakeholders in plan development; and 5) focused management activities to achieve desired conditions and priority objectives. These plans are meant to promote stakeholder collaboration across the landscape, focus efforts on prioritizing land use, and stimulate land-use planning processes throughout the region. The generalized steps involved in landscape LUP are included in Box 1.

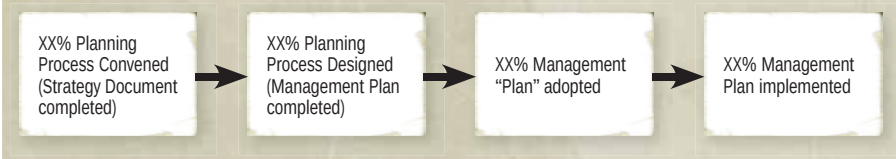
Box 1. Steps in a landscape planning process

The following steps form the basis of the landscape land-use planning process:

1. **Identify planning team members and define individuals' specific roles;**
2. **Identify existing and needed ecological, social and economic information on the landscape;**
3. **Create a Public Participation Strategy (PPS);**
4. **Landscape plan development:**
   - **Describe the landscape's unique value;**
   - **Describe characteristics of the landscape;**
   - **Develop landscape desired conditions;**
   - **Develop landscape objectives which reflect and address the desired conditions for the landscape;**
   - **Develop and map macro-zones, taking into consideration already legally designated areas, concessions and contracts;**
   - **Define landscape-wide guidelines (optional);**
   - **Outline a work plan and activity implementation schedule; and**
   - **Design a monitoring and evaluation system and schedule.**

Box 2. CARPE management approach to the land-use planning process*

Both entire landscapes and macro-zones follow a four-stage land-use planning process, with the degree of completion of each step being characterized by a percentage benchmark.



A land-use planning process is "convened" when a finished, written Strategy Document has been prepared which stipulates and defines the tasks and responsibilities necessary to produce a Management Plan. After the macro-zone or landscape reaches the convened stage, the partner will then proceed with the steps outlined in the Strategy Document to produce the Management Plan. Finally, an "Adopted land-use Plan" is recognized by the legal controlling authorities that govern the specific land-use types (Parks Services, Forestry Ministry, etc.). Implementation of a land-use plan indicates that the activities specified in the management plan are being executed.

**Source*: http://carpe-infotool.umd.edu/IMT/.

The guidance and activities outlined in the landscape plans and the subsequent macro-zone plans aim to contribute to the long-term management, benefit and sustainability of forest resources in the region and thereby contribute to the development of sustainable livelihood strategies and economic development activities for those dependent upon these resources.

As a precursor and in order to orient the development of more formal management plans at multiple levels, CARPE implementing partners have produced a Strategy Document (SD) for each management unit. Each SD describes how CARPE implementing partners will develop a landscape plan, what is needed to develop the plan, and how much time and resources it will take. The elements and analysis needed to develop the SD are part of the landscape planning process. Box 2 outlines the CARPE management approach to landscape LUP.

1.4 Governance and management authority

CARPE landscape partners do not, and will not, have a mandate to exercise governance authority. This authority lies rather with national, local and community entities depending on the national legal framework and structures in place. As government capacity and presence in the landscapes varies widely throughout the region, engagement and policy influence is challenging at best. In order to influence the development of good governance practices and structures on the ground, CARPE partners can strategically use the management plan development process to engage local communities, government agency representatives, concession holders and other stakeholders. This critical stakeholder engagement process requires significant investment of time and resources in order to support the various stakeholders in developing an integrated landscape plan and subsequent institutional capacity to meet concomitant needs for resource use and conservation.

2. A review of the landscape land-use planning case studies

2.1 Introduction

This review of lessons learned from the CARPE experiences in landscape LUP includes three case studies: 1) the Sangha Tri-National Landscape, 2) the Maringa/Lopori-Wamba Landscape, and 3) the Maiko Tayna Kahuzi-Biega Landscape. This section highlights and synthesizes the key lessons from each case study as identified by the authors.

2.2 Sangha Tri-National Landscape case study[2]

2.2.1 Planning activities implemented

The Sangha Tri-National (Tri-National de Sangha – TNS) Landscape includes, broadly speaking, a transboundary core protection zone and a peripheral zone. The core protection zone is managed such that human activities are either forbidden or controlled and consists of the National Parks of Lobéké (Cameroon), Dzanga-Ndoki (Central African Republic) and Nouabalé-Ndoki (Republic of Congo). The peripheral zone is managed for participatory and sustainable management of wildlife and forest resources and includes production forests, sport hunting concessions, community hunting zones and agro-forestry areas.

Land-use planning in the TNS Landscape has existed in one form or another for many years:

1. Planning, or more accurately *de facto* zoning, for parts of the TNS Landscape date back to the colonial era with large rubber exploitation concessions and more recently with logging concessions in the mid twentieth century. More "conscious" planning was initiated in the mid 1980s with a series of biological and socio-economic surveys of the region to better understand its biodiversity conservation importance and pressures.

2. The Yaoundé Declaration was then signed in 1999 along with the forming of the Central African

2 See Usongo, L., 2010, «Lessons Learned from the Sangha Tri-National Landscape», Case Study 2 in Chapter 1 of this volume.

Forest Commission (*Commission des Forêts d'Afrique Centrale* – COMIFAC) to promote sub-regional collaboration on natural resource management and economic development.

3. During the 1990s, land-use plans for various zones/management units were developed under the differing policy regimes in each of the three TNS countries.

4. In the early 2000s, several institutional agreements were signed and implemented by the three countries to facilitate and promote transboundary collaboration (e.g., anti-poaching patrols and free circulation).

5. Since the late 1990s, technical support from various donors and NGOs has been offered for community natural resource management in both forestry and hunting zones.

6. In late 2005, TNS partners, notably World Wildlife Fund (WWF), Wildlife Conservation Society (WCS), German Development Cooperation (GTZ) and national government forest administration staff from the three countries held meetings to discuss thematic issues to be captured in the TNS Land-Use Plan.

7. This led to a process convened by the TNS planning and coordination committee (CTPE – *Comité Technique de Planification et Exécution*) in which over the course of two years a land-use plan was developed by a consultant in consultation with geographical information system (GIS) experts and regular reviews by the CTPE. As of late 2008, a final draft was submitted to the respective national governments for review and approval.

2.2.2 Lessons learned

The LUP process in the TNS has evolved over time concurrently with national policies and the regional context. Harmonization of the three countries' legal frameworks *vis-à-vis* land and resource management would undoubtedly improve LUP and ease implementation. For a LUP process to be successful it is necessary to understand that time and resources (technical and financial) are needed to gain the necessary trust with the relevant stakeholders. National government technical capacity building and involvement is critical to successful LUP processes. Lastly, due to the time and effort required to develop a land-use plan, it is important that the planning team develop and implement a work plan for the production of the plan.

Another key lesson learned presented by the authors concerns the establishment of a trust fund. The TNS Landscape team has invested significant energy over recent years developing a trust fund to sustainably fund core management operations on the Landscape. For a trust fund to work it was necessary to develop not only a land-use plan for the protected areas but also a business plan. It was determined that business planning required an outside specialized skill set and therefore the CTPE engaged consultants to develop and harmonize the TNS management plans and the broader landscape business plan. Additionally, the implication of key stakeholders, notably the national governments and the technical NGOs, in developing a common vision, objectives and management structure for the trust fund was also noted as critical to its success.

Lastly the authors highlighted lessons learned in participatory management as an important element in the process. Planning for communities' access and use rights happened (or did not) based on the differing legal frameworks, policies, and on-the-ground realities in each country as of the initiation of conservation activities. Regardless of the history, it was noted that it is key to engage all stakeholders early in the planning process. Indeed, the authors suggest that this approach led to the significant progress in recent years towards the improved integration of local communities into natural resource management activities.

2.3 Maringa/Lopori-Wamba Landscape case study[3]

2.3.1 Planning activities implemented

The Maringa/Lopori-Wamba (MLW) Landscape covers 74,000 km^2 in the Equateur province of the Democratic Republic of Congo (DRC). The MLW Landscape boundaries are the watersheds of the Lopori and Maringa rivers with forests dominating over 90 percent of the Landscape. Rural villages, farms and plantations comprise less than seven percent of the Landscape. The Landscape retains high biodiversity values despite continued forest conversion, slash–and-burn agriculture, commercial and illegal logging, and the bushmeat trade.

1. Land-use planning in the MLW Landscape was carried out as follows:Prior to 2004, which coincided with Phase II of the CARPE programme of activities, very little planning had occurred in the MLW Landscape. There was minimal data available on biodiversity, stakeholders, land-use patterns and socio-economic conditions, and discussions with the government and local

3 See Dupain, J., Degrande, A., De Marcken, P., Elliott, J. and Nackoney, J., 2010, "Lessons Learned from the Maringa/Lopori-Wamba Landscape», Case Study 3 in Chapter 1 of this volume.

communities had not been undertaken. Therefore a "Threats and Opportunities Analysis" workshop was held to identify, in a participatory manner, site-based conservation targets and goals and ensure local ownership of these goals.

2. In 2007 with the initiation of CARPE Phase IIB, the MLW Landscape Consortium adjusted the approach based on experiences gathered since 2004. Changes were centred around the following elements:
   - Consortium structure;
   - Implemention of the African Wildlife Foundation's (AWF) Heartland Conservation Process (HCP) and identifying priority activities;
   - Stakeholder consultation and participation;
   - Participatory data collection and analysis;
   - Zoning based on desired outcomes; and
   - Spatial modelling and monitoring.

2.3.2 Lessons learned

A summary of the lessons learned identified by the MLW consortium in the MLW Landscape are as follows. The AWF HCP fits well with the USFS/CARPE landscape LUP framework as there is significant overlap and consistency between the planning approaches.

The authors highlighted the importance and value to the LUP process of the proposed MLW Consortium governance structure and function. The Consortium was improved as it evolved beyond individual partners focusing on geographically distinct interventions to a more integrated planning unit wherein a technically competent, compatible and complementary team of partners was formed with each member bringing thematic expertise that contributed to a holistic approach to planning. Moreover the structure included focal points serving as an interface between local stakeholders and partners at the central level in Kinshasa. These interlocutors proved invaluable as local, traditional authorities did not always possess the skills needed to transmit and manage information (e.g., communication, conflict resolution, public participation, etc.). Additionally, the Consortium was structured with both local and national committees empowered and mandated to relay information in both directions (local to national, and national to local) which helped ensure Consortium members were not only well informed but also working together.

Another key to planning in the MLW Landscape is promoting ownership of the process as early in the process as possible. This ownership of the process by local authorities and civil society should best be guided by a public participation strategy to maximize and facilitate participation. Challenges were encountered however in engaging local communities in joint decision making as previous participation they had provided in such processes was characterized as "participation through information giving and/or consultation". To surmount these and other related challenges it was found to be important that a public participation strategy be flexible and adaptive to respond to shifting political and social realities.

The authors underlined the value of the plan being a "living document" through a regular review of the landscape vision, objectives and desired conditions to take into account changes in the Landscape over time. Changes such as the conversion of old logging titles to concessions, changing values for cash crops, the installation of new private companies, evolving priorities of the national government, and new initiatives of major funding agencies could all have an impact on the strategic direction of planning and operational interventions.

Lastly, the MLW Consortium found that satellite data and spatial modelling when ground-truthed with field data proved valuable to both planning as well as monitoring actions. The authors suggest that this sophisticated approach could be replicated to support planning efforts elsewhere in the Congo Basin.

2.4 Maiko Tayna Kahuzi-Biega Landscape case study[4]

2.4.1 Planning activities implemented

The Maiko Tayna Kahuzi-Biega (MTKB) Landscape in eastern Democratic Republic of Congo covers approximately 10 million hectares with large blocks of intact forest that provide many vital ecosystem services (e.g., local climate regulation, prevention of soil erosion, and water purification, retention, and flood control) for eastern central Africa. The MTKB Landscape is also an area of significant poverty, where more than an estimated one million inhabitants rely heavily on subsistence agriculture, hunting, and collection of forest products. In addition, illegal mining of gold, casserite, diamonds and other valuable ores is taking place often under the control of illegal armed militias, a legacy of the region's civil wars.

Land-use planning in the MTKB Landscape has occurred in various forms over the years:

1. In the course of the three decades prior to 2003, significant baseline investment was made in the Landscape namely through the official gazetting of two National Parks (Maiko and Kahuzi-Biega); long-term GTZ support to the state wildlife authority from the Ministry of the Environment, the *Institut Congolais pour la Conservation de la Nature* (ICCN) in highland areas of the Kahuzi-Biega NP; the Dian

4 See Mehlman, P., 2010, "Lessons Learned from the Maiko Tayna Kahuzi-Biega Landscape», Case Study 1 in Chapter 1 of this volume.

Fossey Gorilla Fund International (DFGFI) support of a community conservation programme yielding a land-use plan with local and central level buy-in; and the work of a federation of local NGOs called UGADEC[5] scaling up the DFGFI model to create a community-supported biological corridor between the Maiko and Kahuzi-Biega National Parks.

2. From 2003 to 2005, increased USAID CARPE funding to the Landscape supported the hiring and capacity building of field and management project staff. Additionally, resources were deployed to secure basic equipment for field operations and to carry out a series of socio-economic and biological analyses. The Landscape consortium directed resources towards these basic start-up activities in order to enable the subsequent ramping up of planning efforts.

3. In 2006, more formal LUP discussions and consultations were held at the landscape and macro-zone scale. Notably, co-management contracts were signed and implemented between the ICCN and local NGOs (UGADEC) for the Tayna and Kisimba-Ikobo Reserves which effectively demonstrated the evolution of a formally recognized protected area created out of a broader CBNRM zone. Moreover during this period the Landscape partnership enlarged its vision beyond the protected areas towards a more comprehensive vision for the CBNRM zones in the Landscape, effectively refocusing "attention on the needs of these communities in these zones, rather than continuing a perspective where these areas were seen as buffer zone projects only related to the National Parks".

4. From 2007 to the present, the Landscape partnership moved to adjust the Landscape and macro-zone boundaries to reflect the "government administrative units wherever possible (i.e., provincial, territorial, *collectivité* and *groupement* boundaries)". The partnership promoted such changes thinking that it would "substantially improve governance and long-term management of natural resources at all levels (including local communities) and would ensure that these units remained meaningful well into the future".

2.4.2 Lessons learned

First and foremost the authors suggest that landscape LUP and zoning interventions should build upon on-going local initiatives and existing local contexts and aspirations.

Secondly, to maximize the efficacy of limited resources, local capacity should first be strengthened (where necessary) before attempting broad landscape-scale macro-zoning and LUP. Without certain fundamental capacities, planning efforts are unlikely to succeed and might actually be detrimental to future conservation and development interventions.

Macro-zones within a landscape are not static entities as they must evolve concurrently with the socio-political context. Informed planning will take this into account and adapt as necessary to stay current and relevant.

In order to constructively engage and gain the support of local communities for natural resource management in CBNRM macro-zones, these zones should not simply be viewed as buffer zones for PAs. Rather CBNRM planning and subsequent zoning should focus explicitly on supporting the local communities to meet their needs for well managed resources.

The position of landscape and macro-zone boundaries matter. If macro-zone and landscape boundaries follow government administrative unit boundaries as closely as possible, and not just biological criteria, the land-use plan will more likely be accepted by government authorities at all levels.

Lastly the authors argue that a land-use plan should be a guide for the future sustainable management and use of resources throughout the entire Landscape. As such, with stakeholder participation, it should identify macro-zones for the entire area of the Landscape.

3. Conclusions and recommendations

A number of common themes have emerged from the lessons learned over the last five years in these three Landscapes:

3.1 Lasting LUP requires significant investment of time and resources

The TNS team noted that for a LUP process to be successful it is necessary to understand that time and resources (technical and financial) are needed to gain the necessary trust with the relevant stakeholders. The MLW Consortium suggested that "the process of stakeholder consultation is in a sense never-ending, and must be integrated into all aspects of intervention design, implementation and monitoring". The MTKB partnership spoke to the realities of LUP in Central Africa and the investment required for success: "It would be disingenuous to suggest that at the onset of the programme, the Landscape partnership developed a comprehensive land-use plan and then went forward and implemented it, including the designation of macro-

5 *Union des Associations de Conservation des Gorilles pour le Développement Communautaire à l'Est de la République Démocratique de Congo.*

zones. In reality, this has been very much an organic process relying on inputs and insights from many sources, and perhaps the most important lesson learned is that the process takes time".

3.2 Engage stakeholders early and often for successful LUP

The TNS team highlighted the need to engage stakeholders early in the planning process and beyond through the joint articulation of a co-management vision between stakeholders.[6] Likewise, the MTKB team suggested that planning interventions should build upon on-going local initiatives and existing local contexts and aspirations. The MLW team echoed that early stakeholder engagement is important and moreover that it would promote the ownership of the process.

3.3 Successful LUP requires certain basic capacities and therefore investments in technical capacity building are important

The TNS team observed the key role to be played by the national and local government authorities in any LUP process and underscored the need to provide technical capacity building to help ensure their effective participation. The MTKB team highlighted the value of local capacity and that it should first be strengthened (where necessary) before attempting broad landscape LUP.

3.4 Effective LUP depends on functional and broadly supported governance and management structures

The MLW team highlighted the importance and value to the LUP process of the proposed MLW Consortium governance structure and functions. The TNS team noted that bringing all parties to develop a common vision, objectives and management structure for the trust fund creation and implementation was critical to its successes thus far.

3.5 The Landscapes' contexts (social, political, economic, biological, etc.) are dynamic and therefore the plans should be as well

The MLW team underlined the value of the plan being a "living document" through a regular review of the Landscape vision, objectives and desired conditions to take into account changes in the Landscape over time. The MTKB team suggested that macro-zones within a Landscape are not static entities as they must evolve concurrently with the socio-political contexts. Informed planning will take this into account and adapt as necessary to stay current and relevant.

In conclusion, although land management decisions are ultimately political, law and best practice dictates that such decisions can be greatly influenced by a technical process focused on balancing trade-offs between the sometimes opposing objectives of conservation and development.[7] Landscape LUP is intended to accomplish just that by bringing diverse interests to the table to work out the long-term vision leading to mutually beneficial agreement on the desired conditions and objectives for the landscape. This common vision and these high-level objectives, once articulated, will then orient, through annual work planning exercises, what actions are needed in the landscape. While the reality of LUP in Central Africa has been very much an organic process, the lessons learned to date provide a solid foundation going forward to help bring practitioners, policy makers, local communities and others together to work constructively to maintain the ecosystem services critical to human wellbeing.

6 The overall co-management vision in the TNS landscape "is to ensure greater integration of the surrounding local population in natural resource management processes, facilitate access to resources, support alternative income-generating activities, build strong local management institutions and facilitate benefit-sharing mechanisms for local communities from revenues generated from the exploitation of wildlife and timber, as well as from ecotourism".

7 Opposing in the context of the current predominant economic framework that necessarily undervalues natural capital and therefore does not adequately incorporate conservation actions as critical to sustainable development.

Case Study 1

Lessons Learned from the Maiko Tayna Kahuzi-Biega Landscape

Patrick Mehlman

Introduction

In Libreville, Gabon in 2000, WWF[1] convened a scientific workshop to determine priority areas for the conservation of terrestrial ecosystems within the Guinean-Congolian Forest Region. This led to the identification of 11 large "Landscape Areas" that were identified as having the highest priority to receive support for biodiversity conservation and natural resource management (Figure 1). In September, 2002, at the World Summit on Sustainable Development in Johannesburg, the United States, South Africa and 27 public and private partners launched the CBFP,[2] which focused on these 11 landscapes[3] in order to promote economic development, poverty alleviation, improved governance and sustainable natural resource management. A year later, in October 2003, the United States, through its USAID CARPE II Program,[4] began the first long-term support for these CBFP landscapes.

Central to the Strategic Objective of CARPE[5] is the concept of *landscape-level land-use planning.* This planning, undertaken in partnership with local, national, and regional public and private stakeholders, is intended to provide a rational, logical management approach to natural resource utilization and conservation that can "…*assess broader, wide-ranging trends, influences, and impacts in order to more adequately assess ecological sustainability and identify the appropriate management strategies to maintain these resources for the benefit of all.*"[6]

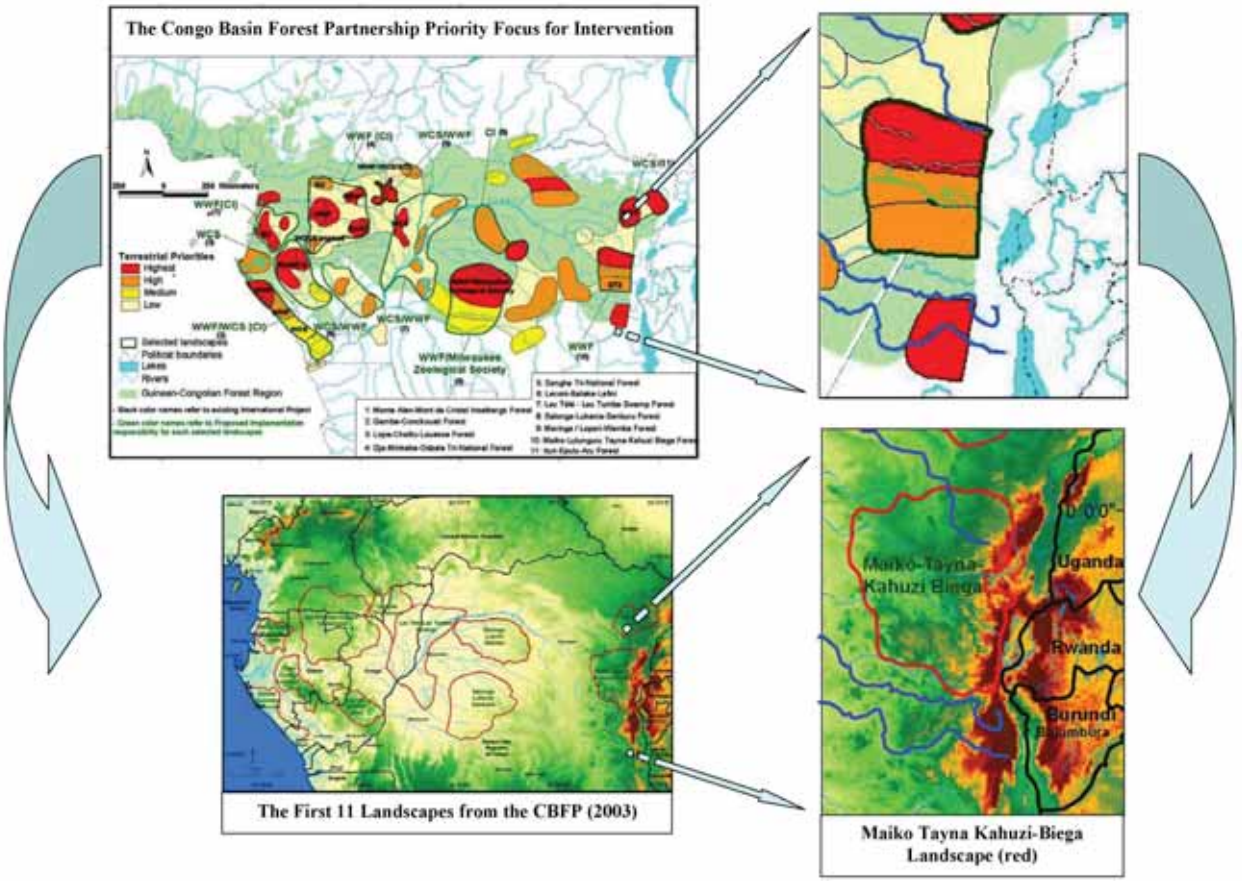
In landscape-level land-use planning, as defined by the USDA[7] Forest Service (which joined CARPE in 2004), landscape planning begins with a broad zoning process that identifies three types of macro-zones: 1) Protected Area (PA) zones; 2) Community-Based Natural Resource Management (CBNRM) zones; and Extractive Resource Zones (ERZ). In the planning process, a planning team is expected to identify the number and types of macro-zones within a landscape, and then with stakeholders, subsequently develop macro-zone management plans that guide sustainable resource use and conservation objectives for each of the zones.

This chapter describes lessons learned relative to the process of identifying and designating macro-zones within one of the CBFP landscapes: the Maiko Tayna Kahuzi-Biega (MTKB) Landscape in eastern Democratic Republic of Congo (Figures 1 and 2). This landscape, approximately 10 million hectares in size, contains some of Central Africa's highest levels of species richness, high numbers of endemic species, and significant numbers of globally threatened species, including 95% of the range of Grauer's (eastern lowland) gorilla. Its large blocks of intact forest not only regulate the local climate and prevent soil erosion, but also play an important role as a water catchment area in east central Africa.[8] The MTKB Landscape is also an area of significant poverty, where more than an estimated 1,000,000 inhabitants rely heavily on subsistence agriculture, hunting, and gathering non-timber forest products. In addition, illegal mining of gold, casserite, diamonds and other valuable ores often takes place under the control of illegal armed militias, a legacy of the region's civil wars.

Since the inception of CARPE II in October 2003, Conservation International (CI) has led a consortium of international and in-country partners[9] to support financially and

1 Worldwide Fund for Nature/World Wildlife Fund.
2 Congo Basin Forest Partnership.
3 The Virunga National Park (and its surrounding buffer zones) in eastern Democratic Republic of Congo was subsequently added as a 12th Landscape Area.
4 CARPE is the Central African Regional Program for the Environment (Phase I began in 1995) with Phase II, begun in 2003, specifically designed to support the 11 priority landscapes (Figure 1) of the CBFP. CARPE II is divided into CARPE IIa (October 2003–September 2006) and CARPE IIb (October 2006–September 2011).
5 The Strategic Objective of CARPE II is to reduce the rate of forest degradation and loss of biodiversity by supporting increased local, national and regional natural resource management capacity.
6 *US Forest Service Guide to Integrated Landscape Land Use Planning in Central Africa*, 2006, p.3.
7 United States Department of Agriculture.
8 The characteristics of the Maiko Tayna Kahuzi-Biega Landscape are described in full detail in *The Forests of the Congo Basin: State of the Forest 2006,* pp.198–204.
9 CI international partners are WWF, the Dian Fossey Gorilla Fund International (DFGFI), the Jane Goodall Institute (JGI), Innovative Resources Management (IRM), and the Wildlife Conservation Society (WCS). Local partners are the state wildlife authority from the Ministry of the Environment, the *Institut Congolais pour la Conservation de la Nature* (ICCN); a local federation of NGOs involved in conservation and development, the *Union des Associations de Conservation des Gorilles pour le Développement Communautaire à l'Est de la République Démocratique de Congo* (UGADEC); a flagship NGO that began community conservation in the region, the Tayna Gorilla Reserve Project; and a community-managed university providing three-year degrees in conservation biology, the Tayna

Figure 1. The development of 11 priority areas for the Congo Basin from the WWF-sponsored workshop in Gabon in 2000. These priority areas became formal "Landscapes" (below), and were targeted to receive substantial funding for natural resource management and conservation. The Maiko Tayna Kahuzi-Biega Landscape, first as a priority area, then in its Landscape configuration, is shown on the right.



technically environmental conservation and improved natural resource management, and to provide capacity building in natural resource governance. Fundamentally important to this effort has been the on-going development of a comprehensive landscape land-use plan, underpinned by a process whereby CI and partners designated macro-zones for this landscape following US Forest Service (USFS) guidelines, which, "…[were based on] *the expertise gained by the US Forest Service in managing large forested, multiple-use landscapes in the United States…., and…* [whereby the USFS has attempted]… *to tailor this guidance to the specific context of Central Africa and needs of implementing partners and government agencies in the region"*.[10] In this chapter, through our lessons learned, we describe how the USFS macro-zone methodology has been adapted to the context of an eastern DRC landscape.

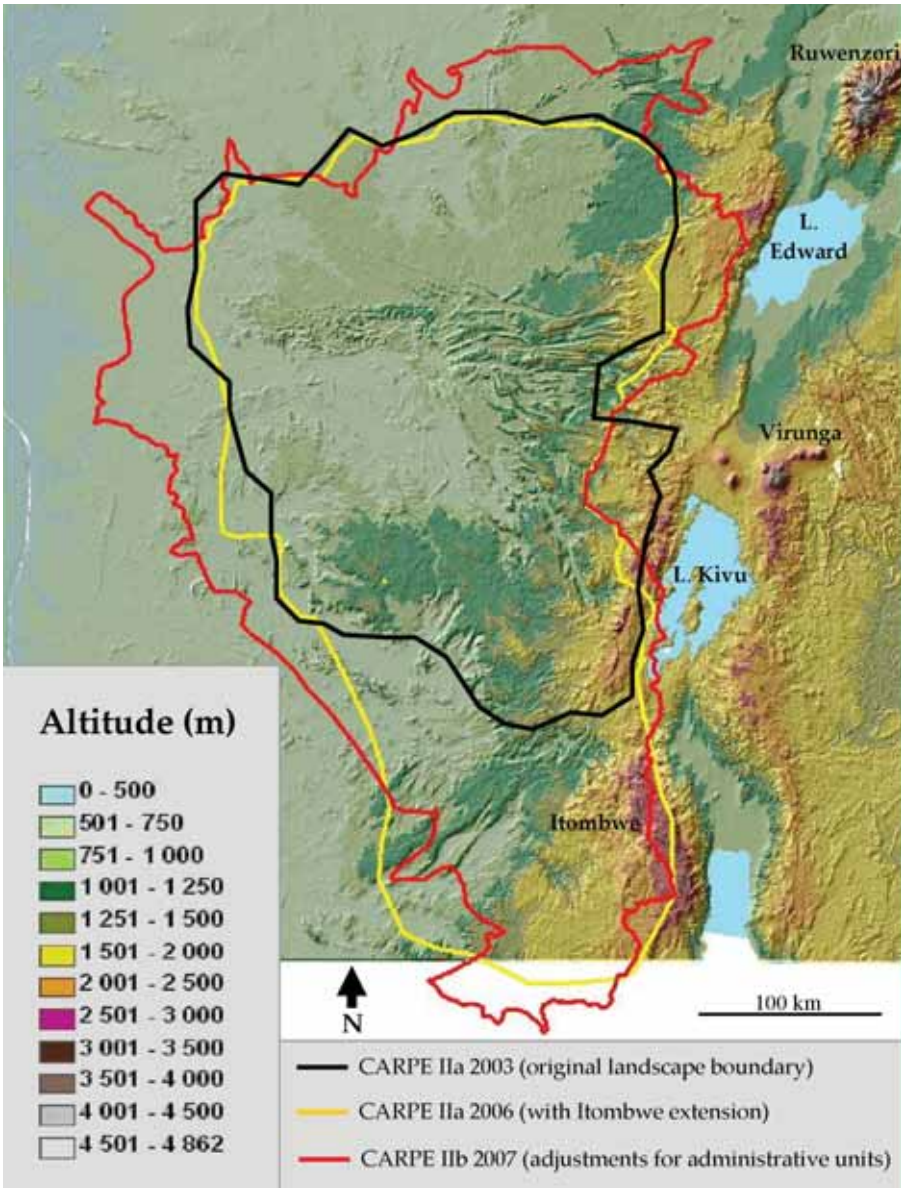
2001–2003: The pre-CARPE zoning context for the MTKB Landscape

Some significant baseline work had occurred in this landscape before the inception of CARPE II in October, 2003. Already in place were two government-authorized protected area zones, Maiko and Kahuzi-Biega National Parks, which were officially gazetted in the early 1970s, but the civil wars beginning in 1996 had effectively made "paper parks" of all of Maiko NP and most of Kahuzi-Biega NP (the lowland sector, Figure 3). GTZ[9] had supported ICCN

Center for Conservation Biology (TCCB). The GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) is also a partner in the landscape.

10 See note 6.

Figure 2. Evolving modifications of the boundary for the Maiko Tayna Kahuzi-Biega Landscape, from the original boundary in 2003 (black) to its most recent configuration in 2007 (red). See text for explanation.

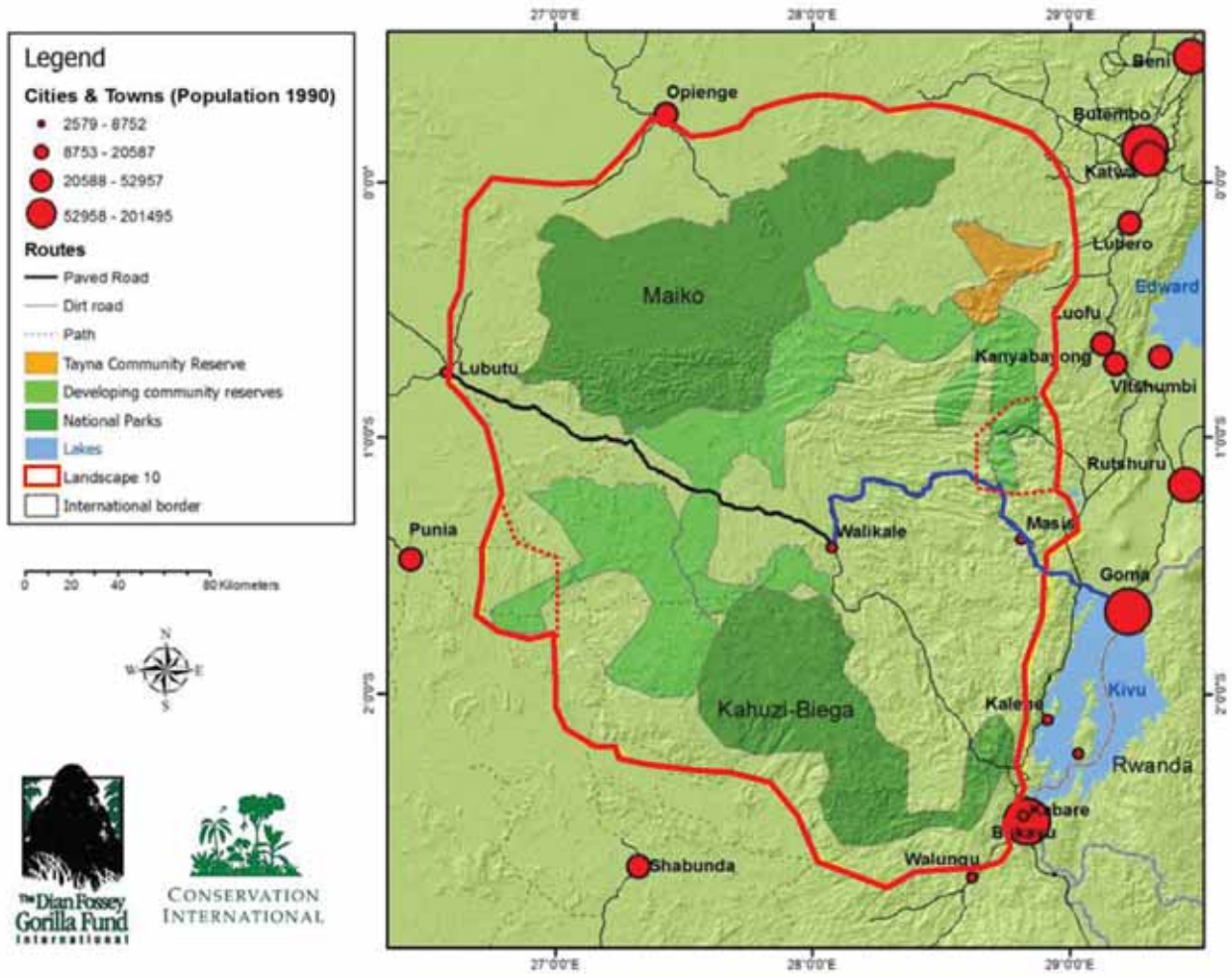


Lesson learned 1: Build upon on-going local initiatives and adapt landscape land-use planning and zoning to existing local contexts and aspirations. In this particular case, resource management zoning was already being conducted by seven local communities who had developed a methodology with an international NGO (DFGFI) with implementation already occurring in a process largely driven by local stake-holders. These community-based groups had organized themselves into a large federation, and by scaling up a successful participatory mapping process from a flagship programme (Tayna) were already in the process of identifying conservation and development zones in their communal areas. This established zoning work was absorbed into the landscape land-use and macro-zone planning.

conservation efforts in the highland sector of Kahuzi-Biega NP (about 10 percent of the park's surface area) for more than two decades, and maintained a presence there during the DRC civil wars. In contrast, there had never been any international support for Maiko NP since its inception in 1970, although WCS[9] conducted surveys there in the early 1990s before the civil war. In addition to these national park zones, DFGFI[9] had also financially and technically supported a community conservation programme in the Landscape since 2001.[11] This programme began with the Tayna Gorilla Reserve (Figure 3, orange area), set in motion by Congolese Traditional Chiefs in 1998 during the civil war, and catalyzed by Pierre Kakule Vwirasihikya, a former ICCN Warden. Kakule and two chiefs (Mwami Stuka and Mwami Mukosasenge) made contact and partnered with DFGFI and, with their support, launched an initiative centred on the establishment of a land-use plan for their territories (*collectivités* of the Batangi and Bamate Nations, Figure 6, area A), which would harmonize conservation and development. In 2002, 13 village chiefs ratified this plan, after participatory mapping delineated a community-based nature reserve and an economic development zone. Their first petition to the government took advantage of the reformed DRC Forestry Code allowing for private reserves. In 2002, the DRC government officially recognized the Tayna Gorilla Reserve with a Ministry of Environment Declaration, which included a core protection zone of 900 km^2 with complete protection. This model, which incorporated a number of significant development incentives, proved so successful that in 2002,

11 Supported in part by the USAID-funded *U.S. Congressional Gorilla Directive*.

Figure 3. Zones for the Landscape during the startup phase, 2003–2005. The UGADEC CBNRM zone is shown in light green. The Tayna Nature Reserve, part of the UGADEC zone, is shown in orange. The dotted red lines represent minor modifications that were made to the original Landscape boundary from 2003 and were added to include areas of the UGADEC CBNRM.



six other community associations (formed as separate NGOs) joined the Tayna Reserve and created a political federation called UGADEC.[9] UGADEC set a goal of establishing a corridor of similar community reserves for an area of more than 10,000 km^2, creating a biological corridor between Maiko and Kahuzi-Biega NPs (Figures 3 and 6).

Thus, by 2002, before the onset of CARPE support in the landscape, significant zoning work had been accomplished by local stakeholders under a community conservation programme supported by DFGFI. In the case of the Tayna Reserve, a local community was already functioning as a local CBNRM group that had received its NGO status from the government. Through field surveys and participatory mapping, the Tayna group had identified an intact, forested mountain zone with only a few local inhabitants that contained a significant population of gorilla and chimpanzee, as well as 12 other primate species, Forest elephant, Okapi and Congo peafowl. The Tayna communities chose to provide complete protection for this 900 km^2 core protection zone and obtained a Ministry of Environment Declaration designating it a Nature Reserve. Further, before the arrival of CARPE support, the UGADEC federation, composed of seven local NGOs, was already functioning as a CBNRM group attempting to replicate the Tayna Reserve model for their communities located between Maiko and Kahuzi-Biega NPs.

2003–2005: CARPE support arrives in the landscape, and macro-zones are initially focused on protected areas

CI began its leadership of this landscape with the onset of CARPE IIa support in October, 2003, and as Landscape Leader began to deploy a methodology described in the first version of their CARPE planning and monitoring matrix organized by three Intermediate Results (IRs): 1) natural resources managed sustainably; 2) natural resources governance strengthened; and 3) natural resources monitoring institutionalized. Most of the first interventions for this landscape centred around several important Sub-IRs:

- network of national parks and protected areas established and maintained in landscapes;
- local community management of forests, other natural resources, and sustainable agriculture benefits local livelihoods;
- policies and laws support CBNRM, decentralization and local-level management;
- civil society and NGO sector capacity to engage in advocacy strengthened; and
- human resources for improved natural resources governance are developed.

In 2003, when CI began leadership of the partnership for this Landscape, two National Park PA zones and the UGADEC CBNRM zone (including the Tayna Reserve) were in place, but importantly, there had been very little financial and technical support for these areas (with the exception of the Tayna Reserve), and as a consequence, there were few administrative and human resource capacities in place. As a result it would have been almost impossible in this first phase to expand or refine macro-zoning or develop long-term management plans for any of the zones.[12] To address these gaps in capacity, for the first two years, CARPE support was therefore directed towards hiring and training field and management staff, providing infrastructural support and training to develop administrative capacity, providing basic equipment needs for the National Parks and UGADEC staff, and conducting the first systematic collection of biological and socio-economic data (the Sub-IRs noted above).

Lesson learned 2: Build local capacity before attempting broad landscape-scale macro-zoning and land-use planning. Landscape-level land-use planning and macro-zoning could not really begin until local institutions had human resources in place, had developed administrative capacity, and had acquired the basic infrastructure and equipment to begin their operations using short-term interim planning. In this case, the first two years of the CARPE programme were devoted to developing this capacity for the staff of two national park zones as well as for the staff of a large CBNRM zone forming a corridor between the national parks. Landscape meetings brought partners and local institutional actors together to better understand a landscape-level approach.

By necessity, management planning for these zones took the form of developing and following one-year interim plans, and landscape interventions focused on the existing three large macro-zones: Maiko NP, Kahuzi-Biega NP, and the UGADEC CBNRM zone (Figure 3, including the Tayna Reserve). For the latter zone, the first focus was on identifying and developing the core protection zones that were being developed into PA community reserves, and CARPE mapping reflected this emphasis on developing the PA network for the landscape (Figure 3).[13]

2006: CBNRM macro-zones are expanded and better defined as two new protected areas are created

Early in 2005, the USFS macro-zone methodology was introduced into the CARPE toolkit. By this time as well, significant capacity had been developed for the ICCN staff of the two National Parks and the staff of the UGADEC federation. The international and local partners of the CI-led partnership were regularly meeting to discuss landscape-level activities and assessing how their activities in each of the macro-zones should work together over the broader region encompassed by the Landscape.

Also by April of 2006, UGADEC reached an important crossroads. A second nature reserve project, the Kisimba-Ikobo Reserve (970 km^2, Figures 4–6) completed the necessary steps to seek Nature Reserve status, and in discussions between UGADEC and the Ministry of Environment, it was also decided that the Tayna Reserve Declaration from 2002 needed to be re-configured. Both of these "Nature Reserve" declarations were issued (re-issued in the case of Tayna), but significantly, each was accompanied by a management contract between ICCN and the local NGO project representing the *collectivité* and customary powers. In this legal agreement, ICCN subcontracted management to the local NGO to manage the reserve, with several co-management conditions that needed to be met by the local community. Effectively, two protected area zones had evolved from a CBNRM zone (the UGADEC federation) and the Landscape partnership realized that macro-zoning should reflect this evolution in zoning (compare Figures 3 and 4, for example).

12 With the exception of the Tayna Reserve, which did develop long-term management planning in the first two years of CARPE support.

13 Despite the fact that the *collectivités* surrounding the proposed core protection zones of UGADEC (Figure 6) were actively participating in the community conservation programme.

To address this evolution of a CBNRM zone into a PA zone, the Landscape partnership made several recommendations for macro-zoning that were approved by the local partners, and subsequently sent to the CARPE/USAID management team, approved, and integrated into the landscape-level land-use planning. First, to reflect the actual status of the Tayna and Kisimba-Ikobo Reserves as two autonomous Protected Areas, each with their own management regimes (despite being members of the UGADEC federation), the Landscape partnership assigned to each a separate PA status, no different from the PA status of Maiko and Kahuzi-Biega National Parks. This was reflected in the 2006 macro-zone map (Figure 4). The planning team reasoned that this would facilitate the development of individual management plans for Tayna and Kisimba-Ikobo, which would ultimately include micro-zones, such as station locations, ecotourism routes, patrol roads, etc.

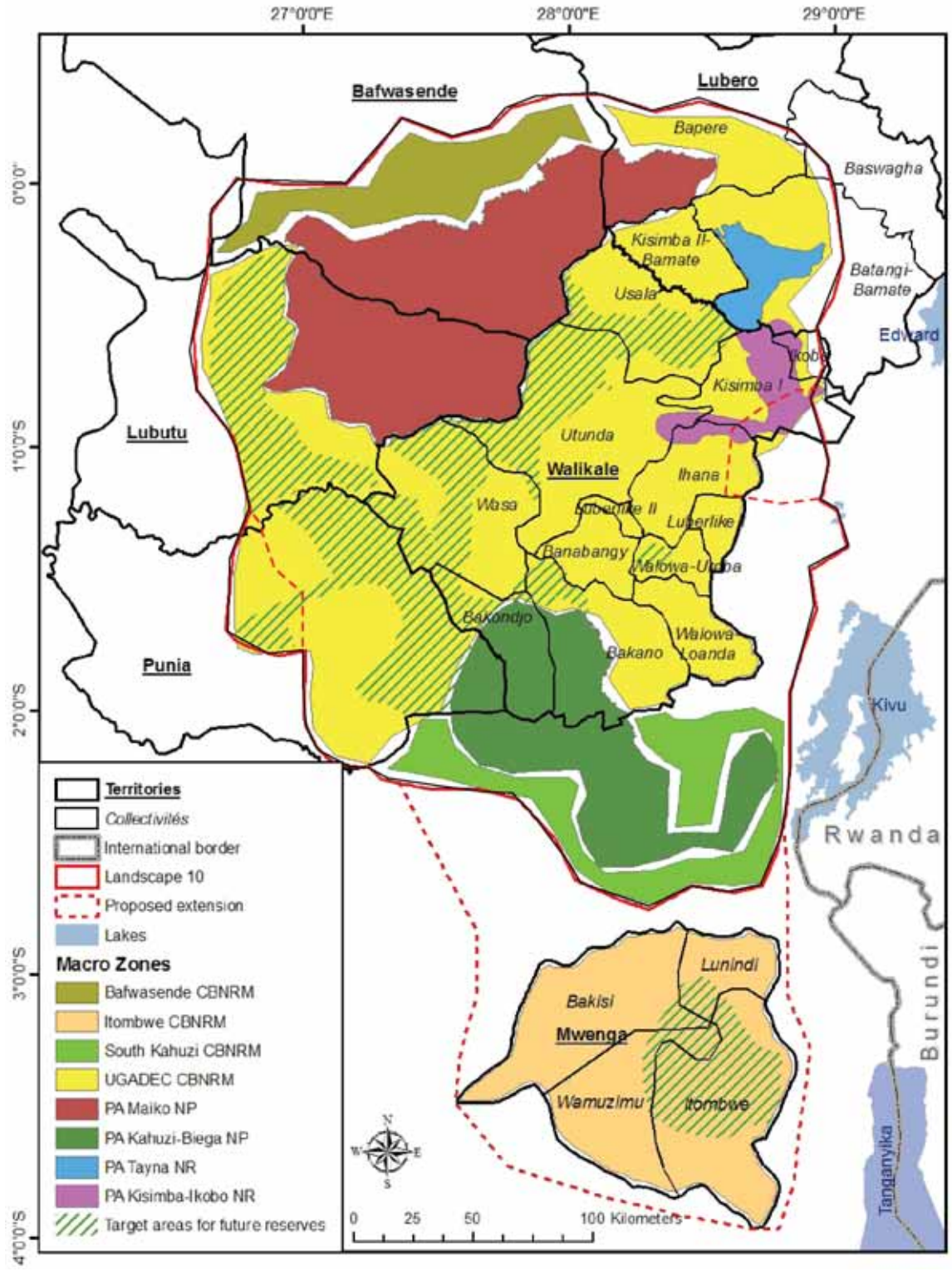
Outside of the two core protection zones of these two new reserves, however, were the actual communities of each *collectivité*, governed by the customary powers sponsoring and managing the reserves (see Figure 6, areas A and C for these two reserves). The Landscape partnership understood that these communities needed resource management plans to sustainably manage natural resources outside of the core protection zones of their reserves, and decided that the UGADEC federation was the best community governance structure to provide this CBNRM planning at that time. Thus, following the boundary limits of the *collectivités* composing UGADEC, that is, those communities still in the process of developing and gazetting nature reserves following the Tayna model as well as the *collectivités* managing the Tayna and Kisimba-Ikobo Nature Reserves, the Landscape Planning Team identified one large CBNRM area as the UGADEC CBNRM (Figures 4 and 5). It was understood that as each of the *collectivités* of UGADEC eventually developed and created their own reserves, each of these reserves would need to be assigned a new PA macro-zone status. In addition, each *collectivité* would eventually develop its capacity within UGADEC and would also develop separate CBNRM macro-zones following the boundaries of their customary governance units. Thus, in a sense, for this landscape in 2006, the UGADEC macro-zone could be deemed a "supra-macro-zone", in that it was an area where communities needed natural resource management planning (in addition to their PA planning for the nature reserves) and the first step would be to do this together in their UGADEC federation, followed by an expected evolution into separate PA and CBNRM zones based on the traditional boundaries of the *collectivités* (reflected in the 2006 macro-zone map, Figure 4, and refined in the latest 2008 versions, Figures 5 and 6).

Lesson learned 3: In a dynamic, large Landscape, macro-zones are not static entities, and as planning is refined, many of these zones will evolve. In applying the USFS macro-zone methodology for Protected Areas (PAs) and Community Based Natural Resource Management (CBNRM) zones, the macro-zoning approach for this Landscape had to take into account that one type of zone was evolving into another: some CBNRM units were (and still are at present) in the process of creating PAs, which would then be integrated into the national network of PAs managed by local communities and the state wildlife authority, the ICCN. Thus, a portion of a CBNRM unit would eventually become a PA, while the remainder would continue as a CBNRM. Both the new PA and the CBNRM would need to be considered as separate macro-zones, expected to develop their own management plans specifically adapted to their contexts.

Thus, from 2003–2005 to 2006, the Landscape partnership enlarged its focus from PAs and the UGADEC core protection zones (Figure 3) to a more comprehensive vision for the CBNRM zones of UGADEC (Figure 4, yellow zone). The partnership assessed its work with areas surrounding the National Parks outside of the UGADEC zone and concluded that we had perhaps employed a somewhat too "protected-area-centric" focus. That is, in the first two years, livelihoods and development assistance for communities surrounding National Parks were seen through the lens of working in "buffer zones" and were developed and directed by National Park ICCN staff and their international partners as, for example, the road and bridge building outside the northeast sector of Maiko NP (Figure 4, olive zone, Bafwasende) or livelihoods projects adjacent to the highland sector of Kahuzi-Biega NP (Figure 4, green zone, South Kahuzi). Although this did have the advantage of creating local goodwill towards state-controlled national parks, it was not conducive to developing a more focused capacity for local communities to manage their own natural resources nearby the two national parks. Following this logic, the Landscape Planning Team concluded that these zones should be identified as CBNRM zones, and two more macro-zones were added to the Landscape, Bafwasende and South Kahuzi (compare Figures 3 and 4). The Landscape partnership believed that the creation of these CBNRM zones would better

Lesson learned 4: CBNRM macro-zones are not simply buffer zones for National Parks or other protected areas. Technical and financial support to develop capacity for community-based natural resource management should, when and if available, not be perceived as projects conceived by and delivered through National Park staff working in "buffer zones" of protected areas, but rather should be directly focused on surrounding communities to build their capacity to manage their natural resources.

Figure 4. In 2006, a more comprehensive series of macro-zones were developed that: 1) included the Itombwe CBNRM extension; 2) included the Tayna and Kisimba-Ikobo Nature Reserves as newly created protected areas (blue and lavender); and 3) expanded the boundaries of the UGADEC CBNRM to the communities involved (yellow) in developing nature reserves similar to that of Tayna (shaded green).



focus attention on the needs of these communities in these zones, rather than continuing a perspective where these areas were seen as buffer zone projects only related to the National Parks. It was also understood that these new CBNRM zones were "supra-macro-zones", in the sense that it was expected that individual communities or *collectivités* within each zone would eventually organize themselves and create smaller, discrete macro-zones for which management plans would eventually be developed (see below).

2006: The Itombwe Massif is added to the Landscape and the Itombwe Nature Reserve is created

The region of the Itombwe mountains to the south of Kahuzi-Biega NP (Figure 2) is a globally important biodiversity region for birds, mammals and reptiles, and was originally given a high priority for conservation intervention at the Libreville Conference in 2000 (Figure 1). Because these mountains also included a good portion of the Albertine Rift Ecoregion (AR) to the east (areas above about 1,500 m, Figure 2), the first MTKB Landscape boundary excluded Itombwe, assuming that conservation interventions there might be sponsored by other initiatives more focused on the AR. After the inception of CARPE in this Landscape however, it soon became apparent that the Itombwe Massif's location in DRC and its proximity to the Landscape argued for conservation interventions being delivered there in tandem with the rest of the landscape interventions, specifically with the WWF programme for Kahuzi-Biega. WWF began a programme of participatory conservation for Itombwe (aided by biodiversity inventories conducted by WCS) and in 2006 requested that the Itombwe region be officially recognized as part of the MTKB Landscape.
The Itombwe extension was officially recognized by CARPE in October 2006 and was added as a CBNRM zone in the 2006 macro-zone map (Figure 4). This increased the size of the Landscape to just over 10 million hectares (10,601,316 ha).

By late 2006, the ICCN and local communities, assisted by WWF, succeeded in obtaining a Ministry of Environment Declaration creating the Itombwe Nature Reserve (Figure 6). Unlike the Tayna and Kisimba-Ikobo nature reserve model, in which the core protection zone delineation was completed by local communities before seeking a Ministerial Declaration, the Itombwe Reserve Declaration provided for the development of a core protection zone in the future: it made clear that the process of determining the final boundaries of the reserve and the zones it would contain, such as completely protected core zones, mixed-usage zones, and other zones devoted to development, would be determined by future consultations with local communities. Because no core protection zone was defined in the Itombwe Reserve Declaration, the Landscape partnership chose to keep it as a CBNRM macro-zone for the purposes of landscape planning, but like the case for the UGADEC CBNRM, expected that a PA macro-zone and one or more CBNRMs would likely evolve there in the future (Figures 4–6).

2007: Adjusting Landscape and macro-zone boundaries to reflect politico-administrative units and expanding macro-zoning to the entire landscape

In 2007, with the inception of CARPE IIb, the Landscape partnership (Consortium in this phase) began vetting the concept of landscape-level land-use planning with local and provincial authorities. It became apparent that our Landscape boundary, having been originally conceived as a biological entity, cut across a number of politico-administrative units (including four provinces). The Consortium therefore re-evaluated the boundaries for Landscape 10, as well as its eight macro-zones, based on a new criterion that was intended to improve zoning for this Landscape, while at the same time facilitating acceptance of the landscape-level approach by local, regional, and national government policy makers: Landscape limits and macro-zone boundaries would be adjusted to follow government administrative units wherever possible (i.e., provincial, territorial, *collectivité* and *groupement* boundaries).

The Consortium reasoned that this would be the best way to facilitate acceptance of both a Landscape and macro-zone approach by government entities at all levels (national, provincial and local) by ensuring that boundaries would be understandable to the government based on the administrative units with which they were most familiar. Because these changes effectively expanded the existing boundaries based largely on biological criteria, the expansion did not interfere in any way with the biological or conservation objectives. The Consortium reasoned that this approach would substantially improve governance and long-term management of natural resources at all levels (including local communities)

Lesson learned 5: If macro-zone and landscape boundaries follow government administrative unit boundaries as closely as possible, the landscape land-use plan will more likely be accepted by government authorities at all levels. A macro-zone boundary based simply on ecological features that cuts across a ***collectivité*** or ***groupement*** (local governance units) is not only not well understood by government authorities, it runs counter to the concept of community-based natural resource management, in which it is expected that all members of a community will participate in developing plans to manage their natural resources.

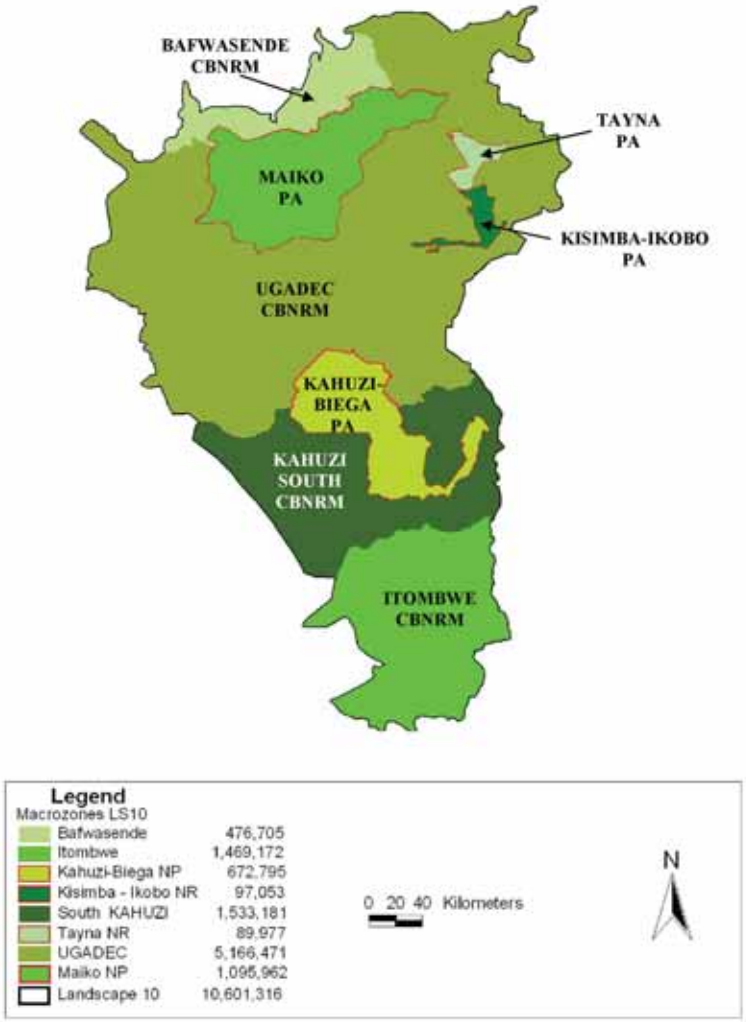
and would ensure that these units remained meaningful well into the future. Importantly, this approach also minimizes competing claims between and within local governance units. For example, if a CBNRM macro-zone is designed around an ecological characteristic, such as a forest block, but that zone overlaps two *groupements*, they are likely to make competing claims over the incoming resources unless both are included. Similarly, if the forest block only covers 50 percent of a *groupement*, ensuring that the CBNRM macro-zone includes the entire *groupement* will avoid internal claims that resources targeted on natural resource management are only going to those members near the forest, rather than all members within the *groupement.*

These adjustments resulted in making the Landscape boundary slightly larger (Figure 2, compare yellow and red boundaries), and as a consequence, also enlarged some of the CBNRM macro-zones to follow more clearly the boundaries of *groupements* and *collectivités* (compare the western boundary of the UGADEC CBNRM macro-zone, Figures 4 and 5).

Simultaneously with the Landscape boundary revision, the Consortium evaluated all interventions in the Landscape and believed it essential for the process of landscape land-use planning to provide a macro-zone designation for all areas throughout the Landscape (compare Figures 4 and 5). For example, following this approach and respecting administrative unit boundaries, we also expanded the Kahuzi South CBNRM macro-zone (compare the 2006 macro-zone map with that for 2007, Figures 4 and 5).

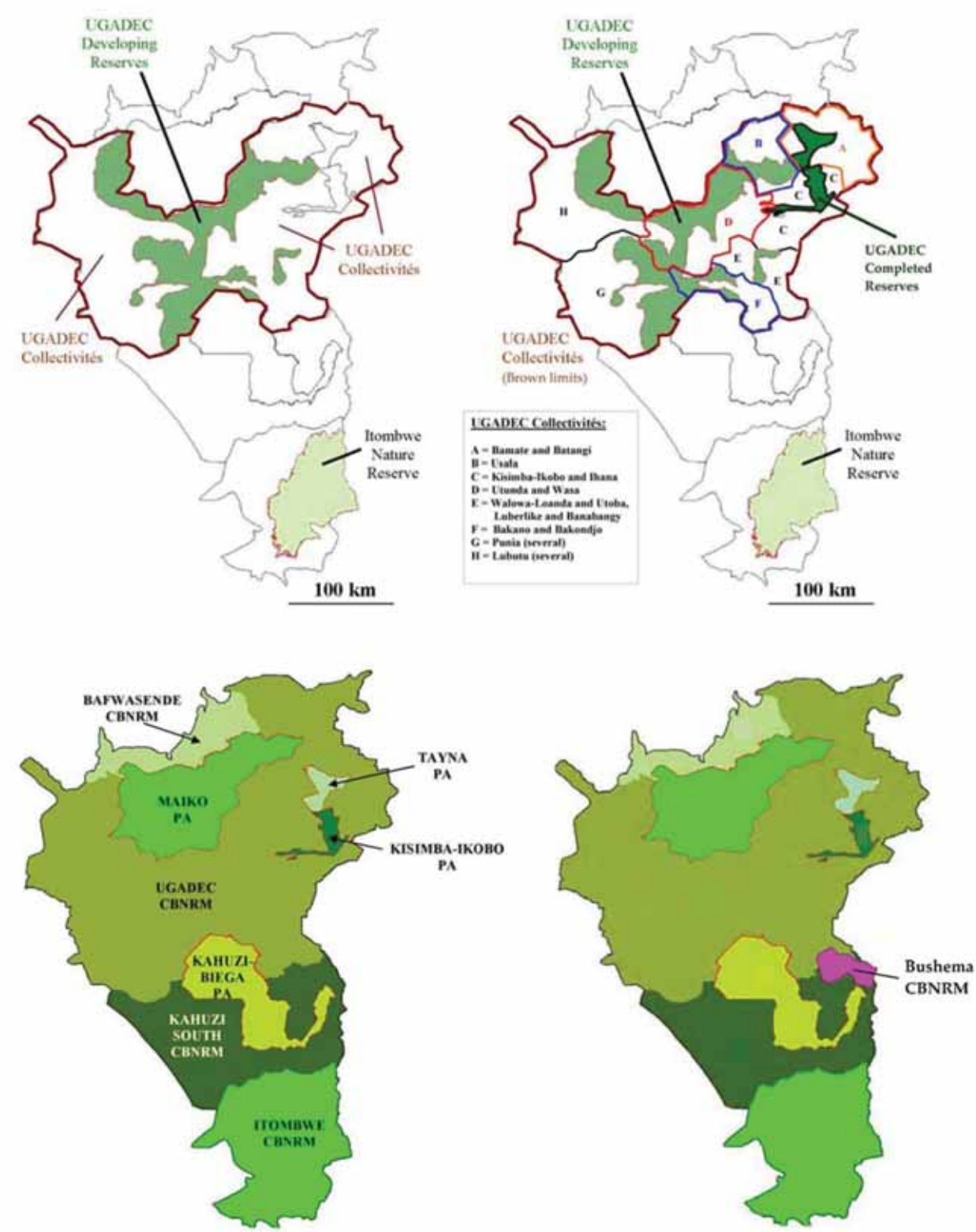
It is important to note that these macro-zone designations do not imply that financial resources are at present available for all zones or that they represent a shift in areas of intervention and responsibility under CARPE funding (and the matching funding provided by partners). Rather, they represent target areas for future interventions and, for the purposes of the landscape land-use plan, indicate that CBNRM planning will be necessary for all non-protected area zones in the Landscape. To provide an example, under CARPE-sponsored funding, one Landscape partner, WWF, is currently undertaking interventions in the Kahuzi South CBNRM macro-zone. With the inception of the CARPE programme, this was originally conceived as the buffer zone for Kahuzi-Biega National Park (Figure 4) and the

Figure 5. The current (2007) configuration of eight macro-zones for the Landscape. Figures below show sizes in hectares of each zone.



Lesson learned 6: An effective landscape land-use plan is a guide for the future sustainable management and use of resources throughout the entire Landscape and, as such, with stakeholder participation, it should identify macro-zones for the entire area of the Landscape. Bearing in mind that macro-zones will likely change and evolve, and irrespective of whether immediate financial and technical resources are available, a landscape land-use plan, through macro-zone designation, should target all areas in a landscape for future interventions. In the case of CBNRM zones, this provides a series of important community targets for government and international partners such that these communities eventually receive capacity building to enable them to develop resource management plans.

Figure 6. How some CBRNM macro-zones for the Landscape are in reality, “supra-macro-zones” (see text) in that they are zones in which it is expected that individual communities will develop as separate macro-zones with their own management plans. The figures below display the actual eight *collectivités* (two are Territories, H and G) composing the UGADEC zone and the Itombwe Nature Reserve, and show the development of the Bushema forest CBNRM macro-zone from the Kahuzi-South CBNRM “supra-macro zone”.



earliest interventions were seen through the lens of this globally important protected area. With a change in perspective by 2006, that an entire set of *collectivités* surrounding the National Park would at some time in the future need capacity building in community-based natural resource management (Figure 5), WWF, with limited resources available, began work in one area, the Bushema Forest (Figure 6), which, in accordance with local *collectivité* boundaries, could organize itself as a CBNRM macro-zone. Under the current five-year agreement with CARPE, it would not be expected that WWF (and the Consortium) could widen its intervention to an area of 1,533,181 ha, the new configuration for Kahuzi South CBNRM zone (Figure 5). Despite this, the Consortium maintains that the new configuration for this zone, following administrative boundaries, is the most appropriate way to go forward in partnership with government officials. Thus, this new (ideal) zone provides a target for resource governance for the future, not a revision of our consortium responsibilities under CARPE funding. This example also demonstrates the utility of using the name "supra-macro-zone" for the Kahuzi South CBNRM zone (also see discussion above for the UGADEC CBNRM zone, and Figure 6), which is an area where formal, smaller CBNRM zones could eventually develop under the vision of a comprehensive landscape land-use plan.

Summary

As the above "historical" narrative to the evolution of macro-zoning in this Landscape has hopefully underscored, the development of a series of macro-zones for a comprehensive landscape land-use plan has clearly been an iterative and adaptive process. First, the process needed to absorb and include the important community initiatives already underway when the CARPE-supported CI-led partnership began its work in the Landscape. Second, when the CI-led partnership began, with no local state or community institutions having the capacity to even begin operations (exceptions: the highland sector of Kahuzi-Biega supported by GTZ; and Tayna, supported by DFGFI), nearly two years of support went into local capacity building and convening the partners and stakeholders to familiarize them with landscape-level activities. Third, as the USFS land-use planning methodology became integrated into the CARPE programme and as CBNRM groups in this Landscape began to create officially recognized protected areas, the macro-zones being used, which at the time focused largely on protected areas, were re-defined with a much broader emphasis on CBNRM zones. Fourth, as the landscape planning process emerged from a smaller project planning team and was vetted by government policy makers, macro-zones needed to be adjusted to reflect the boundaries of local governance units, while continuing to reflect important ecological zones. And finally, to provide for a comprehensive land-use plan, all areas of the Landscape were given a macro-zone designation (or at best, a "supra-macro-zone" designation).

One of the most important lessons learned for this Landscape was that the planning process had to introduce the concept that one type of macro-zone, the CBNRM zone, had (and continues to have) portions of its area morphing into protected areas under initiatives led by local communities. The Consortium believes that zoning should reflect this and therefore assigned these new areas the status of PA macro-zones. This has the advantage of putting a focus on the development of an individual management plan for each of these PAs which, in keeping with their government status as a nature reserve managed by both communities and the state wildlife authority, would allow them to develop a management plan not dissimilar to that of a national park. Meanwhile, for the CBNRM area, the community can marshal its efforts to develop a management plan that provides for the sustainable use of their natural resources outside the protected area.

During the time the Consortium has been working in this Landscape, we can now see, with the clarity of hindsight, that we evolved from an approach focused on protected areas to a more comprehensive approach that considers both the present and future needs of all communities living in the entire Landscape. This evolution was catalyzed by inputs from the CARPE/USAID management team, as the expected results (IRs and Sub-IRs) were adapted and refined and as new methodologies became available for our toolkits, as, for example, when the USFS land-use planning methodology helped to refine our thinking. Importantly, though, the evolution of our approach was most often catalyzed by our local Congolese partners who, with their vision for land use and management and a desire to protect their important biological heritage, catalyzed many revisions. It would be disingenuous to suggest that at the onset of the programme, the Landscape partnership developed a comprehensive land-use plan and then went forward and implemented it, including the designation of macro-zones. In reality, this has been very much an organic process relying on inputs and insights from many sources, and perhaps the most important lesson learned is that the process takes time. Security issues, complex and costly logistics, a new national government and even new regional conservation initiatives, as well as limitations with financial and technical resources, all conspired to slow down the process. But in retrospect, what may have seemed to be delays along the way may have in fact provided valuable time for the Consortium and its local partners to assess, reflect, and adaptively respond to the challenges of the enormously complex task of developing an enduring plan for both the conservation of biodiversity and the sustainable use of natural resources in an area larger than Belgium and the Netherlands combined.

Case Study 2

Lessons Learned from the Sangha Tri-National Landscape

Leonard Usongo

Introduction

In December 2005, partners of the Sangha Tri-National Landscape (Tri-National de Sangha – TNS), (primarily WWF, WCS, GTZ and national government forest administration staff from Cameroon, Central African Republic (CAR) and the Republic of Congo) held meetings to discuss thematic issues to be captured in the Land-Use Plan (LUP) document for the TNS Landscape. The purpose of the consultative process funded by USAID/CARPE was to allow key partners to exchange views on the best strategies to address the multitude of conservation challenges in the Landscape. The meetings promoted dialogue and collaboration especially among the national government forest administration staffs of the three countries. The success of the implementation of the land-use plan strongly hinges on the level of collaboration among national government officials such as the conservators working together to address hunting, the bushmeat trade and other cross-border conservation issues.

Relevance of the land-use plan

The LUP provides broad management guidelines for implementation of activities promoting sustainable management of natural resources with the participation of all local stakeholders. The document describes forest vegetation types and other bio-geographical features, land uses and management strategies as applied by the different actors in the different segments within the TNS Landscape. It enables the TNS partners to communicate with other stakeholders in a comprehensive manner concerning conservation and development issues in this important forest landscape. Looking at the overall forest landscape and its management from a sustainable development perspective provides new insights for what is at stake in the long run.

First of all, this plan is a state-of-the-art document that describes the Sangha Tri-National forest vegetation types, the present land uses and the management strategies employed by the various actors in the different segments of the Landscape. It brings together existing knowledge concerning vegetation types, animal populations and movements, road infrastructure and human settlements, land-use zoning maps and overlays, conservation management with the involvement of surrounding local communities, law enforcement and infrastructure development. These key parameters concerning land use define the context of landscape management and help identify the weak spots in current management. The plan aims to foster existing transboundary collaboration by describing local land-use strategies and policy issues contained in forest and wildlife legislation, in particular issues related to land-use (access) rights of local and indigenous peoples. Furthermore, this document will support long-term funding initiatives such as the establishment of the Sangha Tri-National Trust Fund.

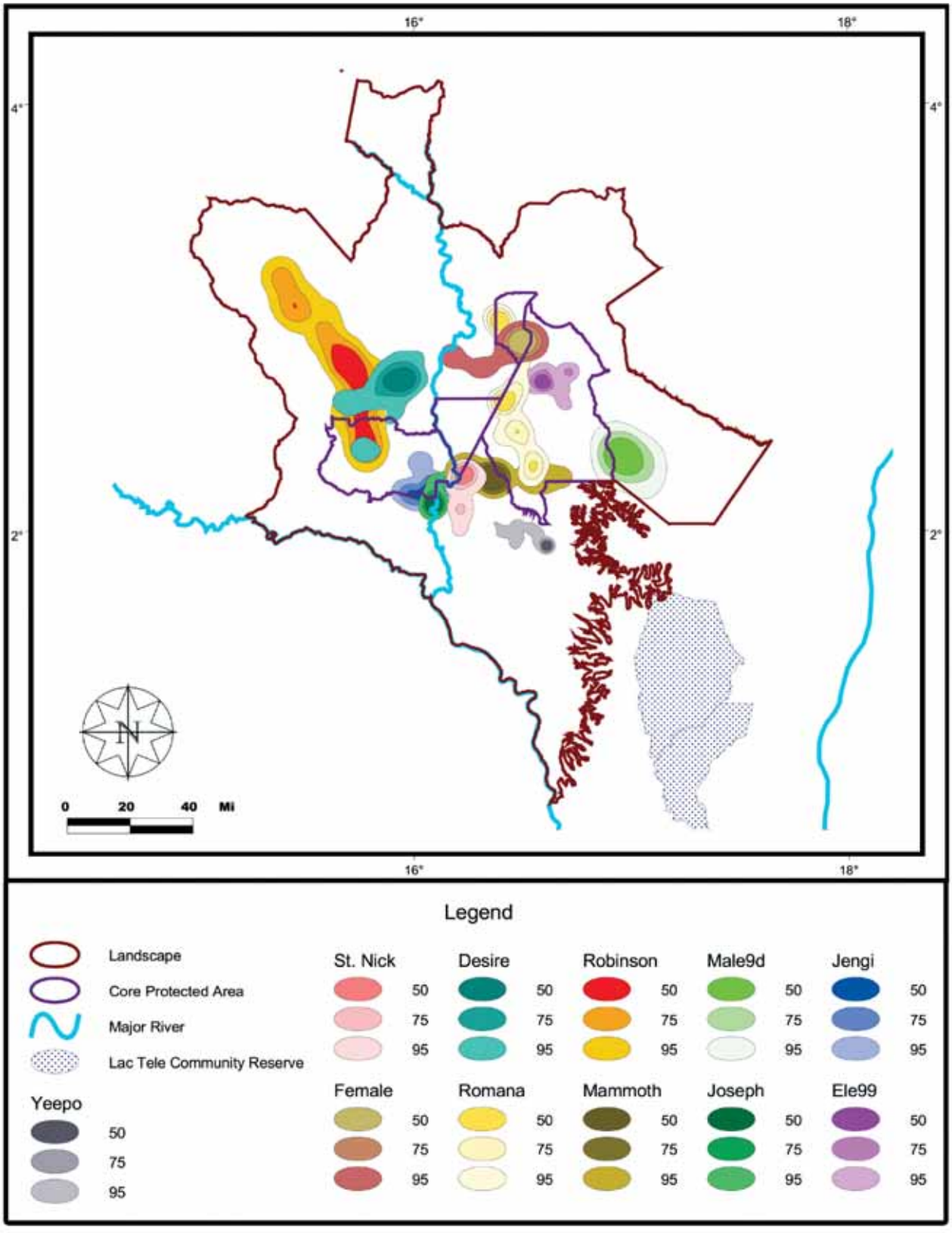
Finally, the existence of a land-use plan provides technical, institutional and political backing for the Sangha Tri-National Landscape. Indeed, the development of LUPs for the priority landscapes in the Congo basin is one of the critical elements recommended by COMIFAC (Commission of Forest Ministers of Central Africa) to improve the management of transboundary conservation programmes.

Vision for the Sangha Tri-National Landscape

The vision for the TNS Landscape includes the following objectives: The TNS will be a forest landscape where wildlife can move freely without fear of being hunted, as illustrated in Figure 1 which shows the cross-border movements of radio-collared Forest elephants over their home ranges. It will also be a place where the rights of indigenous peoples are respected and where local communities and indigenous peoples will be able to continue to practise their traditional life styles with all stakeholders participating in and benefiting from the economic development of the area.

Another important element of the management vision for the TNS is to ensure that forestry and wildlife exploitation as well as agricultural production are in balance with the natural environment and form the foundation for long-term sustainable development in the region. Industrial forestry activity is a key component in this balance as it provides sustainable revenues and employment for the national economies of the three countries. Likewise, wildlife is a critical asset, not only because of its intrinsic value, but also due to its contribution

Figure 1. Elephant home range patterns



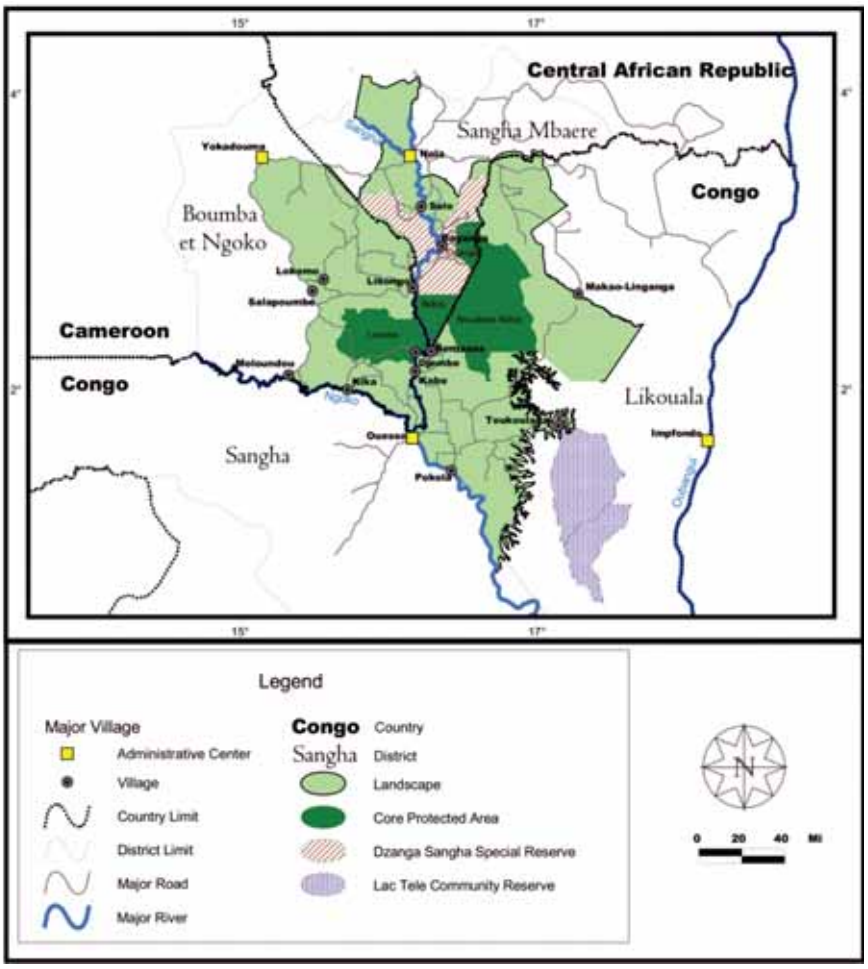
to local development and people's livelihoods.

The Landscape

The Sangha Tri-National Landscape includes a core protection zone in which human activities are either forbidden or controlled and a peripheral zone in which participatory and sustainable management of wildlife and forest resources is practised. The core protection zone of the Sangha Tri-National comprises the National Parks of Lobéké (Republic of Cameroon), Dzanga-Ndoki (Central African Republic) and Nouabalé-Ndoki (Congo Republic). The peripheral zone includes production forests, sport hunting concessions, community hunting zones and agro-forestry areas.

The TNS area is about 35,000 km^2 and is made up of Guinean-Congolese lowland forests rich in African Acajou and large mammals. The forest still covers some 95 percent of the landscape including swamp forests and natural forest clearings. The forest harbours important populations of Forest elephants, Western lowland gorillas, chimpanzees and Bongos. Whereas some 30 years ago the human population density in the area was very low, averaging less then 1 person/km^2, the human population has now risen to about 4–5 inhabitants/km^2. Local administrative centres have grown and, more importantly, the forest exploitation companies have established relatively important settlements deep inside the forests. The building of an intensive network of logging roads has opened up the region further and has encouraged immigration into this zone rich in natural resources. Thus unprecedented development dynamics have taken root in the TNS Landscape.

Figure 2. Administrative features



The land-use planning process

A formal collaborative management agreement was signed by the three governments in 2000 and later ratified by the respective parliaments. This agreement provides the official basis for developing a comprehensive vision and LUP for the entire TNS Landscape. However, the process of land-use planning started a long time ago when governments first started to give out forest concessions during the mid-20th century, or even longer ago when the French and Belgian colonial governments gave out large concessions for rubber exploitation. The human occupation of the area dates back many centuries. More realistically, we can say that the process of consciously planning land use started during the 1980s when researchers doing biological surveys in the area confirmed its importance for biodiversity and developed a vision of establishing a cross-border tri-national conservation area. Over the past 20 years, this vision has gradually been translated into concrete actions on the ground with institutional mechanisms put in place for coordination of transboundary activities. The various studies carried out have contributed

immensely to a better understanding of the ecological and social dynamics in the region. The signing of a tri-national accord in 2000 by the governments of Cameroon, Congo and CAR provided the much needed institutional platform for the establishment of the Sangha Tri-National Landscape. Looking back 15 years, tremendous progress has been made in the process of building management institutions and mechanisms for managing the TNS Landscape. Listed below are the steps that have been taken in establishing the TNS Landscape and in developing the land-use plan:

1985–1995: Completion of various biological and socio-economic studies with results indicating the conservation importance of the TNS Landscape.

1999: Organization of the first summit of Central African Heads of State in Yaoundé and the signing by member States of the Yaoundé Declaration to promote sub-regional collaboration for sustainable management of natural resources in the Congo basin to support economic development of the region. The Yaoundé Summit led to the creation of the Commission of Forest Ministers of Central Africa (COMIFAC) with the mandate to coordinate all sub-regional conservation initiatives under the umbrella of the Congo Basin Forest Partnership (CBFP). The CBFP brings together COMIFAC national governments, donor agencies, research institutions, the private-sector forest industry and international conservation organizations who collaborate in different domains to foster sustainable natural resource management, economic development and the policy and governance reforms required to promote greater participation of local communities. The CBFP also promotes the establishment of long-term funding mechanisms such as trust funds to support the management of conservation programmes especially for the 12 selected priority landscapes in the Congo Basin.

1990–2000: Thorough assessment of the human-driven pressures and other threats to natural resources of the region. Subsequent gazetting and designating of national parks, agro-forestry zones, community forests and hunting areas, professional hunting zones and forest concessions – all with the obligation of elaborating management plans following a clear set of management, use and conservation principles. Land-use planning exercises were carried out in a participatory fashion with the consultation of different stakeholders, notably local communities and indigenous forest peoples living in the area. The land-use planning process was carried out using different approaches as stipulated by the national forestry laws of the three countries.

2000–2005: Signing of different institutional agreements by the governments of the three countries namely a transboundary agreement to establish the Sangha Tri-National conservation programme, an accord on joint anti-poaching operations and an agreement on free circulation of staff. The different accords signed by TNS governments are meant to strengthen sub-regional collaboration in the coordination and management of activities within the TNS Landscape.

1998 to the present day: Development of management plans for the three national parks and for all the forestry concessions under the responsibility and obligation of each concession holder (forestry departments for the national parks and forest companies for the forest concessions). Each stakeholder has the responsibility for developing management plans for each respective forest management unit (FMU). Each country's forestry laws provide certain recommendations for the management plans especially protecting biodiversity hotspots found in logging concessions and the inclusion of local people in management processes.

1997 to the present day: Efforts are being made by different technical partners, in particular GTZ, WWF and WCS, to support local communities in managing community forestry and community hunting zones. For example, in Cameroon, WWF and GTZ assisted the government with the creation of six community hunting zones around the Lobéké National Park. About US$100,000 in revenues has been generated each year by communities from trophy hunting in their hunting zones. Most of the income is used for development projects such as the construction of clean water infrastructure within the communities.

1999 to the present day: Increased collaboration among national forestry and wildlife services and conservation and development partners in developing joint activities for the cross-border management of protection, policing and development initiatives. Following the 1999 Yaoundé Heads of State Summit and the subsequent establishment of COMIFAC and the signature of the TNS transboundary agreement in 2000, tremendous progress has been made by local partners, including local government administrations in joint implementation of field activities. There are numerous stakeholder agreements involving local communities, forest administrations and private-sector operators such as logging companies. These agreements promote consultations among stakeholders over resource use, benefit sharing and equity in access rights for local Bantus and indigenous forest peoples to certain areas for particular activities.

2005 to the present day: Creation of the TNS Trust Fund governed

by a multi-stakeholder board and the elaboration of a comprehensive vision for the long-term sustainable management and use of the entire Landscape. An estimated 22 million Euros is needed to ensure effective operation of the trust fund. To date, 11.5 million Euros have been raised through contributions from various donors. An executive director has been appointed to manage the operations of the trust fund. An administrative board is in place and consists of representatives of national governments, key conservation NGOs, and representatives of the private sector and civil society.

The establishment of the TNS Trust Fund's governance-finance framework and the development of the TNS land-use plan are parallel processes, though not intrinsically linked as the latter is purely technical in nature. The TNS Trust Fund is a financial mechanism to ensure long-term funding of field activities and management of TNS Landscape. This innovative funding mechanism, when fully operational, will serve as a model for long-term funding of protected areas and complex transboundary conservation programmes in the Congo basin.

Development of the land-use plan document

The elaboration of the TNS LUP started with a one-day workshop bringing together major players in the field, notably the forest administrations represented by the conservators of the three national parks and technical partners including WWF, WCS and GTZ. The decision to convene a planning meeting was taken jointly during bi-annual meetings of the TNS committee for planning and implementation of tri-national activities, known by its French acronym CTPE (*Comité Technique de Planification et Exécution*). The objectives of the planning workshop were to: (i) elaborate the planning process for development of the LUP; (ii) create an inventory of available information as well as identifying data gaps; (iii) determine the financial and other resources required for the consultation process; and (iv) agree on a common vision for the LUP. An independent consultant with an in-depth knowledge of the area was unanimously selected by the tri-national partners to pilot the consultation process including the production of the first LUP draft. All parties agreed during the workshop to work closely with the hired consultant in providing the information required from the respective Landscape segments. At the same time, GIS experts from the different projects operating in the area were expected to produce generic maps of land-use practices, human settlements, flagship wildlife species distributions and other relevant information to illustrate and describe the TNS Landscape. Several drafts of the LUP document were produced by the consultant and submitted for review by the CTPE. The document was finalized after two years of consultations and review by the CTPE. In September 2008, the final draft of the TNS LUP was forwarded to the respective national governments for review and approval. The document, once approved by the three governments, will constitute the official document used by tri-national partners to orientate land-use management actions in the Landscape.

The LUP document proposes innovative solutions to many management problems in the Landscape. Some of the proposed solutions require changes in the perceptions and the administrative approach to national parks and the surrounding zones by the forest administrations of the different countries. For example, protected area authorities must accept that success in managing the national parks will depend on support from surrounding local communities. The rights of indigenous peoples over resources must be secured and officially granted. Since it is the first to cover a Landscape involving three countries, it is expected that the TNS LUP, once approved, will generate debate on a number of policy issues:

1. Regulation of the access of local communities and indigenous forest peoples to natural resources in the national parks;
2. Mechanisms for sharing the benefits of forest revenues amongst local communities;
3. Participation of local communities in parks management;
4. Capacity building and integration of the national parks authorities in the management of the tri-national park;
5. Re-investment of revenues generated from ecotourism and other income-generating activities for management of the TNS Landscape;
6. Establishment by the TNS Trust Fund Board of an efficient and transparent system for disbursement of funds for the tri-national park's activities;
7. Agreement on trophy hunting, quotas and wildlife species;
8. Implementation of tri-national accords on free circulation of TNS staff, anti-poaching patrols, and the establishment and functioning of a tri-national brigade.

Lessons learned

Land-use planning process

As we have seen, the process of land-use planning in the TNS Landscape has not been a fully consciously planned exercise from the beginning. Indeed, this would not have been possible as

national policies and the sub-regional context have evolved greatly over the past decade to finally provide the enabling framework and policy environment that allows for such a far-reaching exercise. The national forestry and wildlife laws of the three countries differ in many areas. For example, there is an official quota for sport hunting of elephants in Cameroon while the law prohibits elephant hunting in CAR and Congo. There are currently no laws or policies to control cross-border trade in timber, wildlife and other non-timber forest products. Such sub-regional laws, when put in place, will help control on-going illegal trade in various forest resources notably bushmeat and ivory. It is extremely important for the three countries to harmonize certain laws and policies to ensure effective implementation of the land-use plan. Without such harmonization, there will be continuous discrepancies on issues dealing with the sanctions of illegal practices, remuneration of forestry staff and benefit-sharing mechanisms for local communities.

Also, for land-use planning and implementation to be meaningful, conservation and development partners need to be well established inside the Landscape working together in a relationship of trust with local government services. All this takes time. Even between the three main conservation and development partners in the TNS (WWF, WCS and GTZ) it has taken a number of years to develop sufficient understanding and mutual trust to be willing to freely share information, to sometimes agree to disagree and, above all, to share successes and failures. The implementation of the CARPE programme in the context of the Congo Basin Forest Partnership has helped bring partners closer together.

The finalization of the draft TNS LUP and vision ready for submission to governments, COMIFAC and other stakeholders, has proved to be a slow process. The ownership of the process was more fully anchored with the conservation partners than with the national park conservators and the national forest administrations. The government staff must feel fully involved in the process and possess the needed technical capacities to understand the management vision articulated in the plan. Technical partners such as WWF, GTZ and WCS must dedicate time and effort to training national counterparts in participatory management processes. Finding time with technical project staff to work intensively on the document is a naturally difficult and time-consuming process. Therefore project teams must agree on a calendar for joint planning meetings, including consultative meetings with different local stakeholders.

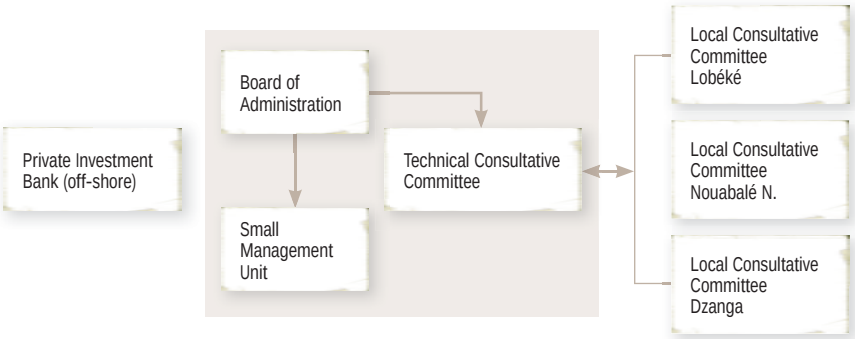
The conservation and development partners who have been involved in the TNS from the beginning had a landscape or eco-regional vision from the start. This larger vision helped push the process forward as all key players had a common understanding of the nature of the key issues, the relevance of the LUP and a long-term vision for management actions.

Establishing a trust fund

One of the critical elements for the development of a trust fund is the availability of business and management plans for the protected areas. The business plan should include information on conservation investments outside the protected areas, notably in production forests where most of the threats originate. Pulling together technical information required to determine the costs of operations for TNS parks was a long process. None of the sites had detailed business plans addressing various management issues within their respective Landscape segments. The CTPE, in consultation with national governments and the main conservation organizations working in the TNS Landscape, agreed to hire a team of consultants who helped with the development, and more importantly, the harmonization of the business plans for the TNS parks. This information was consolidated into the overall TNS Landscape business plan which now forms the basis of the calculation of investment costs for the trust fund.

Another critical factor for establishing the trust fund was the engagement of the national governments and their relevant ministries. It became obvious during the initial phase of negotiations between national forest administrations and conservation partners that both sets of actors differed in their vision and objectives for the trust fund. Another problem was the decision to place the funds offshore given the financial insecurity and political instability prevalent within the sub-region. It took more than two years for conservation partners and donor agencies to convince national

Figure 3. Organigram of the TNS Trust Fund



governments to place the funds offshore. Political endorsement of this decision by governments has been crucial for the success of the process. The three governments discussed and approved the mechanisms for managing the funds in order to facilitate smooth disbursement and ensure transparency and accountability. The management structure of the trust fund is illustrated in Figure 3. The Board of Administration and Executive Director have been in place since 2006. Disbursements of the funds to the three project sites will be coordinated by a technical committee that approves work plans submitted by the three national parks.

Overall, the establishment of a transboundary trust fund involving several countries is a long and protracted process that requires political commitment and understanding from the beneficiary countries. Wide-ranging expertise is needed to produce a comprehensive business plan that reflects the costs of conservation operations in the area. Another important factor is the support of donor agencies and the international conservation community to mobilize funds. The estimated funds needed to create the TNS Trust Fund are yet to be fully secured even after eight years of launching this initiative. Given these difficulties, national governments and conservation agencies need to explore other funding mechanisms such as carbon payments for environmental services to secure the needed level of funding for the establishment of trust funds for large complex transboundary conservation programmes.

Participatory management

From the beginning, the conservation partners have always been very conscious of the spatial use of the Landscape by the indigenous pygmy groups living in the TNS. It is of special interest how, in the large, undeveloped and sparsely populated zone of Nouabalé Ndoki, WCS and its partners were able to map the migrations of the local pygmy groups before proposing use and management regimes. In this aspect, Nouabalé Ndoki is different from Dzanga-Sangha (CAR) and Lobéké (Cameroon) because the attribution of forest and wildlife concessions in the latter two had taken place long before the arrival of the conservation partners.

It is therefore recommended that consultations with local stakeholders, especially local communities and indigenous forest peoples, should be done at the beginning of the planning process. There were problems in the TNS with getting local populations to buy in because they felt cheated and marginalized. Local communities' disagreements with certain already-classified zones seriously impacted management actions on the ground.

There is no doubt significant progress has been made over the years within the three TNS project sites to integrate local communities into natural resource management initiatives. In Lobéké, community hunting zones have been established. Technical assistance is being provided to local communities in various resource management areas such as finance management and the implementation of micro-development projects. Local communities generate significant revenues from trophy hunting by leasing their hunting territories to professional sport hunters. Revenues generated are used for village development projects such as the construction of wells, community health projects and children's education. Land-use plans have also been developed for community hunting areas and local communities are being assisted to secure additional community forests. According to Cameroonian law, communities can acquire 5,000 ha of forests to exploit timber using low-intensity timber extraction methods. In CAR, WWF and GTZ are assisting local communities, notably indigenous forest peoples (Baka pygmies), to develop ecotourism and cultural tourism ventures including activities such as traditional net hunting, bird watching and guided tours of habituated gorillas. The project also plans to create community forest areas surrounding the national parks as part of the on-going land-use planning process. In Congo, WCS is assisting local communities to manage community wildlife zones established around the CIB (*Congolaise Industrielle des Bois*) logging concessions in Kabo. The communities are being trained in management techniques especially for organized subsistence group hunting, basic wildlife monitoring, and the exploitation and commercialization of other non-timber forest products. Other community forests will be established in forests surrounding the Nouabalé Ndoki National Park. The overall co-management vision in the TNS Landscape is to ensure greater integration of the surrounding local population in natural resource management processes, facilitate access to resources, support alternative income-generating activities, build strong local management institutions and facilitate benefit-sharing mechanisms for local communities from revenues generated from the exploitation of wildlife and timber, as well as from ecotourism.

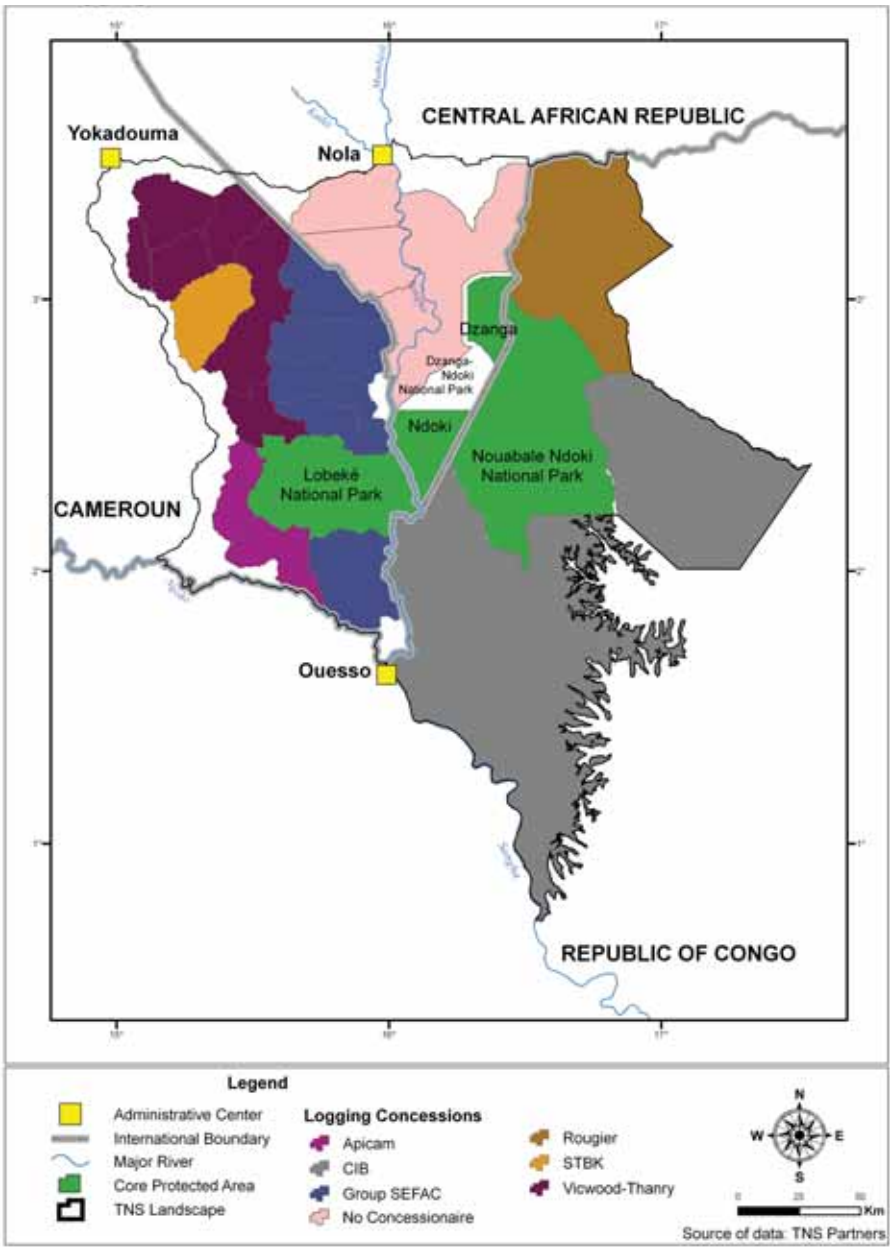
Dzanga-Sangha conservation partners are working out strategies to gazette more community forests in order to obtain property rights over wildlife resources for the Bantu and Baka populations. Failure of these efforts will likely lead to continued tensions and a lack of support from surrounding communities for conservation. This, in turn, could lead to increased hunting and other illegal activities in the park and surrounding areas.

What trends can we see?

The systematic disappearance of forests and biodiversity in most parts of the TNS Landscape such as in

southeast Cameroon and in southwest CAR has come to a halt, and since 2000 a new and more responsible forest management paradigm is emerging. The level of extraction of timber from the natural forest has stabilized to a somewhat more sustainable level. Due to efforts from both the private sector and projects, localized reductions in the large-scale extraction of bushmeat from the forest have been achieved. Overall levels are, nevertheless, still far too high. Most logging companies operating in the region actively support anti-poaching operations. In Cameroon, an Italian logging company provides about US$30,000 per year of direct financing to anti-poaching operations. The company has constructed cold-storage units in Libongo, their main base, to sell beef and fish at subsidized prices to their workers and other local residents. In Congo, CIB has invested in numerous projects to reduce hunting and the bushmeat trade including anti-poaching operations and, in collaboration with WCS, in alternative income-generating projects for local communities.

Figure 4. Logging concessions



In northern Congo, a major on-going challenge is that of previously unlogged forests being brought into production with corresponding dramatic socio-demographic changes augmenting the extraction of bushmeat. Logging operations attract many people into forested areas in search of job opportunities. Individuals unable to find employment generally turn to hunting in the forest in order to earn a living. The timber business also stimulates local economies with small businesses and thriving local markets to help supply the workers of these companies.

The conservation status of the core protection zone, i.e., the three national parks, has improved greatly over the past ten years, with significant increases in wildlife counts in natural forest clearings (*baïs*). This positive trend can be attributed in particular to the greater participation of logging companies and, to some extent, local communities in anti-poaching and surveillance operations. These local stakeholders are held accountable by law for management of their forest units.

However in a number of areas there is increasing disturbance of wildlife and wildlife movements due to unregulated artisanal mining and forest exploitation activities and the poaching it engenders (northern section of Dzanga NP, northern border section of Nouabalé Ndoki NP, north-eastern section of Lobéké NP). The growth of industrial urban centres deep inside the forest has been the main driver in population trends in the Landscape, and whilst these centres may not continue to grow exponentially as during the past 10

years, these centres will continue to be a main driving force in illegal resource extraction and local development within the TNS Landscape. Of the estimated 191,000 inhabitants, 33,000 live in logging towns.

There is an emerging trend and willingness of the different actors to collaborate, and relationships between local communities, the private sector, local governments and conservation and development NGOs have significantly improved. Mutual confidence is growing. This can be explained by the multitude of on-going stakeholders' consultation meetings which have allowed everyone to be sufficiently informed about the objectives of the TNS Landscape, including the roles and responsibilities of the technical partners. The various stakeholder platforms between forest administrations, the private sector and local communities have contributed to building trust and collaboration. Different stakeholders have signed several Memoranda of Understanding to implement joint activities or to address problems affecting their relations. Some of these agreements involve safeguarding the interests and providing benefits to local communities and indigenous forest peoples.

International pressures from donors, international governments and markets for more sustainably produced products have led to greater interactions between forest administrations and the private sector. Most logging companies have approved management plans that address biodiversity issues in their concessions. The forest administration and local councils in particular have now been forced to decentralize decision-making systems for the distribution of timber and wildlife revenues to local communities. In Cameroon, several local NGOs play an important advocacy role in support of transparency in the distribution and management of community forest revenues. This process is extremely important as local communities will not support conservation programmes if their interests are not taken into consideration.

The logging industry's lack of contribution to local economic and social development in the villages and district centres remains one of the most significant failures for sustainable development in the region. The forestry sector constitutes at least one-third of the national economies of the TNS countries and the figure is even higher for the Republic of Congo. According to national forestry laws, 10 percent of total forest revenues must be shared with local communities. In southeast Cameroon, this should amount to roughly US$500,000 of timber revenue. Unfortunately, due to poor benefit-sharing mechanisms and other illegal practices, the communities receive less than US$100,000 of this amount. This should ring alarm bells as, in the long term, maintaining the integrity of the entire Landscape will depend on social cohesion and inclusive and equitable economic development. The lack of revenue sharing is an emerging and urgent issue. Conservation partners have over the past years invested heavily in working with local community groups and the private sector to enhance community-based wildlife management. There is an urgent need for strengthening the conservation and development dialogue, involving political leaders, government institutions, the private sector, community representatives and civil society organizations operating within the Sangha Tri-National Landscape.

Acknowledgements

This article was written thanks to contributions from GTZ, WWF, WCS and other technical partners working in the TNS Landscape. The contributions of the national forest administrations of the three countries, especially the conservators, were highly appreciated. Equally gratifying was the technical and financial support to the TNS Landscape planning and development process from CARPE/USAID, German Development Bank (BMZ), German Investment Agency (KFW), Agence Française de Développement (AFD), World Bank, EU, UNESCO/Central Africa World Heritage Forest Initiative programmes, Fonds Français pour l'Environnement Mondial (FFEM) and other donor agencies.

Case Study 3

Lessons Learned from the Maringa/Lopori-Wamba Landscape

Jef Dupain, with Ann Degrande, Paya De Marcken, Joanna Elliot and Janet Nackoney

Introduction: Landscape land-use planning

The objective of a land-use planning strategy is to outline a procedure to consolidate the needs of local people and biodiversity into a Land-Use Plan (LUP), the implementation of which will render the landscape ecologically, socially and economically viable.

A CARPE landscape is synonymous with an African Wildlife Foundation (AWF) Heartland. AWF developed the Heartland Conservation Process (HCP) as the framework to plan, implement, and measure conservation and social impacts at a landscape scale. As part of the HCP, AWF uses a landscape-level planning process which was developed with help from The Nature Conservancy (TNC)[1] to work with partners and stakeholders to establish conservation goals for each Heartland, to identify threats to conservation targets, and to design threat-reduction activities. AWF has used this process to develop strategies to measure and monitor impacts on conservation targets and to set priorities for future threat-targeted interventions in each Heartland. Although the AWF HCP is an iterative process that takes different forms depending on the local conditions of each Landscape or Heartland, the primary components of the process remain consistent across all Heartlands.

The Landscape Land-Use Planning (LLUP) methods used in the CARPE Maringa/Lopori-Wamba (MLW) Landscape are based on the HCP with adaptations influenced by the United States Forest Service (USFS) Integrated Land Use Planning document (December 2006).[2] Over the last four years, through continuous feedback and adaptive management, the LLUP strategy has been adapted, refined and strengthened. Although a single universal land-use planning methodology cannot exist due to the variability of unique local characteristics across landscapes, AWF's work in MLW so far demonstrates a robust structure and approach as a useful model for LLUP elsewhere in the Congo Basin.

In this paper we begin by presenting an overview of the MLW Landscape. This is followed by a review of select LLUP methods based on Phase II of CARPE (incorporating Phase IIA from 2004–6 and initial learning from Phase IIB, scheduled to run from 2007–11). The final section presents a summary of lessons learned.

Background: The Maringa/Lopori-Wamba Landscape

Physical characteristics

The Maringa/Lopori-Wamba (MLW) Landscape spans 74,000 km^2 and covers the four territories of Basankusu, Bongandanga, Djolu and Befale in the Equateur province of the Democratic Republic of Congo (DRC). The MLW Landscape boundaries are the watersheds of the Lopori and Maringa Rivers. Forests dominate over 90 percent of the landscape; about one quarter of these forests are swamp and floodplain forests (or forested wetlands), reflecting the landscape's low relief (just under 300 m on average) and high rainfall (more than 1.9 m annually). Rural complexes, i.e,. human-dominated areas, mostly farms and plantations, comprise less than seven percent of the landscape.

Ecological characteristics

The ecological value of the MLW Landscape is very high and globally significant as MLW comprises a sizeable portion of the Congo Basin forest ecosystem and is home to diverse and important species, including the endangered Bonobo as well as the Giant pangolin, the Golden cat, the Forest elephant, the Congo peacock, and many other rare primates, amphibians and reptiles. The Landscape has an extremely diverse avifauna and abundant fish species. The biodiversity value of this Landscape continues to be high despite the negative impacts of forest conversion, slash-and-burn agriculture, commercial and illegal logging, and the bushmeat trade.

Socio-economic conditions

Recent spatial modelling on human distribution suggests that human density is on average eight people per

1 In the early stages of developing the HCP, AWF borrowed heavily from TNC's Site Conservation Planning process as described in "Site Conservation Planning: A Framework for Developing and Measuring the Impact of Effective Biodiversity Conservation Strategies, April 2000".

2 See http://carpe.umd.edu/resources/Documents/USFS%20Landscape%20Guide%20Dec2006.pdf.

km² (Kibambe, 2007),[3] with estimated densities of seven, seven, ten and nine people per km² respectively in the territories of Befale, Djolu, Basankusu and Bongandanga. The total human population in the MLW Landscape is estimated at 587,000.

Ethnic groups living in the Landscape are mainly Mongo people and their relatives of the Mongando ethnic group. The Ngombe ethnic group is mainly present in the north, on the axis of Bongandanga-Basankusu, and southwards in the Lomako Forest. Small groups of pygmies are scattered in the northern part of the Landscape and a concentration of Kitiwalists (Jehovah's Witnesses) resides mainly between the headwater areas of the Lomako and Yokokala rivers. The Kitiwalists retreated into the forest years ago and essentially do not accept any jurisdiction from the DRC government (Sifa Nduire, 2008).[4]

Equateur Province was severely impacted during six years of war and unrest (1998–2004) and today remains one of the poorest and least developed parts of the country. Mainly dependent on wild resources for their livelihoods, local communities have indicated a strong desire to be included as partners in the development of improved natural resource management in their landscape.

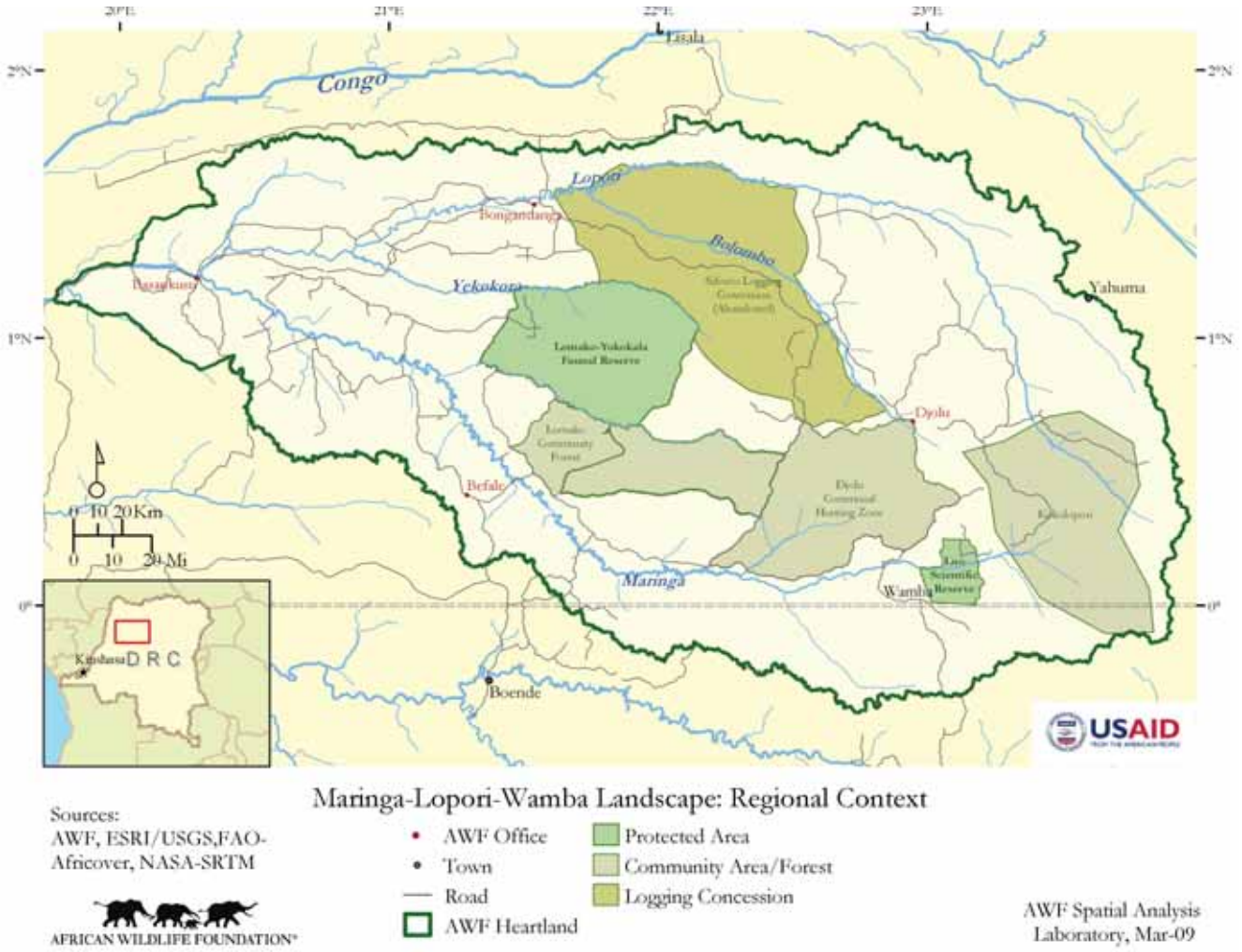
Principal threats to conservation

The principal threats to conservation in the MLW Landscape are associated

3 *Modélisation spatiale multisectorielle des dynamiques territoriales: étude de cas à l'échelle régionale dans la RDC.* DEA, Univ.Cath.Louv.

4 *Les populations de Maringa/Lopori-Wamba, accès aux ressources naturelles et les conflits fonciers: cas de la zone K7/K2.* Rapport AWF.

Figure 1. Forest loss within the MLW Landscape



Source: UMD/SDSU.

with livelihood activities of local people, including subsistence agriculture and unsustainable bushmeat hunting, but also unsustainable commercial hunting, and traditional and industrial logging. These threats are further exacerbated by inadequate agricultural policies and lack of market access. Researchers from South Dakota State University and the University of Maryland analyzed forest cover loss in the MLW Landscape from 1990–2000 using satellite imagery (see Figure 1). Roughly 56,000 ha (about 0.9 percent) of the forest was converted during this period for the expansion of slash-and-burn agricultural activities. Over half of the observed conversion occurred within 2 km of a road.

Human settlement and economic activities

The principal towns in the MLW Landscape are Basankusu, Djolu, Bongandanga and Befale with populations ranging from 41,000–135,000. Many surrounding cities such as Lisala, Bumba and Boende influence economic activities within the Landscape. Roads between these towns and cities are very poor and are often only passable by motorbike. Villages are stretched along road axes, with agriculture concentrated around human settlements. The agricultural activities practised in the Landscape are primarily for subsistence, with less opportunity for cash crops given difficult market access. Cassava, maize and groundnuts are the main agricultural products. Most of the formerly active industrial plantations of palm oil, rubber and coffee have been abandoned.

Bushmeat market data indicates that local people are highly dependent on bushmeat hunting, consumption and trade for both protein and trade (Dupain, 1998). A one-year study of bushmeat availability at the market in Basankusu showed that more than 30 percent of the 12,000 carcasses recorded for sale originated from the Lomako area of the Landscape (Dupain, 1998). This confirms that the Lomako area is an important source of bushmeat for both commercial and nutritional purposes.

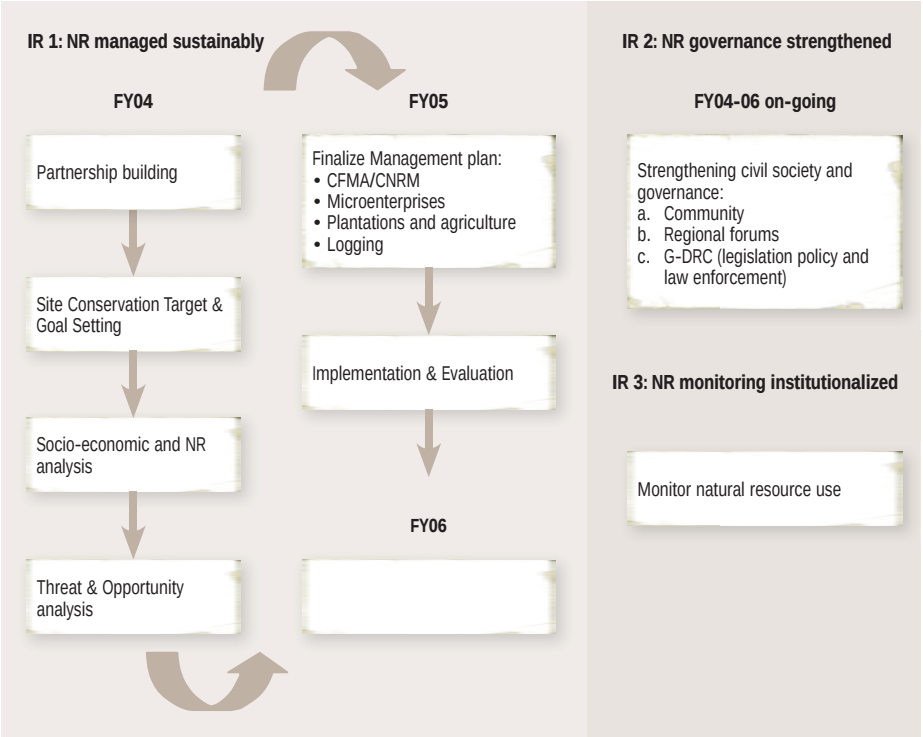
Landscape land-use planning methods and results

Early approach: 2004–2006 (CARPE Phase IIA)

The flowchart in Figure 2 describes the initial HCP methodology as applied in the MLW Landscape from 2004–2006.

Prior to the commencement of CARPE Phase II, very little was known about the MLW Landscape. Little data was available on biodiversity, stakeholders, land-use patterns, socio-economic conditions, and the expectations of government and local communities. The sequence of planning activities was adapted to accommodate this paucity of information. At the onset of Phase II, the CARPE Strategic Objective was translated into site-based conservation targets and goals based on a programme of participatory data collection and analysis (through a "Threats and Opportunities Analysis" workshop). This participatory process aimed to ensure ownership of the programme by the local stakeholders and led to the identification of *a priori* goals centred on the reactivation and/or sustainable management of a number of natural-resource use zones. These zones, called "macro-zones", included Community-Based Natural Resource Management (CBNRM) areas, Protected Areas, logging concessions and plantations. The structure of the first AWF-led MLW Consortium was oriented to these *a priori* objectives, with partners CARE International, Conservation International (CI) and AWF each focusing primarily on one type of natural-resource use zone.

Figure 2. Heartland conservation process for the MLW Landscape



IR: Intermediate result set by CARPE/USAID Programme
NR: natural resources
CFMA/CNRM: community forest management activities/community natural resource management
G-DRC: Government of the Democratic Republic of Congo

From 2007 onwards: CARPE Phase IIB

Experiences and analyses of results from Phase IIA indicated the need for a slightly different approach in CARPE Phase IIB, (2007–2011). Elements of LLUP were adapted and new elements initiated, including:

- Consortium structure;
- HCP and identifying priority activities;
- Stakeholder consultation and participation;
- Participatory data collection and analysis;
- Zoning based on desired outcomes;
- Spatial modelling and monitoring.

The lessons learned and adaptations made in each of these six areas are discussed below.

Consortium building

During Phase IIA, the MLW Consortium consisted of AWF, CARE International and CI. This was based on the perception at the time of the expertise needed. The expertise was macro-zone-directed as opposed to thematic. The work plan referred to a specific number of community forests, plantations and protected areas to be ultimately covered by a sustainable natural resource management plan. CI was responsible for assessing the potential for conservation concessions and the reactivation of an industrial plantation. CARE focused on community forestry and AWF was the overall leader with a focus on protected areas and biodiversity. As consortium members focused on delineated macro-zones, there was a lack of cohesion at the landscape level. One major consequence was the absence of a solid Public Participation Strategy (PPS).

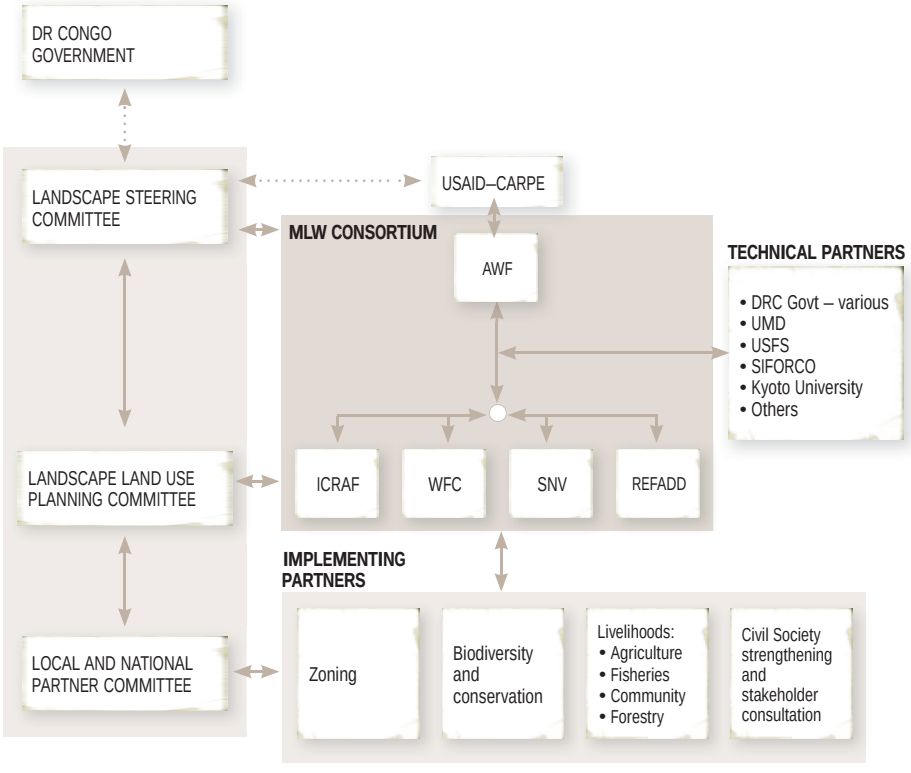
The LLUP consortium for the current CARPE Phase IIB is structured and organized very differently. Instead of being geographically focused, consortium members now work together on common objectives and implement carefully coordinated activities. Consortium members have specific thematic expertise:

- AWF: biodiversity management and sustainable land-use practices, enterprise development and applied GIS processes.
- World Agroforestry Centre (ICRAF): development and promotion of improved agriculture and agroforestry practices.
- Stichting Nederlandse Vrijwilligers (SNV): strengthening civil society institutions, capacity building, conflict resolution and participatory approaches.
- *Réseau des Femmes Africaines pour le Développement Durable* (REFADD): strengthening the role of women and minorities in natural-resource use decision making.
- WorldFish Center (WF): development and promotion of improved fishery practices.
- University of Maryland and *Université Catholique de Louvain*: analysis of satellite imagery and implementation of GIS modelling for land-use planning and monitoring.

Local and national partner committees have been created for the Landscape. At each of the four local "territory" levels, a Committee has been established, with representatives of the various stakeholders and civil society groups involved. These committees meet once a year and serve as information-sharing platforms between the local communities and the LLUP team.

At the national level, a Landscape Steering Committee has been created. This Committee is composed

Figure 3. Phase II structure of MLW Consortium



of stakeholders of the national government. The committee reviews whether the MLW programme is compatible with and responds to the priority agenda of the DRC government. Figure 3 summarizes the overall Phase II Consortium structure, developed from lessons learned during the initial phase of work in MLW.

HCP and identifying priority activities

In December 2004, a two-day participative "Threats and Opportunities Analysis" workshop brought together government, civil society and local NGO representatives from each of the four MLW territories, as well as representatives from provincial and national governments, international NGOs and the private sector. Using the AWF HCP approach, the workshop:

- increased stakeholder understanding of the value of working at the landscape level and the need for landscape land-use planning;
- resulted in the identification of priority activities for specific areas.

At the workshop, participants agreed on the following:

- The Lomako-Yokokala forest should be protected to support the livelihoods of local communities.
- Substantial support for agricultural activities is needed to decrease the pressure on fauna from commercial bushmeat hunting. Participants agreed to give priority to improving access to markets for the sale of agricultural crops.
- A potential site for controlled hunting was selected.

In addition to these principal activities, the consortium also initiated a process of detailed stakeholder scoping, data collection and analysis. The results helped to refine priorities in each macro-zone. Direct support for local NGOS was obtained to implement priority agricultural activities. At the start of Phase II, priority MLW activities consisted of:

- The creation of a protected area: the Faunal Reserve of Lomako Yokokala;
- Indicative zoning of 40 percent of the Landscape;
- Significant support for agricultural activities, including improving access to markets;
- A decision to cancel proposed plans to establish a forest with controlled hunting. The results of the field data indicated that the proposed area was not suitable, and that the MLW Consortium's approach should be adapted. Thanks to participatory data collection and decision making, local stakeholders did not dispute the necessary changes in objectives for the proposed area.

Stakeholder consultation and participation

Ownership of the LLUP process by the primary stakeholders has proved to be a critical prerequisite for success. In the MLW Landscape, this has meant enabling full participation by the socio-political groups in the different levels of government administration (*groupement*, territory, province), traditional chiefs and civil society (preferably umbrella and network organizations), as well as specialized organizations (representing women, indigenous people) and private-sector representatives (including logging companies, agro-industry, small planter groups, and service providers).

The MLW Consortium team initiated widespread discussions on the concept of LLUP and focused on the need to look at a landscape scale rather than macro- or micro-zones. The planning team met with representatives of government and local communities in Kinshasa and in the Landscape. It was important that stakeholders understood that no specific decisions would be taken on zoning without widespread consultation and agreement. These meetings draw attention to some of the main challenges posed by trying to implement a LLUP programme that is both about serving the needs of local people and conserving biodiversity, which are often conflicting objectives in areas such as MLW where people rely heavily on the ecosystem for their livelihoods and well-being.

Attendance at the open meetings with representatives in Kinshasa grew rapidly from an initial eight people to more than thirty. Over time, however, the numbers fell back to a core group of 10–15. The Consortium held open meetings and made presentations at provincial level and in each of the four administrative territories. The open meetings were very much welcomed and initiated a process of growing local ownership. This ownership translated into real participation, with representatives of the stakeholders increasingly involved in the development of the LLUP strategy, vision, objectives and work plans.

The MLW Consortium learned important lessons from this process. First we recognized that, while the meetings are key to real participation and to the project's long-term success, they also create expectations and attract opposition as no specific implementation activities are agreed in this initial consultation phase. Second, we learned that the process of stakeholder consultation is in a sense never-ending, and must be integrated into all aspects of intervention design, implementation and monitoring. These lessons have been fed into MLW Consortium best practice, with our overall Public Participation Strategy adapted as appropriate.

Participatory data collection and analysis

From the start of Phase II, stakeholders were also invited to participate directly in the compilation and analysis of landscape-level data. This participative approach both improved the quality of field data collection and strengthened

the partnership between the MLW Consortium and stakeholders.

As a result of the meetings, participatory data collection and informal discussions with stakeholders, the MLW planning team could develop a large-scale rough data collection system that focused simultaneously on biological and socio-economic issues. The data collection covered an estimated 60 percent of the Landscape (USAID/CARPE MLW Annual Report FY05, AWF).

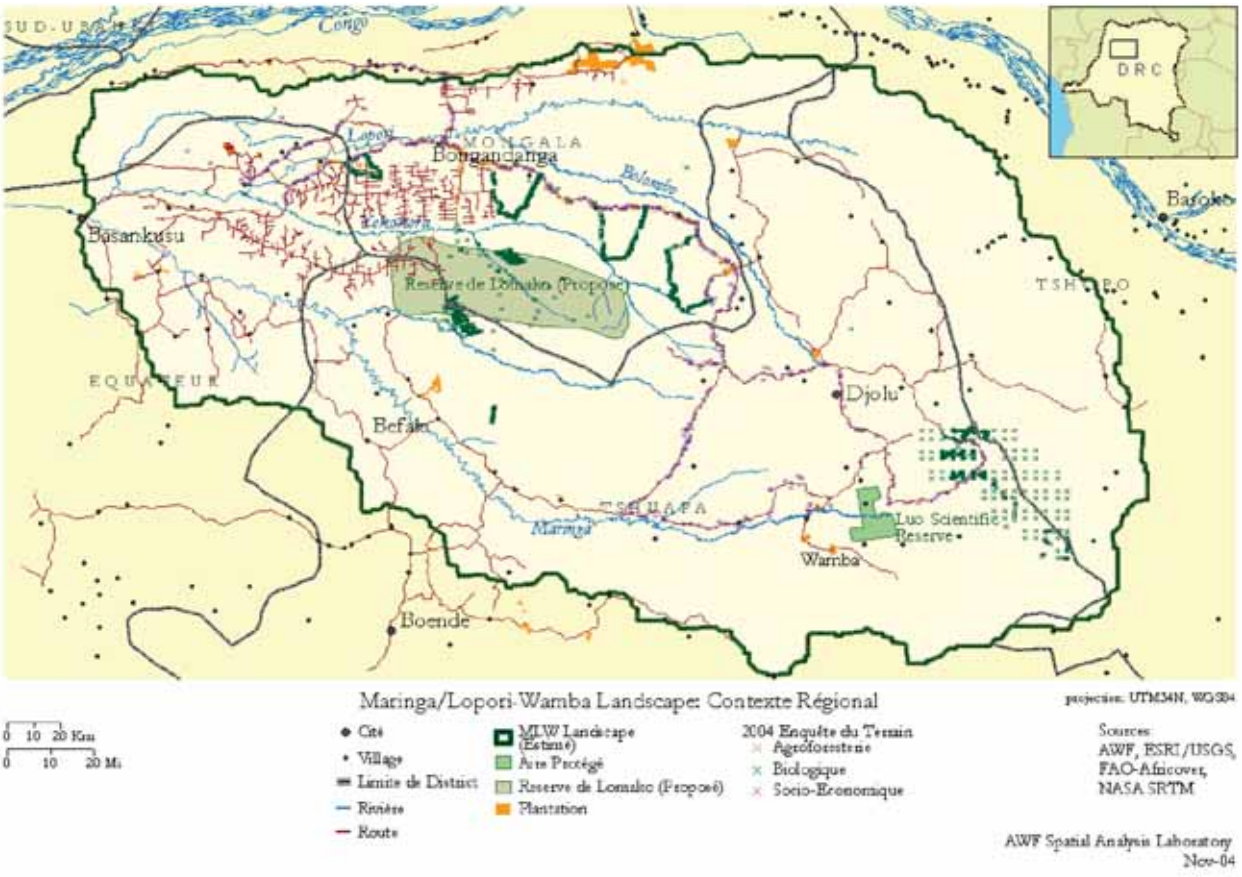
Data collection was stratified (see Figure 4), and partially based on satellite imagery:

- Socio-economic surveys were conducted along the axes of human habitation, i.e., along the roads. Focus was on the historically flourishing coffee and cocoa plantations, with some attention given to other agricultural activities. A total of about 1,200 km of roads (50 percent of the 2,400 km of roads in the Landscape) were covered, and data was collected at about 50 localities. Approximately 250 agricultural fields were geo-referenced.
- The biological surveys had two foci:
  - the status of fauna hunted for animal proteins, usually in areas located closer to human settlements;
  - the status of endemic and/or protected species located further away from the roads, in forest that might be suitable for protection.

The surveys were also designed to examine the linkages between socio-economic and biological factors. All data was collected in a participative way. Socio-economic surveys used focus groups; biological surveys were preceded by focus group discussions and the surveys were conducted with selected representatives of the villages. By using this approach we ensured complete transparency of the data collection approach and built trust with local communities.

The surveys also allowed the MLW team to scope out stakeholders more extensively. Stakeholder scoping is probably the biggest challenge in a situation where there is very weak governance, extreme poverty and an absence of effective means of communication. The expectations of a number of stakeholders were high and we encountered situations where individuals with a competing agenda were intentionally raising these expectations.

Figure 4. Example of mapped data for MLW Landscape



In addition to collecting data on the ground, satellite images were analyzed and basemap features such as rivers, roads, vegetation and others were digitized. Other spatial data collected for the MLW Landscape included previously derived products such as the 1990–2000 forest change dataset developed by South Dakota State University and the University of Maryland.

Combining field data with mapping techniques such as GIS and map-based visualization resulted in the first comprehensive, though rough, picture of the Landscape in terms of biodiversity, land use, socio-economic conditions and the spatial distribution of human populations. A total of 15 young Congolese researchers executed the data collection, entry and analysis.

Zoning and desired outcomes

Thinking about how to develop a strategic vision and objective outcomes for the Landscape, we translated the AWF strategic objective "to make the landscape ecologically, socially and economically viable" into desired outcomes specific to the MLW Landscape. Local communities considered making agriculture more profitable as the top priority for their livelihood security, closely followed by increasing producer values of non-timber forest products (e.g., animal proteins, medicines). This information was considered in conjunction with general theories of biodiversity conservation, notably the need to avoid fragmentation and destruction of the habitat for key species. This led to a focus on better spatial planning for the expansion of agriculture and other activities that require the conversion of forest habitat.

Using these general concepts, desired outcomes can then be translated into expected surface areas of land that should be included in different land-use zones, such as CBNRM areas, Protected Areas (PA) and Extractive Resource Zones (ERZ). However, considering that CBNRM allows for some habitat destruction for agricultural activities, AWF strongly urged the breakdown of CBNRM areas into "Permanent Forest CBNRM" and "Non-permanent Forest CBNRM".

Based on information and understanding acquired during Phase IIA, and taking into consideration the DRC national strategy for nature conservation, the general objectives for work in the MLW Landscape in Phase IIB were translated into the following indicative figures:

- Protected Areas: the national strategy for nature conservation states that 15 percent of the country's territory should be defined as protected areas, equivalent to at least 11,100 km^2 of the MLW Landscape.
- Non-permanent Forest CBNRM areas: based on the estimated number of inhabitants, and rough estimates of agricultural land needed per household, the Consortium estimated that approximately 9,000 km^2 of the MLW Landscape be identified as current and future agricultural land (i.e., 12 percent of the Landscape).
- Wetlands: satellite imagery shows important areas for water, covering about 10 percent of the Landscape.
- ERZ (Extractive Resource Zones): 33 percent of the Landscape is covered by old logging concessions that are under revision for conversion to ERZ. Considering the criteria for conversion, we assume that only Concessions K7 and K2 are really eligible, i.e., 10 percent of the Landscape. Thus, ERZs will cover 10–33 percent of the landscape, depending on decisions by the government on conversion.
- Permanent Forest CBNRM areas cover the remaining 30–53 percent of the Landscape.

Spatial modelling and monitoring

The MLW Consortium is using both analysis of satellite imagery and execution of spatial modelling as tools for land-use planning and monitoring. Marxan is a spatially explicit site-selection software used for spatial modelling to help understand landscape suitability. Marxan is being used in the MLW Landscape to identify areas most suitable for future human expansion, taking into account current needs for agriculture and livelihood activities. Simultaneously, a habitat suitability analysis for biodiversity conservation is being carried out. Both results are combined for identification of compatibility and potential conflict. Priority areas are identified that might need conflict resolution. Proposed protected areas are either justified or identified as better suited for conversion to agricultural land, based on model data and assumptions.

Similar spatially explicit tools are used for monitoring within the MLW Landscape. Locations of active bush/forest fires can be identified using satellite imagery and then used as an indication of human presence and habitat destruction. Analyses such as these serve as powerful tools for predicting patterns of land-cover change and further monitoring of the impact of the MLW programme. In addition to monitoring changes in habitats, a methodology has been developed and will be implemented to monitor changes in livelihoods in the MLW Landscape.

Summary of lessons learned

Heartland Conservation Process fits well with LLUP

Despite the absence of a LLUP Strategy Document[5] at the start of the MLW programme in 2004, we learned *a posteriori* that the implementation of

5 A document required by the CARPE programme, outlining a strategy for completing a landscape management plan.

the HCP responds well to the USFS guidelines for LLUP. Some of the requirements of the Strategy Document (desired outcomes, PPS, definition of the role of planning team members) were particularly well articulated using the USFS guidelines, by comparison with other approaches.

HCP includes stakeholder scoping, conservation target setting, data collection, analysis focused on threats and opportunities based on prioritization of actions, and well developed impact assessment. HCP aligns well with USFS-LLUP, particularly through the participatory "Threats and Opportunities Analysis" workshop. During this workshop, the results of stakeholder scoping and data collection/gathering are pulled together and the following are pushed forward: desired outcomes, creation of goal setting and objectives, identification of macro-zones, and elaboration of an implementation plan.

During Phase IIB (2007–11), we are implementing this merged HCP-LLUP strategy at a macro-zone level. Today, this process is focusing on a potential new Protected Area (the Iyondje forest or Congo-Lopori) and on priority CBNRM areas (the Lomako forest, the Lomako-Luo corridor, and/or Yahuma). Implementation in one of the ERZs (K7 and/or K2) will start soon. We hope to learn from this how the AWF-led landscape approach is replicable on a macro-zone level. The first findings are encouraging.

Together, these accomplishments suggest that this HCP-LLUP model can be a strong tool for participative land-use planning at the landscape, macro-zone and micro-zone level.

The LLUP team: Consortium building through thematic strengths

It is important to put together a LLUP team with thematic strengths. The partnership should enforce the possibility of joint activities that allow increased synergy between the different types of expertise present. Equally the partnership should be open to new partners that can come with needed, but so far absent, expertise.

The MLW Consortium in Phase IIB is much more effective than that in 2A because of its synergistic composition. For each activity the need for specific expertise is identified and mixed teams of Consortium members are created. One example of this is the development of a management plan for the Lomako forest CBNRM area, co-financed by the French government donor AFD/FFEM. In this area we are working with the local committees to develop alternatives to commercial bushmeat hunting and we are evaluating the potential for controlled hunting. REFADD analyzes potential alternatives to the unsustainable bushmeat trade with a focus on gender, and calls upon the expertise of ICRAF to develop and promote agriculture and agroforestry techniques and that of the WorldFish Center in order to improve post-harvest technologies for fish. AWF focuses on hunting off-take assessment. As a result, most field trips to the Lomako area are nowadays joint missions of REFADD, ICRAF, AWF and WF experts.

In August 2006, a field mission comprised of AWF, ICRAF and SNV staff was organized to Basankusu, Bongandanga, Djolu, Lingunda and back to Basankusu. A distance of before more than 1,000 km was covered on motorbikes and in canoes. In each location AWF led stakeholder discussions on HCP and LLUP. SNV facilitated the further development of the PPS. Within this framework of LLUP and PPS, ICRAF then further developed the support for agriculture and agroforestry.

This collaborative multi-institutional approach has ensured effective use of Consortium resources and the best possible outcomes for the MLW programme. It is important to recognize that using this approach, we have been able to develop MLW infrastructure throughout the Landscape, with shared MLW Consortium offices and Joint MLW Focal Points in each of the four territories and in Mbandaka, the capital of the Equateur Province.

Ownership of the process: The crucial initial step

Ownership of the planning and prioritization process by local stakeholders, in particular by various public-sector authorities and civil society representatives, is vital. The inclusion of an initial phase of participative exploratory meetings during which general concepts of LLUP are presented and discussed is an important lesson learned. Through intensive consultations, the MLW Consortium enabled sound understanding of the LLUP concept by stakeholders. This understanding underpinned the meaningful and valuable participative approach and enabled stakeholders to influence LLUP strategy development. The local stakeholders became co-owners of the MLW programme. Through this approach, the Consortium ended up focusing on priority activities that were not prioritized prior to programme implementation (e.g., the focus on improved market access for agricultural products).

However, we did not fully succeed in our attempt due to the difficulties of communication with most programme sites in the Landscape, which are extremely isolated. No matter how often we organized meetings, the majority of the local people were not able to participate. This leads us to the conclusion that a formal PPS (see below) is an essential complementary mechanism to the process of wide consultation.

Consultation supported with a Public Participation Strategy

Through the PPS we aim for real ownership of the project by the local communities. We have learned that

local communities are not used to an approach that allows them to influence general and specific methodologies during the conception of a multi-year programme. This confirms that, for most people and organizations, the meaning of true participation is not well understood. Local communities are used to "participation through information giving" and/or "participation by consultation" which do not concede any share in decision making; however, they are not used to participating in joint analysis and the preparation of joint action plans (Pretty, 1995).[6]

In addition, we learned that a good PPS is flexible and adaptive to the often rapidly changing reality on the ground. During the creation of the local committees, we learned that in Bongandanga, traditional chiefs are of high importance, in Basankusu, business people should be considered, while in Djolu the focus is on the well organized local associations. The composition of today's representative committees and their dynamics are different from those anticipated in Kinshasa. The MLW Consortium, together with representatives of the local communities, is therefore actively and permanently adapting the PPS.

The impact and reach of the PPS is constrained by poor communications infrastructure in the MLW Landscape. No matter how well developed the PPS, it is only by being present in the field that one can try to mitigate the impact of distorted information. Often, this information is spread by people with competing agendas. In July–September 2006, during elections, AWF was not present in the field. During this period, misinformation against the MLW Consortium was launched by some individuals. It took at least 3–4 months to correct the situation. Therefore during the elections in Befale, May 2008, we decided to be present both in Basankusu and Befale, and were able to intervene and mitigate potential detrimental rumours spread by politicians.

Focal points as interface between local stakeholders and partners in Kinshasa

After the "Threats and Opportunities Analysis" workshop, we decided to appoint MLW focal points on a provincial level (Mbandaka) and in each territory (Basankusu, Bongandanga, Befale and Djolu). Focal points are the interface between partners in Kinshasa and the local stakeholders. This mechanism proved very useful in two ways: the focal points could ensure that partners in Kinshasa are informed about activities in the field, and also provide a means to increase local stakeholder understanding of the MLW programme objectives.

In 2007, when requested by local communities, we tested giving local representatives the responsibility of serving as this interface. At the end of 2007, however, it was decided to re-install the MLW focal points. The decision was prompted by a participative SWOT[7] analysis, during which participants expressed the need to strengthen local representatives' capacities in domains such as communication, public participation and conflict resolution before transferring the role of interface to them.

This experience teaches us that: a) the importance of engaging focal points is acknowledged by local communities, b) local leaders currently lack the skills to play the role of interface between the MLW programme and the local populations, and c) our approach engages local communities in analyzing performance and implementing adaptive management.

The use of local and national committees as key to the Consortium structure

The Phase IIB MLW Consortium structure is working quite well, and is a great improvement on that in Phase IIA. However, there is always room for improvement. For example, the functioning of the Landscape Steering Committee, composed of stakeholders of the national government and members of the MLW Consortium, would benefit from more intensive contacts with and between members. This is extremely important because the Committee is supposed to enable formal recognition of the LLUP management plan and its integration into national policies and strategies. Without formal recognition, all the effort that is put into land-use planning is at risk. If functioning well, the Landscape Steering Committee would also inform the MLW Consortium on other initiatives going on or planned in the Landscape, but this has not been happening, for example with regard to planned logging within the Landscape.

At a local level, the MLW Consortium regularly consults with local authorities, though a more in-depth strategy is needed that incorporates the role of authorities at national, provincial and local level. In the past, thanks to close contact with provincial authorities, the MLW team was contacted directly when activities were under development in the Landscape. For example, when a logging company wanted to have a logging concession in the Landscape, the provincial authorities contacted MLW for advice. As a result of this consultation, the logging title was never attributed.

At times there has been insufficient sharing of information between local communities and associations, and the Consortium. Several NGOs in the Befale and Djolu territories are collaborating with projects similar to those in the

6 Pretty, J.N. (1995). *Regenerating Agriculture*. London: Earthscan.

7 Strengths, Weaknesses, Opportunities, Threats.

MLW programme. For example, in some villages, SECID/RE-COMMIT[8] is supporting cassava production, while ICRAF/MLW is working at improving food crop production with the same farmer associations. This in itself is not a problem as long as the approaches do not conflict with one another and interactions are transparent. On the other hand, some projects in the Landscape pursue objectives that are at odds with those of the MLW programme. This is the case, for example, with the international NGO Bonobo Conservation Initiative (BCI), which follows a fairly unilateral conservation concession approach through collaboration with a small elite in the same area where the MLW Consortium is promoting combined spatial planning for sustainable hunting and expansion for agriculture based on broader public participation. Local communities are confused and competition to get access to the resources employed by the different programmes is increasing. This leads to distorted information and a loss of credibility for the conservation and/or development programmes. We have learned again that a permanent field presence can help mitigate at least partially for misunderstandings and conflicts. It allows for responsiveness to questions from stakeholders. But it is not a substitute for the good will of implementing agencies in looking for and reinforcing synergies.

Regular review of vision, objectives and desired conditions for LLUP

At all times, activities and planning in individual zones should reflect the overall objectives for the Landscape. Having a harmonized vision for the Landscape has also facilitated the presentation of the MLW programme to authorities, local communities and other stakeholders. The set of objectives and related approaches evolves as a result of changing dynamics on the ground. The conversion of old logging titles, changing values for cash crops, arrival of private companies, changes in the priority agenda of the national government and new initiatives of major funding agencies, all have an impact on how desired conditions are translated into achievable objectives.

In 2004, the MLW Consortium focused on a landscape approach, identifying overall conservation objectives, desired conditions and priority areas. The priorities at that time were creation and participative management of the Lomako Yokokala Faunal Reserve (Réserve de Faune de Lomako Yokokala – RFLY), a communal hunting area in Cadjobe and small enterprises or community forestry in Lomako. Due to its focus on these few areas, the landscape vision disappeared little by little into the background and local stakeholders disengaged or even opposed the MLW programme. This is for example the case for the people living north of the RFLY.

Only in 2008 did the MLW Consortium re-invigorate efforts and vision in a landscape-wide context. Several actions helped to achieve adapted management of landscape objective setting, notably the further development of the PPS and the Consortium workshop on “development of a methodology to monitor the impact of the MLW program on decreased habitat destruction and on poverty reduction”. Regularly reviewing the vision for the Landscape not only supports successful LLUP, but also enables Consortium members to join with partners to try to access new funding mechanisms. At the time of writing this paper, three joint proposals have been submitted for funding.

Imaginative use of geospatial tools

The MLW Consortium use of spatial modelling and satellite data for planning and monitoring simultaneously may prove an efficient strategy that could be replicated elsewhere in the Congo Basin. In order to be meaningful at the local level, these approaches must be combined with *in-situ* datasets from the ground, and feedback mechanisms must be established as part of the PPS to ensure data validation.

Results of the spatial modelling in the MLW Landscape are being used for further priority setting during participative meetings. Participative field data collection related to human activities, vegetation and biodiversity is fed into the modelling process and allows for regular updating of outputs. For example, faunal surveys in Cadjobe informed the team about depleted fauna, despite predictions to the contrary.

In consultation with local communities, the MLW Consortium has decided to prioritize support for agricultural livelihoods through Phase IIB. This decision has been confirmed and justified both by feedback received from local communities as well as results from the Marxan spatial modelling tool. In addition, we have used spatial data and models to understand the importance of certain areas in the Cadjobe forest for maintaining connectivity for wildlife between the RFLY and the Luo Scientific Reserve.

We will further develop these ideas and methods through implementation on the ground and will build HCP-LLUP as a tool for planning and adaptive management at landscape level, thus, we hope, contributing to a methodology that will be replicable elsewhere in the Congo Basin.

8 South-East Consortium for International Development/ Reintegration, Conservation and Community Recovery Project.

Chapter 2

Land-Use Planning in Central African Protected Areas: Examples and Lessons Learned

Geoffroy Mauvais

Protected areas are like young children, the oldest being scarcely more than 100 years old, and with a lot of hope riding on their shoulders. They grow and spread (more than 12 percent of the earth's land surface), and fill any space that is available. They sometimes grow without knowing exactly why, how and for whom… They try to rescue biodiversity, often fail, start again, change their strategies, philosophy, methods: moving from a conservationist approach where they were protecting nature from humans, to a participatory approach in which they try and integrate humankind into nature. They have gone through many stages, making many U-turns, to the point of blurring the path that they were following.

Protected area managers, whoever they are, are all like parents. They expect the best for and from their children. They set them impossible objectives and nurture unachievable ambitions for them. They look at them with eyes that are anything but impartial, are inclined to be more emotional than rational, motivated by passion rather than reason. Over time, they ask everything of them and more. As they grow, protected areas bring them with joy and often disappointment. And inevitably, they become what they should, or could, have become, and what nobody could have expected.

This is the story of these rather complicated lands, which within a few decades have become powerful tools for the spatial organization of our planet, more and more known and acknowledged by mankind as our environmental awareness grows. They have gone from being a few sanctuary parks, created from a vision of paradise that undoubtedly never existed, to sustainable development landscapes where nature has become a component of progress that is seen as infinite, which will also certainly never exist – an endless to and fro between two extremes that are linked: wild nature that needs to be saved from humans, humanity that naturally respects the future of its ecosystem.

All this to say what we already know: there is no magic formula to save nature any more than there is a perfect recipe for sustainable development. It all depends on the context, places, time and people. In the forests of the Congo Basin, the Central African Regional Program for the Environment (CARPE) has developed a pragmatic and adaptive approach to conservation and land-use planning (LUP). Three examples are presented here, from Cameroon and the Democratic Republic of Congo (DRC).

The CARPE approach to land-use planning of protected areas: an overview of three case studies

One philosophy, three contexts

The philosophy that these three experiences share is a simple one, and may be described as "common sense": land-use planning of a protected area and its periphery has to be done through a participatory process, involving all the relevant stakeholders and taking account of the interests of each and everyone (not forgetting, of course, those of the protected area). This holistic and participatory approach has underlain many conservation projects over the last 30 years, as part of the movement known as "sustainable development".

1. Lobéké National Park (south-east Cameroon). The task here is to organize a complex landscape made up of: a park of about 200,000 ha (which at the start of the project had not yet been created), village hunting concessions, commercial hunting grounds, and community and commercial forests (altogether more than 1.4 million ha), while taking into consideration the presence and specific needs of sometimes vulnerable ethnic groups, such as the Baka pygmies. In this landscape there are various and sometimes opposing interests, which can cause conflicts between stakeholders. In response to this, the "Jengi Forest" project (World Wide Fund for Nature, WWF) has set up an advisory committee that includes donors such as GTZ, the State, represented by its Ministry of Forestry and Wildlife, local administrations and all the representatives of the aforementioned interests, within the framework of establishing the transboundary Sangha Tri-National (TNS) conservation landscape between Cameroon, the Central African Republic and the Republic of Congo. The project is starting off amidst chaos where the law of the jungle prevails, and people's only aim seems to be plundering all of the area's natural resources. Land tenure, access rights, ancestral rights, none of these are respected. The biggest losers, even though they are also participants in this mess, are the local population and particularly the indigenous people.

The planning process in Lobéké started with detailed studies of the exceptional natural wealth of the site, and the distribution of the main pressures. These studies were carried out mostly by WWF and WCS (Wildlife Conservation Society). The key mission of the advisory committee created by the "Jengi Forest" project was to negotiate with villagers and other users of the lands earmarked for the creation of the Lobéké Park, and then to organize the park's peripheral areas. During public meetings, the challenges, mapping and management options were discussed. Out of these meetings came proposals for the boundaries of the park, and various allocations of the surrounding lands for hunting, forestry etc. But they were also an opportunity to pinpoint the expectations and/or the demands of the local population and other interest groups, and to find solutions together, for example developing the fight against poaching in forest concessions, or sharing the meat from the animals killed on safari with the local communities. One crucial point was defining the rights of certain sectors of the population within the park itself, in a zone especially set aside for them, something which up till then had not been done in national parks in Cameroon.

2. The Tayna Nature Reserve (DRC). This reserve, in the Kivu mountains, was created in a very different way from the Lobéké National Park. In 2000, thanks to the good will of some indigenous peoples (including chiefdoms), and based around an old hunting reserve, the "Tayna Gorilla Reserve" was born, a local association devoted to the creation of this nature reserve. What was remarkable was that this took place against a backdrop of a fast-increasing population, the presence of valuable minerals and unpredictable governance. It did not take long for this initiative to attract big conservation NGOs, particularly the Diane Fossey Gorilla Fund International (DFGFI), followed by Conservation International (CI), and it has received support from CARPE since 2003. It is not possible to describe adequately the difficult path that had to be taken, in the extremely tense context of civil war, to create the reserve that we know today (the core area is 90,000 ha). But at every stage, recognition of the reserve by all interested parties was sought. The initiative has remained under local leadership, sourcing its workforce from the region, implementing pilot development projects on the ground, letting the local authorities have their say and leaving leadership to them.

The land-use planning process is drawn from the same inspiration. In 2002, concerned with what would become of the reserve, the local chiefdoms defined the boundaries and zoning of the reserve, taking into account future potential, the established villages and existing types of uses. They based their designations on the surveys carried out with international NGOs (DFGFI and CI) on the natural wealth of the forest and the pressures on it. The plan was submitted to Government for official approval. In subsequent years, the boundaries of the core zone were modified by consensus to take into account more specific management realities on the ground (administrative boundaries, the presence of flagship fauna, etc.) which is testimony to an adaptive and coordinated process. These boundaries were in turn validated by the State. Once created, the Tayna Nature Reserve became an integral part of the network of protected areas in the DRC, with community-based management carried out by a Site Coordination Committee (*Comité de*

Coordination du Site or *Cocosi*). The boundaries were marked out and the management structures (plan, staff, procedures) put in place. The same process has since been followed in other regions in the DRC.

3. The Okapi Faunal Reserve (north-east DRC). This reserve was created by the Government in 1992. The unique feature of this reserve is that it recognizes some usufruct rights to the resident population (grazing livestock, hunting) but obviously prohibits those that are commercial in nature (mining, logging, commercial hunting etc.). The reserve is managed by the Institut Congolais de Conservation de la Nature (ICCN), in partnership with two international NGOs, WCS and Gilman International Conservation (GIC) and, from the start, was threatened by the rapidly growing population in the area; a population that depends mostly on natural resources, both renewable and non-renewable, for its survival while at the same time the management capacity of the State is still very inadequate.

The planning process promoted by CARPE took another direction here. The aim was to facilitate the effective management of a reserve that had already been created and recognized, while integrating various "micro-zones" of human activities into it. The process was based on raising the awareness of the inhabitants to the conservation challenges and the importance of zoning for the long-term management of the reserve. A collaboration agreement was adopted between the villages and the reserve, the first such formal engagement. After studying existing types of use, the potential of the land, the needs being expressed and existing realities, a proposal for functional zoning was submitted and discussed with the village concerned, both indoors and on the ground. Negotiation then made it possible to specify and redefine this zoning, until a common agreement was reached between the reserve and the inhabitants. The signing of the zoning document and the concrete establishment of boundaries on the ground concluded the participatory process, while the zone thus identified was introduced in the management plan. The designation of hunting grounds within the reserve followed the same process.

First tangible outputs

In the case of **Lobéké**, the main outcome of the consensual LUP process was simply the gazettement of the zone into a functional national park, without making the same mistakes as in many previous gazettements, that were carried out in an uncoordinated manner and generated frustrations and conflicts between the various stakeholders in and around the parks. Besides the gazettement and clarification of multiple-use zones near the park, the process itself has made it possible to institute a dialogue between all the actors in the area. The "Mambele Convention", signed by all the parties involved, was the final outcome that established the rules and responsibilities of each and everyone according to their situation and their rights. In addition, logging companies have decided to become more committed to conservation by adopting the certification system. Local social and professional groups, especially village hunting groups, have also organized themselves in the course of this process, and formed a committee to develop wildlife resources (*comité de valorisation des ressources fauniques* or *COVAREF*). This committee has instigated many community projects (schools, public health, sanitation …) thanks to the income derived from organized hunting near the park. Another interesting outcome, and the most unexpected, was logging companies joining in the fight against poaching, and some of them also investing in the provision of local social amenities (dispensaries, schools etc.), that would certainly not have been achieved without this preliminary planning work. Finally, in 2007, a park management committee was set up, bringing together village representatives, the administration and NGOs, to implement the management plan. This body is a testimony of the continuation of the participatory process, beyond just the initial planning.

In Kivu (DRC), the major outcome here too was the gradual gazettement of the **Tayna Nature Reserve.** Having become part of the country's network of protected areas, and as such placed under the responsibility of the ICCN, it is managed by the local group of actors who started the process and who have since become an officially recognized NGO. A Cocosi is therefore in place, while the reserve has been demarcated on the ground with and by the villagers themselves, after successive revision of envisaged boundaries to take into account increased knowledge of the challenges (location of important sites for biodiversity) and pressures (conflict areas, administrative zoning). Throughout the process, raising awareness has been at the centre of the planning efforts. This was done to include all local actors in the decision making. This has made it possible to raise the degree of environmental awareness significantly, and to propagate at all levels the knowledge that the reserve management team accumulated while the surveys were being undertaken. As further proof of its interest in, and commitment to, the local population, the reserve management team draws on local people for its workforce for all its activities. The reserve was gazetted when the main areas of tension had been alleviated.

Finally, through land-use planning, the **Okapi Faunal Reserve** has redefined its landscape in such a way as to allow all actors with user rights to take part in the management and maintenance

of the reserve, while respecting the conservation objectives assigned to it. At the end of the process, 11 zones were allocated for agriculture and six for hunting, within the reserve. The rest of the reserve was dedicated to conservation, and special efforts were made to research and map this conservation landscape, to raise its profile and promote a feeling of ownership amongst the local people. The participatory process also made it possible for problems to be aired and, very often, for common solutions to be found.

Key lessons learned

Each approach has generated its own lessons. Without being fundamentally different, they are distinct depending on the context, the place and the actors. Their main common factor is that they were born on the ground, as the project was being developed. Other lessons would undoubtedly, for some probably, contradict what today we think we have understood. That is the essence of "participation" that allows for the emergence of all opinions, is open to contradiction and, thus, takes the risk of opinions changing over time.

Some local lessons …

The case of **Lobéké** shows the complexity of land-use planning when there are many "strong" parties (logging companies, safaris, local commercial hunters) interacting and whose activities spread over the landscape. When "less strong" groups (local populations, indigenous people) share the same land, relations can become strained and only dialogue with mutual respect can help relieve tensions. As was well understood by the implementers of the "Jengi Forest" project, the most insignificant actor in the landscape could be the one to cause the whole process to fail. The major role of the conservation NGO is therefore to be a mediator who, more than just a good listener, knows how to let each actor air his/her views so that no-one feels left out.

A park such as the Lobéké National Park depends very much on its periphery. Land-use planning should therefore include all on-going uses in the periphery, in a bid to optimize the conservation measures taken inside the park. The collaboration of actors does not require commitment to all the challenges or priorities, but an understanding of the essential ones, as for example with logging companies that have invested in the fight against poaching in their own concessions. In order for this collaboration to take root, it needs to be steered locally, by the legitimate administrative authority but one that is also very close to the actors. It is necessary for people to get to know each other, talk to one another in order to finally listen and sometimes even agree with one another. Here too, the NGO partner has to adopt a guiding role to promote dialogue and understanding, even if at any given time the outcomes may seem insignificant. Finally, and this is a prerequisite to the development of the entire process, NGO partners can help with their specialist knowledge of the landscapes and of the challenges of conservation, development and culture. This knowledge, combined with their neutral and independent status, allows an objective picture to be drawn of the land being "allocated".

The experience in the **Tanya Nature Reserve** teaches us many other things, even if their essence is the same and the purpose is to ensure that all stakeholders take part in the planning. It emphasizes the need to gauge properly the consequences of actions to be undertaken, and not to fall into the trap of responding to demands, albeit local, which do not take into account all the parameters of the zone, especially conservation priorities. Preliminary studies to get to know and understand the structure and functioning of the land are essential (and NGO partners have an important role to play here). The reserve came into being in the particular context of war in the DRC, and it shows that in the absence of any kind of reference to governance, conservation can still be possible, provided it is neither partial nor partisan. It is also necessary to move quickly from words to action and show that conservation effectively has measurable economic benefits. The first action is to give priority to local people as regards the jobs generated by the reserve. Furthermore, Tayna did not hesitate to take former hunters on to its staff, to show that conversion is possible and that there are alternatives to poaching. Since knowledge of land is a dynamic process, the Tayna Reserve also invested in training its staff to collect field data, including constructing an accurate spatial representation of the environment and challenges. Special emphasis was also placed on raising the awareness of the local population through a standardized approach that brought to the fore the long-term benefits of the LUP process. A standardized approach was important to enable the information to be disseminated efficiently, using local NGOs, and to ensure that "individual" approaches were not developed, leading to the risk of confusing the message. Even if the advice and guidance of international NGO partners have been decisive, the LUP process has always been controlled at the local level, in order to ensure its effectiveness on the ground, and its connection with the realities of the situation. The consequence of this "on-the-ground" approach is that the boundaries of the core zone of the reserve (conservation zone) were modified several times, to take into account the real pressures, the conservation and administrative challenges. This "flexibility" during the establishment of the reserve was encouraged by the State which did not hesitate to modify, accordingly, the gazettement decree. Promoters of the reserve also insisted on the importance of physically marking out the various boundaries of the multiple-use zone of the reserve (conservation zone, buffer zone, development zone) with and by the villagers, to ensure their

understanding of the plan, and again to be able to offer direct employment opportunities. Finally, even if the birth of the reserve has followed a very different path from other parks, it is important that in the end it should be integrated into the protected area network of the country, and be considered as a substantial addition to its representative nature. The creation of a management body made up of all the interested parties (the Cocosi) is the next step in finishing the work already undertaken to set up this reserve.

The case of the **Okapi Faunal Reserve** is in itself more traditional given that it starts with a park that has already been created and recognized (World Heritage Site). The challenge here is not to map out a conservation zone, but to optimize its management while taking into consideration its special statute that provides for usufruct rights for the resident population. The LUP process thus aimed, first and foremost, to raise the awareness of stakeholders of the limited nature of the resource, and the need for coordinated holistic management. The particular context of the zone, which has a large immigrant population, required that the indigenous population be given a say, as they were generally less able to stand up for their rights, and liable to take short-term decisions that may be detrimental to themselves in the longer term. Thus, emphasis was put on raising awareness so that the local people understood their rights, and could measure the contribution of conservation in their everyday environment. During the planning process itself, efforts were geared toward achieving an unambiguous understanding of the objectives of the reserve. This did not entail removing the rights of villagers, nor did it mean that the reserve had to compromise its prerogatives; the common objective was to achieve optimum management of the limited space. A lesson learned in the course of the process was the need to continue listening to all and not to be distracted by short-term interests that kept coming up during discussions. As a result, the reserve now has functional zoning that is accepted by all.

…And some general lessons

Many common lessons may be learned from these experiences. They are *inter alia*:

- Effective dialogue is often only achieved, paradoxically, when there are more than two persons involved. Many of the situations described could have been resolved by simple consultation between the protagonists but this does not happen. There is a need for third-party intervention. Mediation by international conservation NGOs can make it possible for the parties to accept sitting around the same negotiation table. These NGOs describe themselves as “mediators” or “facilitators”.
- Knowledge of the environment, of its strengths and weaknesses, the challenges and pressures is indispensable. It is useless trying to undertake joint planning without having prior knowledge of the situation on the ground. Given that each actor will come in with just his or her own knowledge, that may well be limited or subjective, the sum total of everybody’s knowledge will not necessarily give a true picture of the reality. The information-gathering phase can also help in identifying problems, to better circumscribe them, and could be very useful later in the negotiations.
- Planning is a rigorous process that requires a lot of improvisation. While the route has to be marked out, the objectives have to be understood, the choices have to be understood and shared, it is also necessary that, throughout the process, one continues to be aware of what is taking place on the ground, and is prepared to change course as often as is necessary. What is important is no longer to know what has to be done, but to find out what works and will lead to solid results.
- All actors are important, and one should give priority to those who seem, quite rightly, to be relegated to the background, i.e., those who are not heard because they are generally not invited to discussions, or who do not have a full understanding of the challenges, or who are usually reluctant to take part in such meetings … It is generally amongst these people that you will find the weakest link that may cause the whole arrangement to fail. It is necessary to identify them and give them the place they deserve. That is another vital role that NGOs can play.
- In the end, land-use planning does not change the realities of the world. It is therefore necessary to ensure that decision makers (and especially the State and its various bodies) take part in negotiations, and then in the decision making. Without the support and political will of the government, a sustainable outcome is impossible. The participatory approach therefore requires that all stakeholders from all walks of life be brought together.
- At the same time, local interest groups have to be helped: to be better structured, to be more capable of expressing their expectations, to be more representative of the local population, and thus to become more reliable partners with which to embark on a joint venture (the three experiences are built on a “contract of trust”). Although these groups may generally be legitimate, it would be a mistake to think that this means they are representative, let alone efficient. Working with weak local groups is building a weak partnership and a fragile future.
- “Moral, ethical and philosophical principles are essential” – this is what the Tayna Reserve teaches

us. In addition to that, coordinated land-use planning requires respect. It is not only necessary to analyze or understand the aspirations of the other stakeholders, it is necessary to accept them in their context for they are not, generally, determined by anything other than legitimate needs, or at the least are felt to be such. Obviously, these principles sometimes weaken in the face of foreign partners, or are sometimes galvanized by a logic in which the land itself is secondary … NGOs can play the important role of watch dog in these circumstances.

- Raising awareness is therefore a vital phase. Everyone has to understand the subject matter, and no longer view the land just through his or her prism. All planning work – especially zoning of activities, or rights, or challenges – should lead to a common understanding of the problems or opportunities, to facilitate a meaningful dialogue in the future.

These lessons, and many others illustrated by these three examples, will inspire those who are committed to the adventure of participatory land-use planning for their own protected areas. This also applies to those who are responsible for developing new ones.

Conclusion

The three experiences developed here, with the support of CARPE, certainly do not cover all the possible aspects of the participatory approach as conceived and elaborated over some decades now. They do however illustrate very well that there is potential for action to be taken in the Central African forest context, where there are mixtures of scales, challenges and actors. Multinational companies work alongside small local producers; industrial development is threatening endemic species; exploitation of natural resources is increasing while the resources themselves are decreasing; powerful migrants are coming up against fiercely sedentary peoples who are not well equipped to stand up for their rights. Men and women are taking up the challenge of conserving "their" nature while international NGOs would like to preserve "the" nature … All the ingredients are there for misunderstandings and conflicts. Meanwhile, each in their own way, these three experiences show how to overcome these differences. Each of them describes a different way to arrive at the same end result: conserving an ecosystem, if not in its original state, then at least in a sustainable state. Each of them shows that, one by one, it is possible to overcome every hurdle. We must congratulate those who carried out this work, the local people that committed themselves, their representatives who were able to bring everyone on board, the administrative authorities who for once, encouraged decentralization, the State that allowed or sometimes even promoted this approach, environmental NGOs that turned away from theory to face the realities on the ground. These experiences are promising and are already being emulated. This is all to the good. They are however still fragile, given the challenges ahead, and their balance sheet will need to be examined in 10 or 20 years to come, to know if today's success is truly the foundation for the success of tomorrow.

As for lessons learned, they are already out there. Each one of us stands to benefit if we can adapt them to our own working environment. If these experiences are to be summarized, three major factors come to the fore:

- **Trust:** none of the three LUP endeavours would have gone this far without real and absolute trust between actors. It is easy to say that dialogue is "instituted", easy to pretend that we "listen" to others, easy finally to say that we work in a "participatory" manner. But it is much more difficult to actually do it, and to continue to do it in spite of the difficulties that arise. In these three stories, there was no hypocrisy, no lies … there were complicated situations, difficult discussions, outcomes that may have been less successful than those planned … but there was always consultation and sharing of decisions.
- **Time:** undoubtedly the key factor in achieving trust. If there is no time to meet, to listen to one another, to understand one another, to convince one another, to change ideas, to change everything … it is not possible to have trust. The best ideas need time to flourish. Furthermore, they need time to evolve and to face the hard realities of the field, a process which will sometimes cause them to be relegated to the level of a mere "concept". Each of the experiences presented here did it their own way, sometimes rushing phases, while still respecting the "timetable" of others. However, much more time is still needed to move from on-going experimentation to the day-to-day and sustainable management of parks.
- **Work:** discovering these three projects has been an inspiration, and just a few pages have described what was done, why and how. But this disguises a major reality. For nothing was produced by chance. Nothing could have happened by itself, simply with trust and time. This may sound banal, but these results have been achieved because men and women have worked, not just with extreme dedication, but sometimes above and beyond the call of duty too. There are hundreds of projects like this but only a handful that get this far. It is not a matter of

luck; what counts is the energy expended by those who determine the future of the project: local actors, paid staff of international NGOs, representatives of local administrations that care, and those others, often isolated individuals whose contribution can be crucial, maybe someone from a forest concession, a development project, a school, the media.

Trust, time, work – indispensable ingredients for enabling human societies to live together. Just remember, protected areas are a human invention and like all its inventions, they only work if the inventor wants them to work. *Really.* '

Case Study 1

Okapi Faunal Reserve, Ituri-Epulu-Aru Landscape, Democratic Republic of Congo

Ellen L. Brown

Introduction: Overview of the Okapi Faunal Reserve

The Okapi Faunal Reserve (OFR) is a protected area in the Ituri Forest of north-eastern Democratic Republic of Congo (DRC) that covers more than one third of the Ituri-Epulu-Aru Landscape.[1] The OFR, created in 1992 and added to the list of UNESCO World Heritage sites in 1996, boasts high levels of biodiversity and endemism. The Reserve harbours several high-profile species including Okapi, Forest elephant, Chimpanzee, 13 monkey species, Leopard, several species of forest antelope, and Buffalo. The Ituri forest is valuable because of its biogeographic history as a Pleistocene refugia with endemic plant communities found in rocky outcrops, or inselbergs, in the Reserve.

In addition to being a world-class site for the study of tropical forest dynamics and wildlife conservation, the OFR is home to ethnically diverse human communities[2] including hunter-gatherers (Mbuti and Efe Pygmies) and Bantu and Sudanic-speaking shifting cultivators (Bila, Ndaka, Lese, Mbo, Manvu and Budu) who participate in social institutions based on exchange relations and reciprocity. The Reserve is unique among protected areas in DRC because it is a high-profile high biodiversity site where, unlike national parks, livelihood activities, such as farming and hunting, are permitted by the resident population. People may practise hunting and gathering, fishing and farming but they may not carry out activities that are permitted in villages outside of the protected area such as gold mining, timber exploitation, plantation agriculture, and commercial-level bushmeat hunting and trade.

The Okapi Faunal Reserve is under the management authority of *l'Institut Congolais pour la Conservation de la Nature* (ICCN). ICCN is joined by two conservation NGOs, Wildlife Conservation Society (WCS) and Gilman International Conservation (GIC), and together the three organizations constitute the Reserve's management committee. In this paper when reference is made to "the OFR" as a stakeholder, the OFR is shorthand for this management committee.

Although ICCN has the management mandate for the Reserve, they generally lack resources to carry out the Reserve's conservation and livelihoods objectives. Land-use zoning is facilitated by Wildlife Conservation Society's Community Conservation Program (WCS-PCC) which is composed of 11 full-time staff members including four agronomists.

The Reserve is situated on a settlement frontier where the population density is increasing in part due to immigration from the highly populated Kivu regions where densities surpass 100 people/km^2. Since the 1980s with such events as the liberalization of mining (especially gold) and two civil wars, the region has seen an influx of migrants who come in search of arable land and economic opportunities. People have very few employment options and must rely on their farms and the forest for all of their needs.

In the period following the end of the war in 2003, Reserve managers worked to secure the forest and stop illegal activities. Mixed teams of ICCN eco-guards and the Congolese Army effectively evacuated active gold mines and poaching camps in the Reserve. Despite the fact that certain efforts by local farmers, such as seed storage and increased food productivity, were completely wiped out during the conflict period, people had the courage to try again – which has enabled land-use planning and agricultural activities to proceed. Alongside progress with land-use zoning, the Reserve management plan is being revised including detailed guidelines on access to and use of land and natural resources.

In 2006, DRC held its first presidential election in over 30 years and since then, institutions and government agencies have begun to regain some of their functions and widespread national road rehabilitation is underway. The government is revising conservation laws and drafting implementation guidelines for the national forestry code. National efforts to repair dilapidated infrastructure are being carried out in

1 The OFR covers 1,376,000 ha of the Ituri-Epulu-Aru Landscape which spans a total of 3,600,000 ha.

2 17,000 people inside OFR borders and an additional 37,000 people within a radius of 15 km around the OFR, according to a 2003 population census conducted by the Wildlife Conservation Society Community Conservation Program (WCS-PCC).

the Landscape. The main road (RN4)[3] that bisects the OFR, and another road that forms the Reserve's eastern boundary, are being repaired. Most villages and agriculture clearings are located along these two principal roads. Improved roads will facilitate increased immigration to the area and enhance market access as people come in search of land and forest resources.

Land-use planning in the Okapi Faunal Reserve

In order to manage the OFR effectively for biodiversity conservation and sustainable livelihood support for the resident population, a land-use zoning plan, supported by USAID-CARPE, is being implemented. The micro-zoning includes areas for hunting, agriculture and settlement, and conservation. The zoning system formalizes limits to agricultural expansion and subsistence hunting, limits that are based on the number of resource users. As mentioned above, the OFR is unique because it is a protected area managed with community-based natural resource management "micro-zones" in its interior.

Protected area land-use planning methodology and results achieved

Box 1 provides a summary of the land-use planning steps used for agriculture zones in the Reserve; after a detailed explanation of the agricultural zoning process, a brief description of the methodological considerations for hunting and conservation zones is provided.

Methodology for agriculture zones in the OFR

1. ***Sensitization:*** The first step in the land-use zoning process is to introduce the notion of zoning in the Reserve through a series of formal and informal meetings with village chiefs, landowners (people who have ancestral claims to land), and various members of the community, especially indigenous farming groups.

2. ***Signature of collaboration protocol:*** A collaboration protocol is signed between representatives from the OFR (ICCN and WCS-PCC) and the local community (usually village chief and/or elders) that states that the village is ready to proceed with the process of zoning. This document does not mention limits or area; it is only a step to formalize the beginning of the process.

3. ***Census of agricultural households:*** A census of agricultural households, those heads of household who have farmland in the village, is conducted in order to estimate the area of land required for farming. The size of agriculture zones is based on the number of agricultural households. ***Socio-economic studies:*** The order of steps is flexible. For instance, a census of agricultural households and socio-economic studies may be conducted before a collaboration protocol is signed to begin the zoning process. Socio-economic studies are conducted to document village history, ethnic groups present, sources of revenue, hunting and farming methods, agricultural production, educational level, social problems, conflicts between different groups, and the relative power of chiefs and landowners.

4. ***Proposal of agriculture zone limits by village elders (customary landowners):*** The village elders, who are recognized as the customary land owners, make the first proposal regarding the size and outer limits of an agriculture zone. Often they propose natural limits such as rivers and hills that lie beyond the forest that has been cleared in recent history. WCS-PCC reviews their proposal in terms of area (ha) and limits, and evaluates it based on estimated land-clearing rates which take into consideration factors such as age of the fallows, number of consecutive years a field can be farmed, average field size, number of agricultural households, and

Box 1. Summary of agricultural zoning process in the Okapi Faunal Reserve

1. **Conduct sensitization meetings**
2. **Sign collaboration protocol**
3. **Conduct census of agricultural households and socio-economic studies**
4. **Agriculture zone limits proposed by village elders (customary landowners) and documented with GPS**
5. **Identify and map the extent of agricultural clearing with GPS**
6. **Produce map; present map and zoning recommendations to community members**
7. **Negotiate agriculture zone to be delimited**
8. **Agreement reached between representatives of village and OFR authorities on the zone limits**
9. **Ceremony to place boundary markers and signposts and signature of agriculture zone agreement**
10. **Delimitation: clear the perimeter of the agriculture zone and demarcate zone borders where natural boundaries do not occur**
11. **Validation of land-use zones in protected area management plan**
12. **Zone management**

3 *Route Nationale 4;* or National Road No. 4 in English.

population growth rate. The proposed agriculture zone (size and limits, number of agricultural households) is presented to the Reserve management committee.
Participatory mapping of outer limits proposed by village elders with GPS: A team composed of village representatives and WCS-PCC field technicians maps the limits proposed by the customary landowners using GPS units.

5. ***Identification and mapping of the current extent of agricultural land clearing with GPS:*** A mapping team of WCS-PCC field technicians and village residents walks along the perimeter of active fields and fallows to create a map of the current limits of agricultural land clearing – where fields and fallows meet primary and secondary forest.

6. ***Create map of current agricultural clearing and outer limits proposed by village elders and chiefs:*** After prospecting the outer limits of an agriculture zone and the limits of agricultural clearing, the geo-referenced data collected during the field missions is transferred from GPS units to a computer at the main office for clean-up and analysis, first in Excel and Mapsource, and then in ArcView. WCS-PCC technicians also make a poster-sized map of the proposed agriculture zone using the geographic way points collected in the field and translating them into angles and distances on the map for presentation to the community.
Presentation of map and zoning results to community members: Community members representing different groups (Bantu men and women, Pygmy men and women, etc.) are trained to present zoning objectives and to use the map to explain the village agriculture zone to others. They facilitate meetings on the new agriculture zone and its proposed limits and present the map to local communities for discussion.

7. ***Negotiation of zone to be delimited:*** After the proposed limits have been mapped and the results presented to representatives of different groups in the village, the official agriculture zone limits are negotiated. In some cases people may feel compelled to argue for more area based on fear that they are losing their land – or in other cases WCS-PCC may advise them to extend the proposed limits based on estimated land-clearing rates or population size. The final decision depends on approval from both the Reserve management committee and village leaders.

8. ***Agreement reached between representatives of the village and OFR over zone limits:*** It may take several meetings before a final agreement on the zone limits is reached; then a date is set for the ceremony to place cement posts and signs marking the limits of the agricultural zone along the road.

9. ***Ceremony to place boundary markers and signposts and to sign the agriculture zone protocol:*** During the ceremony the zoning process is reviewed, and the protocol which states the area (ha) and boundaries of the agriculture zone is read aloud before an audience of local authorities, Reserve managers and other community members. Signature of the protocol by Reserve and village representatives is followed by a shared meal.

10. ***Delimitation: clearing the perimeter of the agriculture zone:*** Where natural limits such as rivers do not exist, field teams clear a 3 m band in the underbrush of the forest in order to make the artificial agriculture zone limits visible. Small teams of village residents, led by a WCS-PCC technician, are hired to clear the perimeter when the zone is first created, and there is annual upkeep. This activity provides multiple benefits including: revenue for hired teams, awareness of zone limits by villagers and OFR personnel, and it facilitates monitoring of zone limits by ICCN.
Demarcation of zones: Erecting cement posts and signs along the borders of agriculture zones has been completed for five zones, but it is an expensive undertaking that costs an average of US$4,000 per zone (including the purchase and transport of materials and labour) plus long-term maintenance. Whenever natural limits, such as rivers and roads are present, it is not necessary to mark the borders with posts and signs. However, zone limits in the forest must be marked so that farmers and OFR managers alike can respect and monitor zone limits. This kind of physical demarcation has been suspended at this time and we hope to find less costly alternatives.

11. ***Validation of land-use zones in the Reserve management plan:***Once the Reserve land-use plan is complete, and all micro-zones have been created in the OFR at the local territorial level, the land-use plan will be officially considered part of the OFR management plan and should be recognized by ICCN at the national level.

12. ***Zone management:*** This paper will not elaborate on the long-term management of agriculture zones; but briefly the objectives of zone management are to ensure the effective use of land and resources in order to ensure that local people's livelihood needs are met while decreasing deforestation and biodiversity loss. Once agriculture zone protocols are signed, agronomists work with farmers to optimize land use in order to increase crop productivity using less land area, to encourage the use of fallow land, and to limit forest clearing for agriculture.

Special methodological considerations for hunting and conservation zones

The land-use planning process for hunting and conservation zones follows similar steps to those listed in the agriculture zone methodology section above, including a series of meetings, participatory mapping, negotiation and communication with different community groups to reach a final agreement on zone limits. However, certain modifications are necessary due to the nature of the resource being exploited (wildlife *vs* farm land); and the fact that hunting zones are larger with territories organized by clan, whereas agriculture zones have more individual property claims (such as fallow land) and farming is organized at the family level.

For conservation zones, field teams composed of representatives of local communities, and WCS and ICCN staff will map local forest claims and collect social and biological data in the proposed zone. These data will be used to create a map showing how local land claims (forest hunting territories) overlap with the conservation zone. The map and the results of the social and biological assessment will be presented to stakeholders in order to negotiate a management agreement for the conservation zone.

Results achieved

Agriculture zones: Eleven agriculture zones, covering 30,700 ha, have been delimited with agreement from local communities and zoning is in progress in two more villages. Technical assistance and improved seed varieties have been provided to farmers to increase productivity and to reduce the need to clear primary forest.

Hunting zones: Participatory mapping of hunting territories has been accomplished for six villages covering more than 195,000 ha.

Conservation zone:An inventory of key large mammal populations and selected human activities was conducted from 2005–2007. Significant populations of Forest elephant, Okapi and chimpanzee were found and most of the Reserve's unique habitats, including the spectacular inselbergs that harbour endemic flora, remain intact. Most faunal populations were more abundant in the centre of the Reserve, in a zone proposed for core conservation, than in the zones designated for hunting and agricultural activities. The exceptions were elephants, which remain concentrated in south of the OFR in areas that suffered less poaching during the period of conflict, and monkeys (12 species) that were most abundant in agricultural zones, in secondary forests near fields and villages.

Lessons learned

Zoning as a way to secure indigenous land rights on a settlement frontier

As explained above, the OFR is located on a human settlement frontier that is already home to more than 15,000 people who depend upon the forest for most, if not all, of their resource needs. Within this management context it is important to understand the indigenous-immigrant[4] dynamic surrounding access to land and natural resource use. Indigenous groups perceive the forest to be an abundant resource, and one of the goals of the zoning system is to empower these groups to understand the value and limited nature of their land and resources, and to manage them accordingly.

The zoning steps enumerated above enable indigenous groups to document and manage their land in collaboration with ICCN; and to prevent the false impression that land and natural resources are limitless. Immigrants prefer the informal land tenure systems and easy access to land that they find in the Ituri forest; this situation makes it possible for them to open large fields, usually by cutting primary forest. Immigrants tend to be more economically powerful and can recruit labourers from indigenous ethnic groups to clear the forest and work in their fields. Local landowners gain an immediate benefit from selling farming rights to immigrants from neighbouring regions where land is scarce; others may benefit from being hired as day labourers. In this sense, immigrants provide immediate benefits in exchange for access to land and natural resources, whereas ICCN's zoning system may be seen as a hindrance to these short-term gains. In a context where immediate gain is highly valued, protected area managers have the task of conveying the value and limited quantity of land available; hence the benefits of the zoning system are projected on a longer time-scale. The steps of land-use zoning which require local landowners to discuss and document their land claims can instigate conflicts with immigrant groups who wish to have easy access to land without oversight

4 In this paper, indigenous is a general term for the ethnic groups who have the longest history in the area that is now the OFR, notably: Mbuti and Efe pygmies and Bila, Ndaka, Lese, Mbo, Manvu and Budu; whereas immigrants are generally those ethnic groups that originate from other regions such as Nande, some Budu, and others.

by protected area authorities. In cases where immigrants feel threatened by the zoning programme, they have advised indigenous landowners to refuse to cooperate with the OFR. This requires that the OFR be proactive with community education so that the resident population understands that zoning is a management tool whose goal is to ensure their long-term use of resources. Thus far zoning in the OFR has been effective in this sense. In some villages where locals have already determined agricultural zone limits, immigrant communities have decided to look elsewhere for farmland, beyond the protected area limits. If zoning can be replicated for all farming villages in the OFR, as is the plan by 2011, new settlements should occur outside of the protected area, thus ensuring that the agriculture zones already established may continue to serve the subsistence needs of OFR residents for several generations into the future without compromising zone integrity by leading to deforestation. In some areas, chiefs have remarked upon the trends of deforestation and declining wildlife populations; these local spokespeople are important allies in passing the conservation and land-use planning message onto local communities.

Importance of sensitization and communication to avoid misconceptions

It is important to communicate the goals and regulations of subsistence zones within the context of the protected area as a whole. Signing land-use agreements is not a way of signing away their land to the OFR; it is still their land, over which they have customary rights, but it is a recognition that they live in a protected area and that agricultural expansion and hunting, to name two of the most common resource uses, need to be planned and monitored. Another interpretation is that by mapping agricultural land and negotiating the limits of an agriculture zone, the Reserve is, in effect, ceding that land back to the community. This is also not the case; zones are still under the mandate of ICCN, and they are subject to the regulations of a protected area. Zoning aims to document, and validate, local claims to resources – namely by the Mbuti and Efe Pygmies and indigenous shifting cultivators – in such a manner that despite being located on a settlement frontier, immigrants will arrive to find that the local populations understand that land is a limited resource and it is in their best interest to manage it well.

Erecting signs listing OFR interdictions such as mining and plantation agriculture created the impression that once an agriculture zone is created and the sign erected, these activities are illegal, but these activities are prohibited throughout the Reserve both in and out of established agriculture zones. In order to counteract the view that agriculture zones have specific resource restrictions, which could cause negative attitudes towards zoning, we stopped linking general Reserve-wide regulations to the specific process of creating an agriculture zone.

It is not uncommon for village representatives, especially chiefs, to change their positions more than once during the process. Even on the eve of an inauguration ceremony for a new agriculture zone, we have received letters threatening to call off the ceremony if certain demands are not met; for example the construction of a school, medical care for village elders, or a motorcycle for the village chief. It is important not to respond to this kind of political manoeuvring with false promises. We have found that the appropriate response to such demands is to assure local communities that OFR representatives are not in a hurry to sign the protocol creating the zone, but rather it is a document that should be signed when both parties are ready.

Conclusion

It is important to stress that this land-use management tool is, in many ways, experimental and that subsequent monitoring of results and adaptive management are key. We strive to make decisions based on the most complete information presently available and to consider possible demographic, ecological and social changes. Once an agriculture zone is created and an agreement is signed with village representatives establishing the outer limits of agricultural expansion, monitoring how people use the agriculture zone is very important. Trust between local communities and Reserve managers is equally important; communities must be convinced that the OFR will work with them to find solutions to zone management problems and that, if necessary, zone limits may be re-evaluated in the future.

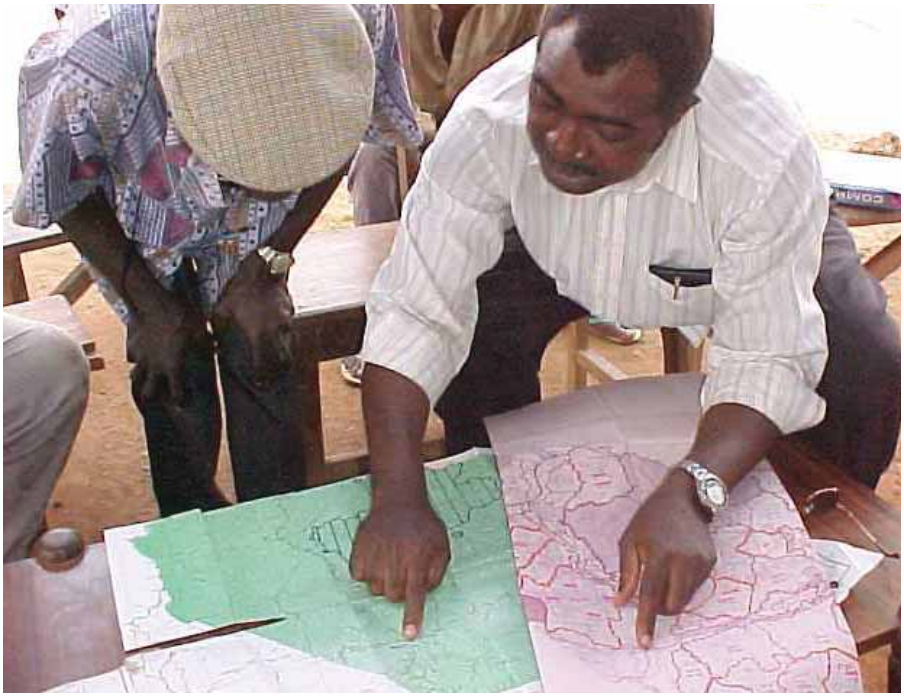
Case Study 2

Lessons Learned in the Lobéké National Park, South-East Cameroon

Leonard Usongo and Zacharie Nzooh Dongmo

Introduction

This paper describes the land-use planning process of the Lobéké National Park situated in the south-east corner of the Republic of Cameroon. The park covers 217,850 ha of forests and is part of the Tri-national de la Sangha (Sangha Tri-National) TNS Landscape. The paper highlights the biological significance of the Lobéké National Park and its rich biodiversity which has attracted several logging companies, sport hunting outfits, parrot trappers and commercial bushmeat hunters. The scramble over natural resources in Lobéké by the different user groups, including local communities, has contributed to stakeholders' on-going conflicts over the ownership and exploitation of the resources. The land-use planning process for Lobéké, given the complexity of stakeholders and high population of Baka pygmy indigenous forest peoples, was carried out in order to ensure the protection of the rights of this ethnic group as well as addressing the interests of Bantu communities and other stakeholders. One of the objectives of land-use planning for the protected area was to ensure that the ecological integrity of the forest ecosystems in the area is maintained while promoting sustainable natural resource use in surrounding buffer zones. The participatory management process that led to the designation of core protected areas and surrounding resource use zones was coordinated by the Ministry of Forests and Wildlife (MINFOF) in collaboration with WWF, the German Development Corporation – GTZ, and the local government



administration. One of the basic principles that guided consultations was that conservation of natural resources in the area can only be achieved with the support and participation of all stakeholders. The USAID/CARPE programme provided significant funds to support the land-use planning process in the Lobéké National Park including the establishment of various consultative platforms with different stakeholder groups.

Overview of the Lobéké National Park

The Lobéké Forest National Park and its peripheral zones are of outstanding conservation interest for a multitude of reasons. For example, the area supports unusually high densities of forest mammals, particularly so-called "charismatic megafauna" such as Forest elephants (*Loxodonta africana cyclotis*), Western lowland gorillas (*Gorilla gorilla gorilla*), Common chimpanzees (*Pan troglodytes*), Bongos (*Tregalaphus euryceros*) and Forest buffaloes (*Syncerus caffer manus*). Sizeable populations of animal species internationally recognized as endangered still thrive in the forest, although they are increasing threatened by unsustainable exploitation of timber and by hunting of bushmeat. Moreover, the park includes a significant proportion of primary forest, one of the few remaining unlogged forest

areas in this particular region thus giving an opportunity to preserve the biodiversity of a rapidly degrading habitat. Protection of the Lobéké forest ecosystem also provides a notable and complementary addition to Cameroon's protected area system.

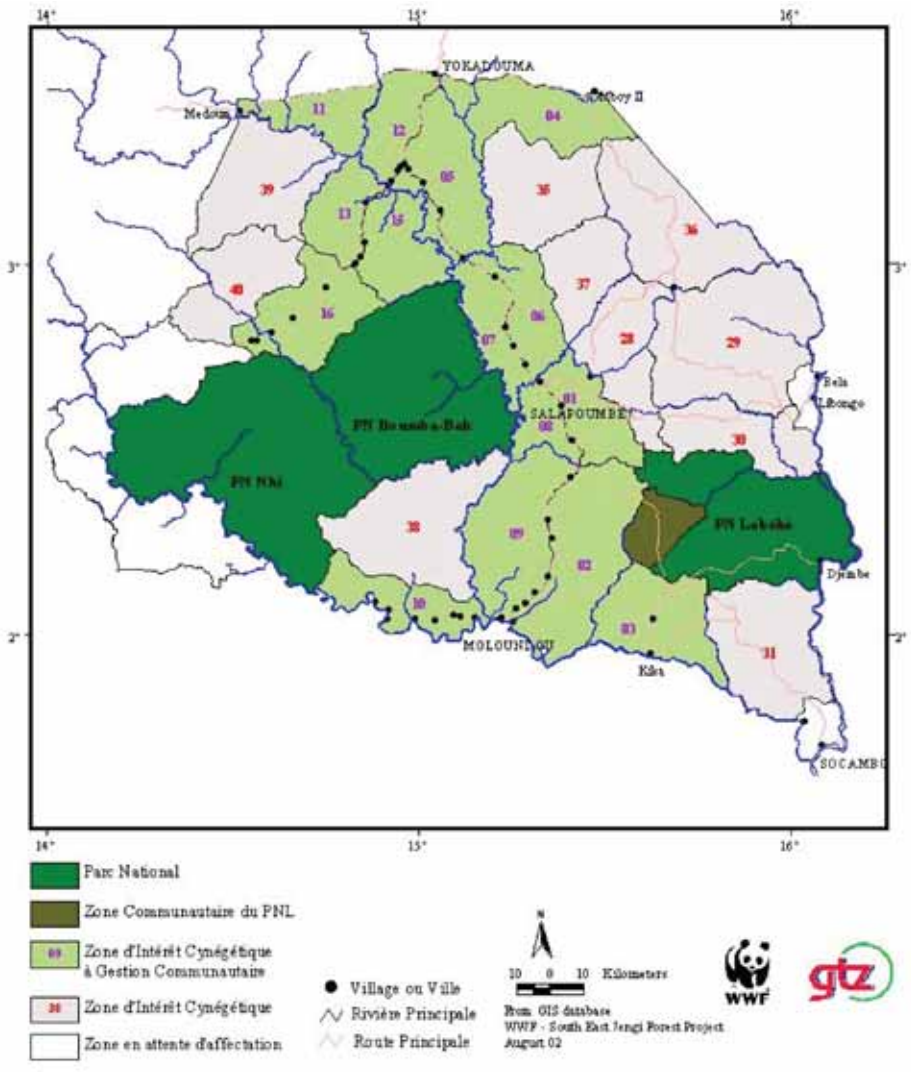
At the international level, the Lobéké National Park is contiguous with protected areas in both the Central African Republic (Dzanga-Ndoki National Park) and the Republic of Congo (Nouabalé-Ndoki National Park), and consequently there is a unique opportunity for a tri-national conservation programme fully developed under the CARPE programme and the Congo Basin Forest Partnership (CBFP). Finally, and perhaps most significantly, the forests of the Lobéké National Park and its peripheries provide the basis for the way of life of two particular groups of Cameroonian people, the Baka and the Bangando. Both rely heavily on the forest for food, medicine, building materials and cultural identity, yet their environment and hence their livelihoods are severely threatened by the detrimental activities of outsiders whose arrival is facilitated by commercial logging. Indeed, while it is recognized that commercial activities such as timber exploitation and safari hunting have an important role to play in the local and national economy, it is vital that specific areas of south-eastern Cameroon are officially recognized by government for their intrinsic conservation value as protected areas while others are designated as multiple-use zones for sustainable exploitation and revenue generation.

Lobéké National Park covers 217,850 ha of forests. The surrounding multiple-use zones consist of six community hunting zones with an estimated size of 487,600 ha, seven safari hunting concessions (738,100 ha), six community forests (30,000 ha) and 14 forest management units owned by logging companies (*Unités forestières d'aménagement* - UFAs) covering 911,454 ha (see Figure 1). The total area of the Lobéké tri-national segment that comprises the national park and the surrounding use zones is 1,470,799 ha. The overall area of the TNS Landscape including the core protected areas is 3,713,800 ha.

The size of the park, including the surrounding multiple-use zones with several stakeholders, obviously creates an environment for potential conflicts. The conflicting and multiple land-use options and rights, as well as the diversity of stakeholders, have created a complex management challenge in Lobéké.

It is against this background that WWF, in collaboration with technical partners including notably GTZ, worked with MINFOF to establish a technical consultative committee to coordinate negotiations with different stakeholders including the local government administration. The committee was established after the completion of various biological and socio-economic studies that provided baseline data

Figure 1. Zoning map of the south-east Cameroon region (excluding forest management units)



Plan de Zonage de la région du Sud-Est Cameroun (UFA Excluses)

on key management aspects such as proposed park boundaries and multiple-use zones, key threats to biodiversity, potential alternative income-generating options and other important data on the demographics and social dynamics of the area.

Initial context

Conservation of the biological diversity in the Lobéké National Park, as in most of the Congo Basin, is challenging given the broad spectrum of interests and problems notably the bushmeat trade, commercial logging, mining and other illegal operations. Weak administrative institutions, ill-adapted forestry laws, poor governance structures and the abject poverty of surrounding local communities add more layers to the existing pile of conservation problems in the region.

According to Cameroon forestry law, the forest is divided into two main categories of land tenure: permanent and non-permanent forest areas. Generally, the permanent forest areas include protected areas and legalized forest concessions where no human settlements are allowed although there are illegal settlements observed in certain forest concessions. The non-permanent forest areas allow community resource-use zones and agro-forestry zones. Human settlements and other activities such as farming are allowed within non-permanent forest areas.

Until the mid 1980s, very little biological data describing biodiversity potentials and threats existed for Lobéké forests. Subsequently, conservation organizations such as WWF and WCS have carried out a series of studies that highlighted the conservation importance of the area including threats mainly from unsustainable commercial logging, poaching and bushmeat trade that seriously threatened the rich wildlife and biodiversity in the area. Most of the biological and socio-economic studies were funded through the Global Environment Facility (GEF) and GTZ. These studies provided critical management information to discuss future management options in Lobéké. These included data and information on demographic trends with Bantu and Baka pygmy populations, lists of non-timber forest products (NTFPs) with potential economic value for local communities, proposed core conservation areas, and potential use zones with due consideration of areas used by local people, especially Baka pygmies.

The prevailing situation in Lobéké prior to the work of conservation organizations could best be described as chaotic. There was an absence of law enforcement, disenfranchised local communities, absolute power and ownership over certain resources by influential stakeholders notably logging and safari hunting companies; wide-scale corruption of local authorities including mayors and government forest administrations engineered by the private sector; abuse of rights and no recognition of indigenous forest people's communities. This lawless situation also encouraged poaching, bushmeat trade, illegal parrot trapping, cross-border hunting and an influx of arms and ammunitions.

Despite the confused situation on the ground and numerous conservation challenges, WWF and other conservation partners were determined to assist the government of Cameroon in creating a national park in the Lobéké Forest. The technical partners were also determined to establish a co-management system whereby different land-use types would be delimited and approved by the government in consultation with all local stakeholders. The motivation of conservation organizations to embark on this arduous process was reinforced by the scientific knowledge of the rich biodiversity of the area following several years of studies.

Methodology used for land-use planning

The development of a land-use plan for the Lobéké National Park

The land-use plan (LUP) provides the broad management guidelines concerning approved activities allowed in a particular land-use type. This document is jointly approved by the government administration and the local stakeholders. The purpose of the consultative process is to address problems related to ownership and access rights, and also to help define the responsibilities of the local forestry administration and other specific stakeholders to manage the national park and its immediate peripheral zones with local stakeholders.

In the 1990s, WWF, in collaboration with the Government of Cameroon and other conservation NGOs, and with the financial support of the WWF Network, GEF and GTZ, initiated wildlife inventories in the Lobéké forests with a special focus on large mammal inventories. These inventories assessed the abundance and distribution of megafauna species such as elephants, gorillas, chimpanzees, Forest buffaloes and forest antelopes. Another focus of the studies was on the assessment of various threats to biodiversity from logging, poaching and the bushmeat trade. The results of these surveys revealed a high conservation value in the area, with some of the highest densities ever recorded for Forest elephants and Lowland gorillas in the Congo basin.

Building on the results of these studies and subsequent recommendations, a consultative committee was established in 1998 comprising WWF, GTZ, MINFOF and the local government administration. The committee was

headed by the Sub-Divisional Officer (*Sous-préfet*) with the MINFOF Divisional Delegate as the Secretary. The committee reported to a Divisional supervisory commission chaired by the Senior Divisional Officer (*Préfet*) of the Boumba Bek and Ngoko Division. The main objective of the local consultative committee was to facilitate negotiations with villages and stakeholders for the approval of the proposed national park and surrounding multiple-use zones. The participatory land-use planning process was developed and initiated by the Divisional delegation in charge of Forests and Wildlife, MINFOF, with the participation of a multi-disciplinary team that included representatives of the local administration, local council, guardians of public opinion such as local parliamentarians, WWF and GTZ and was guided by the following vision statement:

> *Sustainable management of natural resources in south-east Cameroon is ensured through participatory management practices involving all stakeholders and contributes to improving the living conditions of local people.*

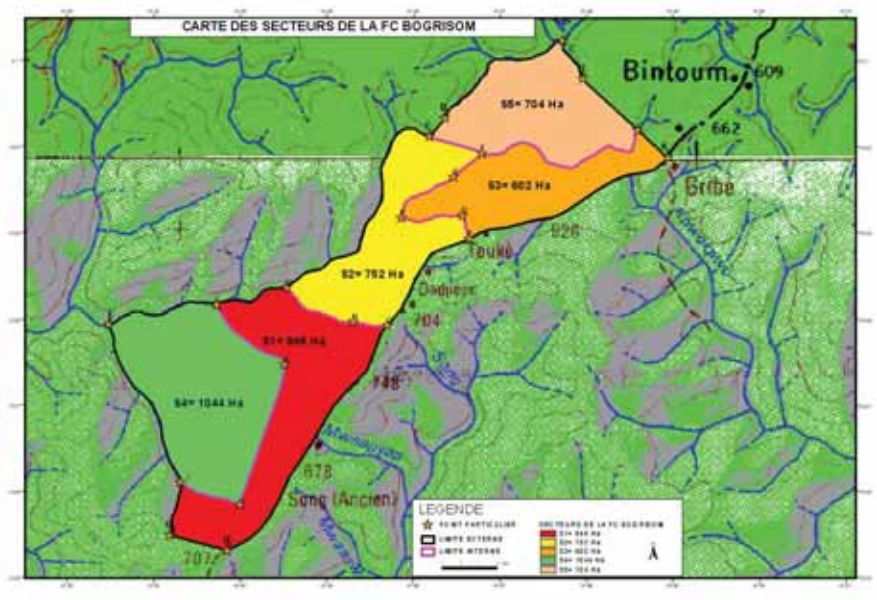
The local consultative committee held meetings in all the villages to discuss the proposed boundaries of the national park, community hunting zones, logging and safari hunting zones, especially those adjacent to or overlapping with village farmlands and forests. Village meetings were co-chaired by the village chief and the sous-préfet. Illustrative maps were produced from biological and socio-economic data and other maps were generated from rural participatory mapping processes involving guided discussions with local people. The consultative meetings allowed villagers to make proposals on either adjustments or acceptance of proposed areas for the different land-use types (national park, community forests, and safari and logging zones). Once an agreement was reached with each group of stakeholders, the minutes of the meeting were read in public prior to being signed by a designated stakeholder representative and the head of the consultative committee. The village meetings allowed for a broad range of issues, in particular development problems, to be discussed with local administrative authorities. The meetings fostered communication between local authorities, conservation projects and stakeholder groups.

At the end of the local consultative process, minutes of the meetings from local stakeholder consultations were presented to the Divisional supervisory commission. Following deliberations at the Divisional level, a report was sent to Yaoundé endorsing the proposed limits for the Lobéké National Park. The letter of endorsement from the Senior Divisional Officer also included a technical report describing the proposed boundaries of the national park and designated surrounding resource-use zones such as community forests, safari hunting zones and logging concessions.

According to Cameroon law, a community forest covers 5,000 ha and is directly managed by a local community that constitutes itself as a recognized legal entity. The authorized community must submit a management plan written on the basis of the results of multiple-resource inventories carried out to determine the quantity of timber species, densities of wildlife and other important NTFPs found in the designated forest. The community forest is managed by an approved local management committee with official statutory organs governing the administration of the community forest. The local community is authorized by law to exploit just 200 ha of the forest each year. Other activities include harvesting of NTFPs based on an approved list of items. Figure 2 is an example of a community forest map.

There are always stakeholders' conflicts resulting from the delimitation of use zones surrounding national parks. The conflicts are primarily due to overlaps in user rights over the given territory. For example, within the multiple-use zones around Lobéké National Park, certain safari hunting zones overlap with

Figure 2. Map of the sectors in the Bogrisom community forest

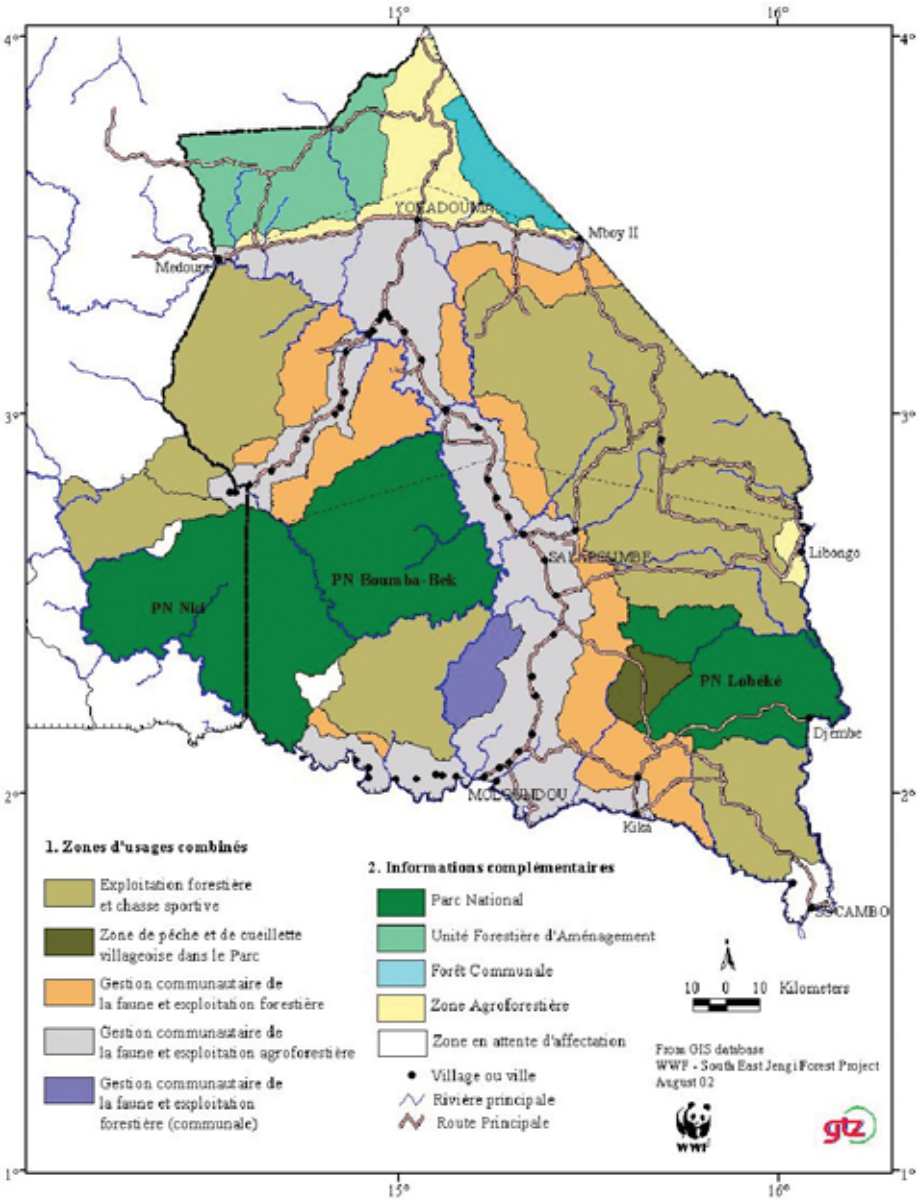


logging concessions and community forests. Figure 3 presents the network of protected areas in south-east Cameroon which includes the Lobéké National Park and surrounding resource-use zones.

Conflicts of interest arise concerning access rights, ownership and the exploitation of natural resources. Unfortunately, the various users' rights such as timber exploitation and safari hunting are regulated by different laws.

Over the years, WWF and other conservation partners have been working in collaboration with the national forest administration to facilitate a dialogue among the different stakeholders. The facilitation process led to the establishment of various consultative platforms to promote dialogue and collaboration among these local actors. There has been significant progress with collaborative agreements signed by some of the stakeholders

Figure 3. Map of the protected areas in south-east Cameroon showing the multiple-use zones



to work together in the different management zones. An example is the Mambele Convention which was signed by logging companies, safari hunting outfits and representatives of community wildlife management zones. Some results of this convention include: i) the various stakeholders financing anti-poaching operations to combat hunting and the bushmeat trade within resource-use zones; ii) safari hunters sharing the meat of hunted species with villagers where an animal was killed; and iii) logging companies providing local communities with waste wood for fuel and other development activities.

Negotiating use rights of local communities in the national park

During consultative meetings in villages to discuss the proposed boundaries of the Lobéké National Park, the local people, especially the Baka pygmies, made recognition of boundaries conditional upon guaranteed access to certain areas of the park. Baka pygmies frequently use some areas of the national park to harvest bush mangoes and other wild forest products. They also carry out shrimp fishing during the dry season in some of the major streams in the park. In addition, there are secret forests in the southern sector of the park that Baka pygmies visit for traditional rituals and during Jengi festivals. Jengi in Baka is "spirit of the forests". Young men are initiated into Jengi which is a secret cult of the Baka. New members undertake a pilgrimage to some of the secret sites before the Jengi ceremony.

As a compromise, MINFOF officials and the consultative committee agreed to gazette a community use zone in the Lobéké National Park (see Figure 1 with the olive green community use zone). This process came after a decision by national park authorities in Yaoundé whereby national wildlife laws prohibited human activities in national parks. Acceptance by the government

to gazette a community use zone in the national park was an unprecedented decision in the history of protected area management in Cameroon.

This decision demonstrated the government's commitment to engage in a people-centred conservation approach. In the negotiation process, local communities accepted that a regulatory mechanism with joint monitoring and control operations by MINFOF and representatives of management committees of community forests should be put in place to control access and activities in the proposed community use zones. Hunting was prohibited in the community forests except organized subsistence hunting targeting Class C animals listed as non-endangered species. Prohibited activities include illegal parrot trapping and the exploitation without a permit of medicinal plants. Harvesting of NTFPs must be carried out in strict compliance with existing forestry and wildlife laws.

Major achievements

The multi-stakeholder process piloted by the technical consultative committee for the land-use planning process in the Lobéké National Park has been mutually beneficial to all parties by addressing the needs and interests of the different stakeholder groups. It was not possible to gazette the national park without the consent of local stakeholders especially as most of the threats to the park come from the activities of these same stakeholders in surrounding resource-use zones. One of the main strategies in the land-use planning process was to ensure the occupation of all the forest territories in the surrounding zones by legally recognized stakeholders whose activities are authorized by the forestry and wildlife authorities. The strategy was also to avoid the no-man's-lands that existed in the past which created fertile grounds for poachers, parrot trappers and other illegal activities.

The land-use planning exercise also alleviated tensions and disputes among stakeholders over the ownership of land as well as the exclusive exploitation of both legally and illegally appropriated concessions. The multi-stakeholder process led to the creation of a collaborative management agreement which was signed by local communities, safari hunting companies and the forest administration. This collaborative management agreement, known as the Mambele Convention, establishes rules and responsibilities for the parties involved, and clarifies the content and geographic sphere of each stakeholder's land-use rights.

As a result of collaboration between WWF and the logging companies, three logging companies have voluntarily engaged in the certification process. Inspired by this model of partnership, other logging companies have followed suit with commitments to promote sustainable forest management.

Further, to defend their rights and more effectively manage their resources and the benefits generated from community hunting zones, local communities have organized themselves into groups known as COVAREF (*Comité de Valorisation des Ressources Fauniques* – Community wildlife management committee). Between 1999 and 2005, all the COVAREFs' wildlife management activities generated about 115 million CFAF in revenues. The wildlife revenues are generated by the communities leasing out their hunting territories to sport hunters for trophy hunting. Significant incomes are generated from trophy hunting of wildlife species such as forest buffaloes and antelopes. According to existing wildlife laws, the local community receives the total amount paid as leasing fees for the territory where the hunting takes place; the government wildlife administration receives 100 percent of the trophy tax and an additional payment equalling 10 percent of the value of the trophy tax is paid to the local communities. Revenue from trophy hunting is managed by management committees whose members are elected by the villages. WWF has helped with the organizational set-up of these wildlife management committees by: i) assisting with their legalization as official management entities; ii) training members in various aspects including technical, financial and project management; iii) carrying out the wildlife inventories required to determine wildlife populations in hunting territories; iv) training in the planning and execution of micro projects; and v) facilitating dialogue and contract negotiations with sport hunting outfits. The community wildlife management committees have reinvested the income into education (building classrooms, providing scholarships to enable village children to access secondary schools and universities), health, connecting villages to electricity networks, and constructing wells for clean water.

In 2000, a collaborative agreement was signed between local communities and safari hunting outfits operating around Lobéké National Park. Some of the key points of the agreement include: a) safari hunters sharing the meat of the wildlife they kill with local communities; b) both parties especially COVAREFs jointly investing in anti-poaching operations; c) safari hunting outfits investing in development projects in villages; d) safari hunting outfits hiring staff from local villages; and e) both parties committing to resolving any conflicts through dialogue with arbitration by the government administration and park authorities.

In 2002, another convention was signed between the forest administration and logging companies. Under this agreement, logging companies will invest in anti-poaching operations as well as community projects. The local wildlife management committees will jointly finance anti-poaching operations with logging companies and the forest

administration. The logging companies will also allow local communities to collect waste wood from lumbering and processing sites. From 2002–2006, the Italian logging company SEFAC operating in the northern sector of Lobéké National Park invested about US$30,000 in anti-poaching operations. The company also constructed a modern market for the surrounding population, a health centre and two primary schools with one specifically for Baka pygmies.

In 2007, three logging companies, namely SEFAC, ALPICAM and SEBC Lokomo, signed an agreement with the forest administration to financially support anti-poaching operations around Lobéké National Park. The companies agreed to make a monthly contribution of US$300 based on an agreed work plan. In return, MINFOF will produce quarterly technical and financial reports for distribution to all parties.

In 2007, the Lobéké National Park management committee was established. Members of this committee include representatives of surrounding villages, conservators, technical partners, representative(s) of local NGOs, the local council and a representative of the local administration. This is the highest decision-making body of the park and is primarily responsible for the overall supervision of the implementation of the park management plan.

Lessons learned

WWF and partners adopted a flexible grass-roots approach in the design and implementation of the land-use planning process for the Lobéké National Park. The approach reflects the complexity of the situation in Lobéké with multiple stakeholders from different interest groups. The land-use planning process had to ensure that proposed park boundaries were accepted by all stakeholders while also addressing natural resource ownership and use in the surrounding buffer zones. This was a delicate balancing act given that the interests of multiple groups had to be satisfied throughout the entire process. The following lessons can be drawn from the Lobéké example:

General observations

An open and sincere dialogue and collaboration among stakeholders can lead to a land-use plan on which the boundaries of non-conflicting uses overlap. A landscape land-use planning process is more likely to succeed if stakeholders discuss how the boundaries of their non-conflicting activities can overlap, as opposed to strictly focusing on each one's exclusive land-use rights and perceived legitimacy.

The vision and attitudes of conservation agencies

1. Landscape conservation is a science of compromises. No one group has enough power to impose rules that other stakeholders do not understand or share. Even the less powerful stakeholders remain a serious threat to biodiversity when they feel the rules are against them. In the Jengi Forest project area, conservation is a social process. A good example of how not to start the process is the authoritarian way in which the government administration began the LUP negotiation process to define the limits of the national park – in the end, they had to succumb to pressure from the local population who openly criticized the top-down approach in discussions. Most of the early meetings were boycotted by the local population as a protest against the cavalier attitude adopted by the local forest administration. All the main actors including the forest administration finally came around to this approach once an agreement was reached to work together based on the principle of mutual respect. WWF with GTZ played a key role in facilitating dialogue and restoring confidence among the stakeholders.

2. Landscape planning and management is not only a science for protected areas. The Jengi Forest project found that the security of the protected areas within a landscape depends on the resource exploitation dynamics of the buffer zones and on how stakeholder relationships are managed. A good illustration of the new engagement of logging companies is the disciplinary measures taken by the companies against workers caught hunting in their concessions or transporting bushmeat. For example, the Italian logging company SEFAC has dismissed five workers implicated in the transport of bushmeat and hunting. In addition, hunting by workers in the forest concessions adjoining the park has decreased due to the increased disciplinary measures and anti-poaching operations financed by the companies. Understandably, this is good for wildlife in the park as hunting in peripheral zones has a direct impact on wildlife populations both inside and outside the park.

3. Landscape land-use planning is more likely to succeed when the process is led by public authorities and technically facilitated by neutral resource persons. Conservation agencies must act as technical support agencies and land-use planning and management advisers, and avoid being perceived as competitors who defend conservation against other public interests.

Landscape land-use planning methodology

1. A bottom-up process, led by local administrative authorities and supported by conservation agencies is more likely to generate results, as opposed to the trickle-down effect of top-level decision making at the macro scale. By taking the lead in experimental community hunting and safari hunting zones in the Lobéké Forest of south-east Cameroon, the local forest administration with technical assistance from international NGOs like WWF has achieved a landmark result in Cameroon and Central Africa in general that can now serve as a model for designing nationwide procedures for the designation and management of hunting zones.

2. Our experience in Lobéké shows that multi-stakeholder collaborative land-use planning has the potential to overcome land-use conflicts, consolidate negotiated rights over natural resources, act as a catalyst for local collective action and establish a climate of confidence among stakeholders. Though it might be a resource-consuming and lengthy process, this approach appears to offer a long-term guarantee that the landscape LUP will be defended by the stakeholders involved who clearly see the interest in protecting and ensuring the intergenerational availability of the resources they all depend on.

3. The landscape land-use planning methodology must be designed to address land-use conflicts strategically, secure all categories of stakeholder rights, and secure livelihoods in order to create a climate of confidence. Through this methodology, a negotiated land-use plan stands a better chance of being adhered to and implemented in a complex setting like that of the Jengi Forest project area.

4. Engagement of public institutions at both the micro and macro levels is a precondition for successful landscape land-use planning and management.

5. A multi-disciplinary approach based on good knowledge of the milieu by facilitator(s) potentially leads to greater efficiency and stronger engagement of stakeholders in the land-use planning process. '

Case Study 3

The Tayna Community-Managed Nature Reserve in Democratic Republic of Congo: A Grass-roots Approach to Conservation and Resource Management

Patrick Mehlman

Introduction

In 2000, more than 150 international scientific experts convened a workshop in Libreville, Gabon to determine priority areas for the conservation of terrestrial ecosystems within the Congo Basin.[1] This workshop led to the identification of 11 Priority Landscapes[2] that formed the basis of multiple conservation interventions for the Congo Basin Forest Partnership (CBFP) launched in 2002 at the World Summit on Sustainable Development in Johannesburg, South Africa.

Unknown to these experts, another workshop was taking place in 2000 in eastern Democratic Republic of Congo (DRC). As the civil war still raged, traditional chiefs of the Bamate and Batangi Nations were in the mountains of North Kivu meeting with their constituencies and discussing how they could develop a community conservation programme, an initiative they launched in 1998. This programme was spearheaded by Pierre Kakule Vwirasihikya, who had been an ICCN[3] warden for 15 years, but was on a leave of absence. Pierre was born in the region and had learned first-hand both the need for conservation and the difficulties faced by traditional, government-run national parks. Realizing the potential for a protected area for gorillas in the mountains near where he spent his childhood, he enlisted the support of the traditional paramount chiefs (Mwamis) of the Batangi and the Bamate peoples, Mwami Stuka Mikundi II and Mwami Mukosasenge II, to catalyze a community-managed project to create the "Tayna Gorilla Reserve".

The Tayna model proved successful. By late 2002, seven other community associations had joined Tayna, creating a political federation called UGADEC (the Union of Associations for Gorilla Conservation and Development in Eastern DRC), with the goal of establishing a series of similar reserves for an area of more than 12,000 km^2 (the proposed integral[4] zones),

Founders of the Tayna community conservation programme. Pierre Kakule (*centre*), with co-founders Mwami Mokasasenge (*left*) and Mwami Stuka (*right*). These days, leopard skin hats are synthetic.

1 This workshop is described in Kamdem-Toham, A. *et al.* 2006. *A Vision for Biodiversity Conservation in Central Africa: Biological priorities for conservation in the Guinean-Congolian forest and freshwater region*. Washington, DC: WWF.

2 A 12th landscape was later added to the CBFP Priority Landscapes: The Virunga National Park (and its surrounding buffer zones) in eastern Democratic Republic of Congo.

3 ICCN is the *Institut Congolais pour la Conservation de la Nature* (Congolese Institute for the Conservation of Nature), the DRC wildlife and parks authority.

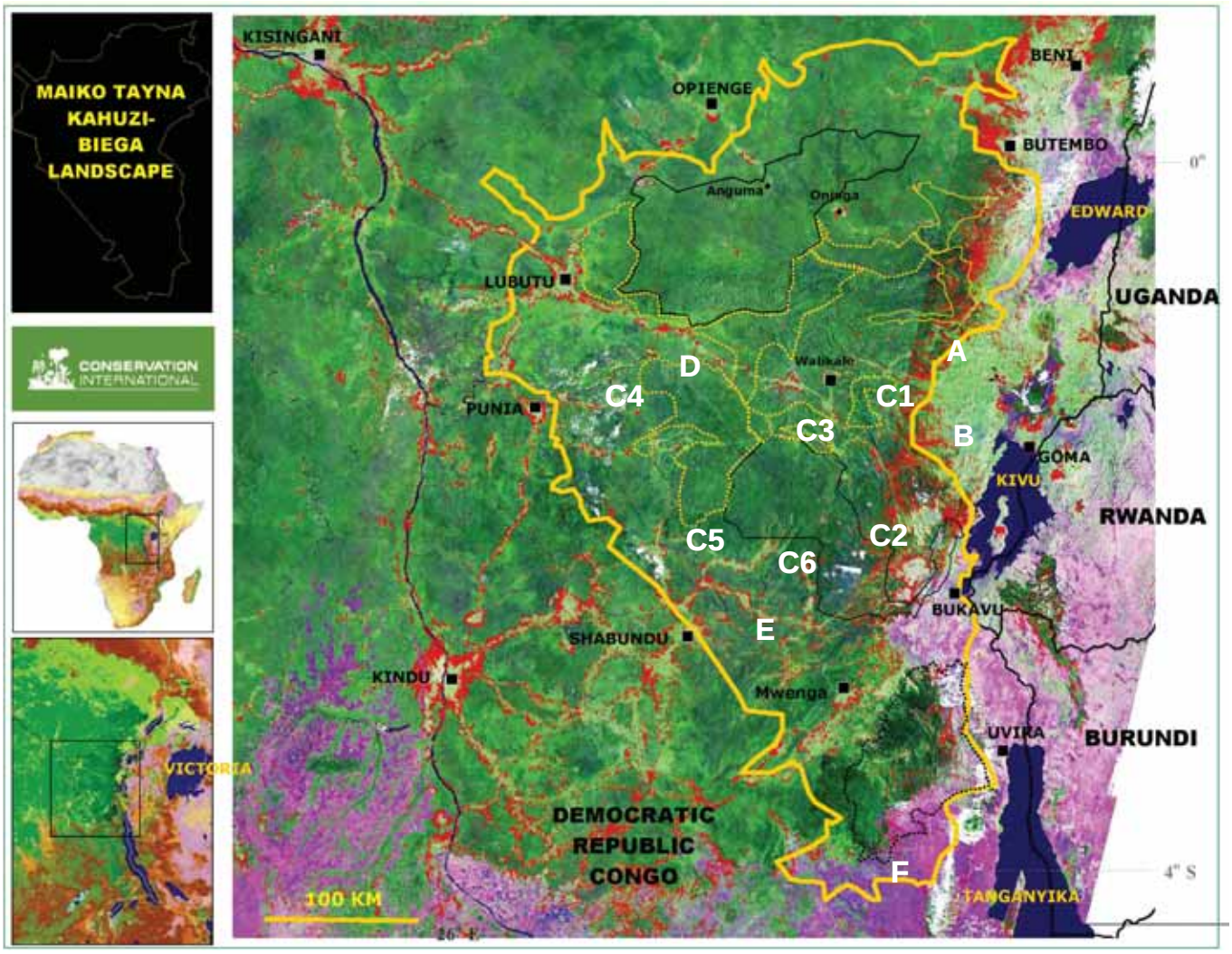
4 The integral zone (from the French term) is a core protected area; it is completely protected and does not permit extraction of any kind.

creating a biological corridor between Maiko National Park (10,000 km^2) and Kahuzi-Biega National Park (6,600 km^2), and working hand-in hand with the ICCN to preserve biodiversity (Figure 1). This integrated approach between communities and national park management authorities was first supported by Dian Fossey Gorilla Fund International (DFGFI) in 2000 and was significantly strengthened when CI formed a strategic partnership with DFGFI in 2003.

By 2006, the Tayna Nature Reserve, as well as another UGADEC project member, the adjacent Kisimba-Ikoba Reserve, were both declared Nature Reserves (for their integral zones, 900 and 970 km^2, respectively) by the Minister of Environment, becoming part of the official network of protected areas in the DRC. Significantly, these declarations were accompanied by unique co-management plans, in which the ICCN entered into a legal agreement with the local communities (represented by NGOs based on traditional/ customary governance) such that these NGOs were sub-contracted to manage their reserves in perpetuity.

In the sections that follow, the history of this unique grass-roots approach to conservation is chronicled to provide an understanding of how this programme developed locally and was then successfully supported by the international conservation community. From the history of this programme, we can also extract a number of lessons learned, with the hope that the

Figure 1. Tayna Nature Reserve (A) and the similarly managed Kisimba-Ikobo Nature Reserve (B) with six other projects (C1-C6) form the UGADEC Federation



Note: The UGADEC community conservation zone forms a biological corridor between (and with) the Maiko National Park (D) and the Kahuzi-Biega National Park (E), which are located in the CBFP Maiko Tayna Kahuzi-Biega Landscape (yellow). Red areas indicate deforestation between 1990 and 2000 (satellite image courtesy of University of Maryland, CARPE program). A further Nature Reserve area, Itombwe, is located in area F.

approach can be replicated in other areas of DRC, other communities in the tropical forests of the Congo Basin and perhaps in other areas across the globe.

Ecology and history of the Tayna region

The Tayna Nature Reserve is situated in a transition zone between the lowland forests of the High Biodiversity Wilderness Area of the Congo Basin and the highlands of the Albertine Rift, part of the Eastern Afromontane Hotspot.[5] It ranges in altitude from 850–2150 m, and holds exceptionally high levels of biodiversity and globally threatened species, such as Grauer's gorillas, chimpanzees, Okapi, Forest elephants, and 14 species of primates.[6]

The Tayna Reserve lies within two *chefferies* (chiefdoms),[7] the Batangi and Bamate chiefdoms, who have become so intertwined socially and politically that it is virtually impossible to map them separately (see Figure 3 for the location of the Batangi Bamate *Chefferie* within the Territory of Lubero). They are part of the Banande people (Bantu), living in North Kivu, and share close affinities with other Banande such as the Bapare, Bashwa, etc.

The oral traditions of the Bamati and Batangi [8] recount that their ancestors arrived in the Albertine Rift in the highlands west and north-west of Lake Edward more than 500 years ago, as part of a wave of Banande immigrants fleeing land disputes and tribal warfare in Uganda. Despite the centuries they spent expanding into the Albertine Rift, their oral traditions indicate a much more recent arrival in the mountains of the present-day Tayna Reserve: they suggest the first pioneers moved into these mountains seeking new hunting grounds and agricultural fields only about 200–250 years ago.

By the period of colonial rule, at the beginning of the 20th century, Belgian-led expeditions began entering the area to hunt elephant, trade for ivory and to explore for mineral wealth (primarily gold). In the 1920s they began construction of a dirt road from Beni to Mbohe, west across Tayna, and then west north-west to Oninga, a small mining centre (Figure 1, visible now as agricultural fields and small villages following the long-degraded road system; also see Figure 2). They never completely finished a road between Oninga and the Anguma gold mine, which would have crossed the present-day Maiko National Park (Figure 1).

In the 1930s, the Belgian colonial authorities declared the majority of the present-day Tayna Reserve to be the "South-west Lubero Hunting Reserve" identical to the "hunting reserve" created at that time for what is present-day Maiko National Park. In reality, these reserves were not gazetted for hunting; they were created to limit migration into the area by local people seeking their fortunes looking for gold and diamonds. While doing this, the Belgians simultaneously developed one of the largest alluvial gold mines in the region at the Lutunguru gold mine (see Figure 2) just to the east of the present-day Tayna Nature Reserve, which at its peak in activity in the 1930s had more than 15,000 miners working and living in camps in the area. Of historical note, an even larger mining camp developed near the deep-shaft gold mine in Maiko NP at the Anguma mining site (Figure 1).

In 1959, Schaller and Emlen surveyed this area[9] and reported several pockets of forest with Grauer's gorillas, but what was once surely a contiguous block of forest from Tayna to Tchiaberimu (near Lake Edward, Figure 2) had by the time they conducted their surveys already become fragmented by increasing human population pressure.

1998–2000: Local origins of the Tayna community conservation programme

Eager to update some of Schaller and Emlen's 1959 surveys, in June–July 1997, Thomas Butynski and Esteban Sarmiento revisited the area near the present-day Tayna Reserve, arriving almost at its current eastern limits in the village of Mbuhe (Figure 2). In discussing the reported presence of rich wildlife west of their position, they suggested to local community representatives (Mwami Stuka and others) that the area might be protected through some kind of community action. Following this suggestion, Pierre Kakule and Mwamis Stuka and Mukosasenge realized the area's potential for future ecotourism and ecosystem services, and having watched their forests disappear to commercial cattle ranchers

5 A "Wilderness Area" is defined by having 70 percent of its original habitat still intact; a "High-Biodiversity Wilderness Area" is defined similarly, but contains more than 1,500 endemic plant species, and along with Hotspots is how Conservation International sets its priorities throughout the world. A Hotspot is defined as having lost more than 70 percent of its original habitat, and contains more than 1,500 endemic plant species. The "hotspots" concept was first articulated by British ecologist Norman Myers in 1988 and adopted by CI as a priority-setting framework in 1989. See Mittermeier, R.A., Robles Gil, P., Hoffman, M., Pilgrim, J, Brooks, T., Mittermeier, C.G., Lamoreux, J. and da Fonseca, G.A.B. 2004. *Hotspots Revisited*. Cemex Books on Nature; Mittermeier, R.A., Mittermeier, C.G., Brooks, T., Pilgrim, J., Konstant, W., da Fonseca, G.A.B. and Kormos, C. 2003. "Wilderness and biodiversity conservation". *PNAS* 100: 10309–10313.

6 Tayna is home to a suite of globally threatened large animals typical of the region, such as the Eastern chimpanzee (*Pan troglodytes schweinfurthi*), the African forest elephant (*Loxodonta africana cyclotis*) and Grauer's gorilla (*Gorilla berengei graueri*), as well as a number of species found only in the Albertine Rift (for example, there are reports of a completely black morph of the forest leopard, *Panthera pardus*, the Endangered Ruwenzori morph). These restricted-range species include several poorly known, threatened birds, such as the Albertine owlet (*Glaucidium albertinum*), as well as locally endemic mammals, such as the Ruwenzori sun squirrel (*Heliosciurus ruwenzorii*) and the Ruwenzori otter shrew (*Mesopotamogale ruwenzorii*). Also see, *The Forests of the Congo Basin: State of the Forest 2006*, pp.198–205, http://www.cbfp.org/.

7 Administrative organization in rural DRC is by Province, then Territory, then *Chefferie* (Chiefdom, formerly called a *Collectivité chefferie*) or Sector.

8 The Bamati and Batangi are two tribes of the Tayna area, who through intermarriage and land-use sharing have substantially intermingled over the last century; they share a very similar oral history.

9 Emlen, J.T. and Schaller, G.B. 1960. "Distribution and status of the mountain gorilla (*Gorilla gorilla beringei*), 1959". *Zoologica* 45: 41–52; Schaller, G.B. 1963. *The Mountain Gorilla: Ecology and Behavior.* Chicago, IL: University of Chicago Press. Also reviewed in reference xvi.

Figure 2. A comparison of the original boundaries proposed for the Tayna Nature Reserve (2a) with the final configuration (2b). One of the principal access routes into the reserve is shown in the Figure 2a.

Figure 2a

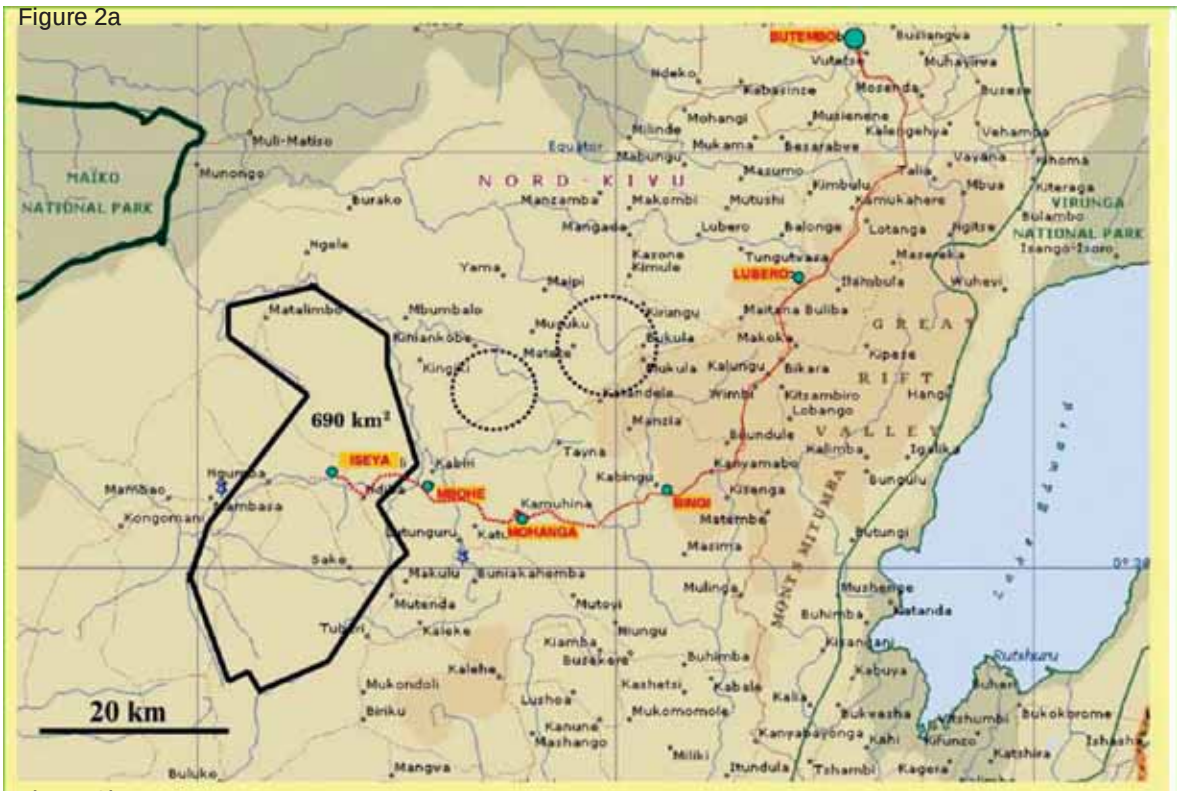


Figure 2b

and agricultural settlements creeping west, they began discussions with their local village chiefs surrounding present-day Tayna as to how this might be accomplished. By 1998, the Mwamis had banned the use of shotguns in the area and were considering the creation of a communal reserve in a mountainous forest with only the presence of a dozen small villages west of Mbuhe (Figure 2). Equally important to them, they noted the presence of chimpanzees to the north-east of their first target area near the important cultural village of Kasugha, which contained a sacred forest, a waterfall, and a series of caves, and thought that this could also be gazetted as a separate reserve.

From the beginning of 1998 through mid-2000, despite the civil war raging in their area with various battles between armed militias and foreign armies (Congolese Mai Mai, Rwandan Interehamwe and Congolese rebel forces, the MLC and RCD,[10] as well as the Ugandan army), Pierre and the Mwamis kept the idea of a community reserve alive and continued discussions with local people as often as possible. In 2000, Pierre Kakule created a local association, the RGT (*La Réserve des Gorilles de Tayna* – Gorilla Reserve of Tayna)[11] composed of about 10 staff members (with no salaries) who came from the area. In 2000, the RGT began to seek help from several international conservation organizations, but the civil war (and risk aversion on the part of the NGOs) prevented any significant action at that time.

2001: International support for the Tayna project

From April 2001 to the present day, the RGT began to receive significant amounts of international financial and technical support. In April 2001, Tayna signed its first contract with DFGFI, in which Tayna accepted DFGFI as its "primary partner" (UGADEC signed an identical agreement in 2002). In doing so, they agreed to the principle that all financial and technical support to Tayna would be channeled through a single international partner, DFGFI. It was felt by both parties that this would eliminate multiple donors with multiple (and sometimes contradictory) technical inputs. The primary partner agreement first signed in 2001 is still in effect today eight years later, and is the fundamental basis with which Tayna (and UGADEC) receive international support.

Lesson learned 1: Support local initiatives as opportunities arise, but only after feasibility and due-diligence studies are conducted to calibrate potential conservation outcomes with an appropriate level of investment. Local people sometimes present autonomously developed projects to international NGOs. It is highly desirable to support these projects, but only after initial due-diligence and feasibility studies. It is best to begin a first phase with small grants to assess their capacity to manage funding and achieve conservation outcomes. In some cases, a Primary Partnership between a local and an international NGO is advantageous, since it channels funding and technical inputs from a single partner to the local NGO, and can avoid multiple (possibly contradictory) conditions and objectives associated with several funding sources.

2001–2003: Support from the Dian Fossey Gorilla Fund and the US Congressional "Gorilla Directive"

In mid-2000, Tayna staff requested a donation from Dr Liz Williamson, then-Director of the Karisoke Research Center, DFGFI, and she secured a small fund to support community meetings for Tayna that took place in late 2000. By February 2001, Pierre Kakule met again with DFGFI senior staff (the author and Dr Dieter Steklis), and presented a plan and local maps that had been created by community members. DFGFI was interested in the visionary approach of the Tayna group, and the author made arrangements for a due-diligence trip into Tayna a month later. In March 2001, the author traveled from Butembo to just beyond Bingi by road, and made his way to Iseya, a small village located within the targeted area for the reserve (Figure 2a). During this trip, he met the Mwamis, village chiefs and community members who made clear their desire to create a gorilla reserve. The author did as much biological prospecting as was possible given the conditions, and confirmed the presence of gorillas and healthy forest blocks within the targeted reserve area. The author became convinced that creating a community reserve was not only feasible, but desirable, in that local communities were leading the process, rather than a more traditional approach of creating a protected area from the top down, usually led by government authorities and international conservation NGOs. From March–October 2001, DFGFI provided approximately US$65,000 to support the Tayna Reserve. In October 2001, DFGFI successfully obtained an award from the US Congressional "Gorilla Directive" (administered by USAID), and with DFGFI internal funding, from then until September 2003, was able to provide Tayna (and other project members from UGADEC) direct operations funding at approximately US$215,000 for each of the two years.

10 MLC was one of the rebel factions during the civil war backed by Uganda, the Movement for the Liberation of Congo (*Mouvement pour la Libération du Congo*); RCD was another rebel faction backed by Rwanda, the Rally for Congolese Democracy (*Rassemblement Congolais pour la Démocratie*); Interehamwe are illegally armed Rwandan militia in DRC who, being responsible for the Rwanda genocide, fled into DRC; Mai-Mai were (and in some cases, still are) locally based Congolese militia formed during the civil war to resist external rebel forces such as the MLC or the RCD.

11 The Tayna Gorilla Reserve (*La Réserve des Gorilles de Tayna* – RGT) received local NGO status in 2001, and was legally registered in DRC in 2005 (when it received its *personalité juridique*).

2003–2008: Support from DFGFI, Conservation International (CI) and the USAID CARPE12 and Gorilla Directive programmes

By 2003, the on-going CBFP process and the Tayna community conservation programme successfully intersected. One of the landscapes identified in the CBFP process was the Maiko Tayna Kahuzi-Biega (MTKB) Landscape and the zone between Maiko and Kahuzi-Biega NPs was precisely where Tayna had begun its programme and scaled it up with other UGADEC communities (Figure 1). By chance, this guaranteed an essential role for DFGFI in the incipient Landscape programme, since it was the primary partner for Tayna and UGADEC, and was working with communities outside (and between) National Parks within the MTKB Landscape. As proposals were being called for by the USAID CARPE programme, DFGFI and CI created a strategic partnership to support the UGADEC community zone and Maiko NP in order to submit simultaneous proposals to CARPE and to CI's Global Conservation Fund (the latter providing match funding to CARPE). These awards were successfully obtained, and with DFGFI's third and final year of the Gorilla Directive Funding, DFGFI internal funding, CI's Global Conservation Fund, and CI's award from USAID CARPE Phase IIa, the Tayna and UGADEC community conservation programme received US$1,750,000 in direct operations funding from October 2003–September, 2006.[13] This partnership and funding arrangement has continued from late 2006 until today, with support from USAID CARPE Phase IIb, CI's Global Conservation Fund, DFGFI internal funding, and special CI donors.

2001–2006: Development and implementation of the Tayna programme

As noted above, the vision for a community-based gorilla reserve for the Tayna area of North Kivu did not originate in Washington, Paris or Kinshasa, but rather with the inspired leadership of the customary powers from the region. By the time international funding first arrived, they had a clear vision that they wanted to protect gorillas. They understood that this could improve local economic development through ecotourism, through development incentives linked to conservation outcomes, and through simply hiring and paying local staff, whose salaries would circulate locally in a very impoverished area. They had identified a mountainous region within their *chefferie* where intact forests and gorilla populations still remained. They had discussed creating a reserve with local stakeholders (village and clan chiefs, local landholders, village inhabitants) despite having to deal with the tragedy of civil war sweeping through their villages on many occasions.[14]

Below, the various phases of the development and implementation of the Tayna project are described from early 2001 until today, as it now functions as one of DRC's official protected areas.

Start-up phase for the Tayna project

By early 2001, DFGFI and Tayna staff had conducted a number of planning meetings and concurred that the first actions to accomplish would be to:

- Complete the receipt of formal NGO status for the Tayna working group;
- Establish an agreement between the Tayna group and the ICCN;
- Hire, equip and train field staff who could immediately begin work in and around the area targeted for the community reserve, to both conduct rigorous biological censuses and to provide more extensive awareness raising with the local population.

Interactions with "government" during the start-up phase

In mid-2001, the RGT received formal status as an NGO in eastern DRC. Because Goma was controlled by a rebel government at that time, NGO status was obtained from RCD Goma officials (by 2005, the RGT had applied for and received NGO status through the new unified DRC government in Kinshasa, obtaining a *Personnalité Juridique*). In mid-2001, the RGT also entered into a Memorandum of Understanding with the ICCN through their officials stationed with RCD Goma, and with the MLC, which controlled much of North Kivu. Since Mai-Mai militia groups also controlled the reserve area, the RGT also met with them and explained their apolitical status, obtaining permission to conduct field work. During the time the Mai-Mai controlled the area, they insisted on supporting the RGT by providing protection against other illegally armed

Lesson learned 2: Conservation work in contexts of civil strife (or civil war) must attempt to remain apolitical at all times. The success of this project, as it developed in a context of civil war, can largely be attributed to it maintaining an apolitical stance, and its representation by local people who were well-known in the area and who were willing to talk to every side to advance their conservation cause. The international sponsor, DFGFI, left all local political matters completely in the hands of the local NGO, the Tayna Gorilla Reserve Project.

12 CARPE is the Central African Regional Program for the Environment (Phase I began in 1995). Phase II, begun in 2003, was specifically designed to support the 11 Priority Landscapes of the Congo Basin Forest Partnership. CARPE II is divided into CARPE IIa (October 2003–September 2006) and CARPE IIb (October 2006–September 2011).

13 Direct funding figures quoted here are *estimations* of those funds that were directly provided to Tayna, UGADEC and the Tayna Center for Conservation Biology; they exclude Maiko National Park, and operational funding and administrative fees for DFGFI and CI.

14 It is important to note that when this project first received funding during the civil war, their region was partially controlled by various armed factions, such as the Mai-Mai, the Ugandan army, the MLC, and on some occasions, RCD Goma. This created a political context in which there was simply no central government. For the region of the incipient Tayna reserve, the only truly functioning government entity during this time was the traditional, customary powers.

groups by accompanying RGT and DFGFI staff on field missions.

Deploying field staff for Tayna

Field staff for the project were recruited from the Tayna region. Amongst the first 25 field staff, there were 15 "rangers/guards" and 10 trackers, the former being young men who had left the area to obtain university degrees and in a few cases, ICCN training, and the latter being local men living in the area as hunters and agriculturalists (in several cases, the sons of village and *groupement* chiefs). The first funding support went to equipping and paying the RGT field staff as well as to creating an office in Goma. Field staff created a small camp at Iseya (Figure 2a) with tents and traditional huts. Field staff received blue uniforms to distinguish them from all other groups in the region, and they were provided typical field equipment, such as tents, backpacks, binoculars, compasses, etc., as well as GPS units and satellite-image-based maps.

Lesson learned 3: When hiring and training field staff, hire locally and be willing to hire former hunters. All staff hired for this project were from the Tayna area, and since one of their primary duties was to sensitize local people, they could not have succeeded if they had not been local people. Former hunters were hired as trackers, and with a regular salary, made much more for themselves and their families than they would have gained from subsistence hunting and local trade of bushmeat. Most remain with the project today.

A small supervisory staff of four to six RGT employees remained in Goma (as well as Butembo) to deal with administration, finance and NGO relations. In the first year, foot messengers were responsible for all communications between Goma and Iseya (later, radio communications were established between Iseya and Goma). The RGT, in developing its identity, made an immediate decision to use the title of "Guide", rather than "guard" or "ranger", emphasizing that field staff were there to "guide" the local population in conducting community conservation, rather than assuming a police function usually associated with traditional national park staff. The Tayna guides and trackers were unarmed (as they are today).

Early training – biological data

In discussions with DFGFI scientific staff, the Tayna group determined the first objective for this initial phase of work: to transform traditional knowledge about the location of intact forests and presence of gorilla, chimpanzee and elephant populations into a quantified and geo-referenced database that would enable them to target limits for their reserve. It was presumed that protecting these forest blocks would, by default, protect the full range of biodiversity and ecosystem processes, a position the Tayna group rapidly reached as they become more fully aware of the IUCN Red List and international protected area efforts. As a result, they transformed their original concept from only protecting gorillas to creating a fully functioning, internationally recognized protected area.

To enable the Tayna group to create this database, in June 2001, the author, Stuart Nixon and Pierre Kakule (DFGFI employees at the time) travelled to Iseya and provided the first biological training for the staff in a "learn by doing" approach. Until that time, staff had been using traditional maps (both hand-made and government maps which often dated back to the colonial area) to understand better the location of small villages, geographical markers (rivers and mountains), the location of gorilla populations, and the location of important forest blocks relative to degraded or active agricultural areas.

Lesson learned 4: Train field staff immediately on the use of satellite imagery and how to geo-reference their field work. Traditional hand maps were essential for working with local people, but very early in the project, field staff were trained to translate these into geo-referenced maps. This was essential to the project in order to understand boundaries and customary claims, to understand the collection of biological and socio-economic information related to previous published work, and for the staff to navigate efficiently in a mountainous and difficult field context.

This was an opportunity to upgrade and fully modernize their tool kit.

In this first training, the RGT field staff were introduced to satellite mapping, the use of GPS units for field orientation, and to record the location of all geographical data. They learned to identify the presence of all fauna (not just gorillas) and were trained in identifying IUCN Red-listed species. Importantly, they were also trained in how to create and cut line transects, and conduct censuses along these, collecting data on the presence of all fauna and anthropogenic disturbance. Since RGT and DFGFI both wished to emphasize gorilla protection as the iconic species that represented the reserve, the staff were trained in how to collect quantitative data for gorilla nest sites, using methods the author had developed in the Central African Republic,[15] combined with DFGFI's long experience collecting data on mountain gorillas at the Karisoke Research Center.

One year later, four of the RGT staff traveled to the Karisoke Research Center in Ruhengeri, Rwanda and received further training. This

15 For more on gorilla nest counts, see Mehlman, P.T. and Doran, D.M. 2002. "Factors influencing western gorilla nest construction at Mondika Research Center". *International Journal of Primatology* 23(6): 1257–1285.

programme, which had great promise, was cut short by the Rwandan government when it blocked these exchanges, fearful that RGT staff may have had undesirable political affiliations.[16]

Early training: Sensitization/ awareness-raising approach while deploying the first development incentives

Training staff to conduct biodiversity surveys was rapid and relatively simple compared to the much more challenging task that the Tayna staff set out to accomplish (and requested DFGFI to assist with): how to work with local people so that they see the advantage of "ceding" their customary rights to hunt or expand their agricultural fields in areas of the reserve. In the start-up phase, field staff, when conducting biological and geographical surveys, were also expected to contact local villages, estimate their sizes, determine their locations, collect initial data on livelihoods and needs, and through communicating the advantages of preserving biodiversity to local people, sensitize inhabitants about the desire of the *chefferie* to establish a community-based gorilla reserve.

By the time of the first field training session in June 2001, the staff had already contacted many villages and had encountered some challenges. In general, those villages to the east of the reserve had village chiefs who had been sensitized by the Mwamis, and thus had come to understand a long-term vision; they were eager to hear how creating a reserve could benefit their future. In contrast, villages farther west and south were asking tough and pointed questions: "were the Mwamis selling 'their' land to foreigners for a profit; was a National Park going to be established that would be run by outsiders; what immediate trade-offs would be offered as compensation, etc?" These initial interactions with locals were the first serious challenge for the RGT. Could they communicate effectively to isolated, local people that a reserve could maintain essential ecosystem services, create opportunities for ecotourism, and in general improve livelihoods and stimulate the local economy?

The leadership of the Tayna group came up with what they believed would be a solution to breaking the "suspicion barrier" in some of their communities. They reached an agreement with DFGFI to provide some pilot development projects in selected villages. These included refurbishing four primary schools and staffing them with teachers, supporting two medical clinics and nurses, and creating a mobile health team that would provide some emergency health care in the area, given the limited resources. They argued that these responses to some of the "critical needs" of local communities would both demonstrate goodwill and a moral commitment on the part of their international partner and provide incentives to local people to become active participants in the reserve project. They also argued that the pilot projects should go initially to those villages that supported Tayna, not, in fact, to villages that had been the most resistant. They argued that any other approach would create perverse incentives, and that resistant villages after seeing the progress achieved in neighbouring villages would eventually come to support the project. As time passed, this proved to be correct.

Lesson learned 5: Assist local NGOS conducting sensitization to develop a standardized approach to education, awareness raising, and working with local people on issues of land use and conservation. We discovered that field staff in their enthusiasm to begin working with local people were actually interacting with villages in many different ways, depending on staff personalities, their understanding of the project, and more importantly, the reaction of locals to their message. We discovered a risk of creating perverse incentives, in that villages showing the most resistance to the project were sometimes given more attention and believed (or construed that) commitments for development incentives were being provided them as they "negotiated" their participation in the project. To address this gap, we immediately developed a standardized awareness-raising approach that emphasized the long-term benefits and advantages of the project, rather than a short-term view of opportunity costs incurred through the perceived loss of hunting rights and potential future agricultural expansion.

Due to lack of development funding relative to the enormous needs of the impoverished local population, development incentives for the Tayna project could not be calibrated as *quid pro quo* agreements that could offset the short-term opportunity costs of conservation incurred by local resource users.[17] The initial challenge, therefore, for the Tayna project was to develop a sensitization and awareness-raising programme for local people that could demonstrate in plain terms the long-term advantages of protecting their biodiversity, juxtaposed against the perception of short-term losses related to giving up rights to hunting and future agricultural expansion.

16 To emphasize the context of our work at that time, it is important to note that the first training was cut short and had to be completed in Butembo (Figure 1). After a week at Iseya, our group received word that armed forces of unknown origin (suspected Interehamwe) were camped only a few kilometres west of our position and were occupying a neighbouring village, and possibly intent on doing us harm. We immediately left, but two of the RGT supervisory staff courageously decided to go unaccompanied to the village to try to discuss the issue. They were promptly beaten, and taken hostage for three months before we secured their release. They remain with the programme today, one being the Director of UGADEC, and the other being a field supervisor for the RGT. The Interehamwe eventually left the village and today the village actively supports the Tayna Project. Since that initial incident, Tayna staff have never experienced a similar situation.

17 CI's Conservation Steward's programme works through an approach called Conservation Agreements; these provide exact *quid pro quo* contracts that specify conservation activities to be accomplished and match these to lost opportunity costs via specific economic and development initiatives.

With the support of DFGFI, the Tayna group then developed a standardized sensitization methodology to be used by the field staff in visits to local villages where they fostered "dialogue committees":

1. It used local people's interest in gorillas as charismatic animals in their culture to stimulate interest in protecting biodiversity;

2. It used a Noah's Ark story to inspire them about their responsibility to be stewards of their biodiversity;

3. It informed people about the IUCN Red list and DRC's list of protected species;

4. It used local examples of disappearing forest and fauna (loss of forest from cattle ranching; loss of gorillas in the east when they once were common, and loss of bongo throughout the area) to sensitize communities to the existence of environmental threats and the concomitant need for behavioural change as formalized in the development of a plan for sustainable use of forest and fauna before these resources disappeared altogether;

5. It made local people aware of the potential for ecotourism by describing nearby examples where foreigners were paying to visit gorillas (Rwanda, and previously in DRC, when gorilla tourism was being conducted in the Virungas and at Kahuzi-Biega) and would pay for places to stay, places to eat, and would be interested in buying handicrafts and seeing local culture;

6. It made local people aware of the value of forests for their local watersheds and how designating "no-go" zones would allow populations of fauna to recover from over-hunting;

7. It described how community conservation differed from a national parks approach, and how financial and economic benefits would remain local;

8. It described how community conservation could draw attention to their communities and attract development incentives, and used the pilot development projects as examples;

9. It made clear that no promises were being made for *quid pro quo* development incentives;

10. It solicited from local people their ideas of the critical needs for their villages;

11. It introduced a concept of participatory mapping, in which local people were encouraged to explain how they used adjacent forests and were introduced to the idea that they could easily cede the use of some of these areas by shifting their usage patterns;

12. It introduced the concept of *vacance de terre*, an official declaration by local people who wished to support the reserve indicating that the designated area for the reserve was not in active use, and there were no future plans to use the area;

13. It established a network of communications (foot messengers at the time) to facilitate further dialogue and to inform local "notables" (chiefs, landholders, etc.) about further developments such as the presence of field staff conducting studies or sensitization or important meetings of the customary powers.

Armed with knowledge of how to collect biodiversity and basic socio-economic data, as well as an awareness-raising methodology ("armed with knowledge, not guns" became the slogan), the Tayna field staff working with local villages throughout 2001 and 2002, and through a process of convening with local people, began to define what might be a first perimeter for the Tayna reserve (Figure 2a). During the same time, some of the field staff assigned to census large mammals and anthropogenic disturbance, completed a grid of about 70 km of line transects, which provided a first estimate that more than 400 Grauer's gorillas lived within the area they had targeted for the reserve.[18]

The Tayna group develops a first land-use plan and seeks national government recognition

By early 2002, the RGT convened its first General Assembly of village and *groupement*[19] chiefs from the Tayna region. The Assembly, led by Pierre Kakule, was composed of 13 village chiefs and other notables. They discussed the proposed limits of a reserve by evaluating data collected at that time by their staff concerning the distribution of remaining villages in and near the proposed reserve, the distribution of forests and gorillas, and the use of the forests by local people. After negotiations, the Assembly ratified the first land-use plan and agreed that the two *chefferies* should petition the government to become recognized as a protected area under the new Forest Code.

In November, 2002, the first governmental Decree recognizing the Tayna Gorilla Reserve was signed by the Minister of Environment. It established an integral zone with complete protection, and made provisions for

18 See Mehlman, P.T. 2008. "Status of wild gorilla populations". In: Stoinski, T., Steklis, D. and Mehlman, P.T. (Eds) *Conservation in the 21st Century: Gorillas as a Case Study,* pp.3–56. New York, NY: Springer Press. Note that the figure of more than 600 gorillas referenced in that work includes areas south and outside of the present-day limits of Tayna Nature Reserve (i.e., includes the northern area of Kisimba-Ikobo Nature Reserve).

19 A grouping of several villages, roughly equivalent to a clan, led by a chief who can convene village chiefs.

a working committee to establish a management plan for the reserve. It is noteworthy that the limits of the integral zone (effectively, the reserve) at that time, were quite different from their configuration today. The evolution of this participatory mapping and delimitation is explained below.

Evolution of the Tayna Reserve integral zone borders 2002–2005

Between 2002 and 2005, the stakeholders of Tayna substantially modified the limits of their integral zone with a shift northward of boundaries in the south and a shift eastward in the north (see Figure 2). In the south, this change reflected political realities; in the north-east, the change reflected new knowledge gained from field surveys, as well as new engagement with local villagers through participatory mapping.

After considerable study of administrative maps, it was realized that the proposed southern borders of Tayna overlapped with the Territory of Walikale. The Tayna Reserve under this configuration would be mostly in the Territory of Lubero where the customary powers for the Batangi-Bamate were located, but would cross over into another territory (Figures 2 and 3).

This approach had been quite natural for the customary powers, since in the area south of Tayna, most villages were Bamate and Batangi, even though they were administratively located in another territory (highlighting the fluid nature of *chefferie* boundaries compared to administrative boundaries laid down in the colonial era). For the Tayna staff working in the field, it had also been quite natural, since their surveys of gorillas had taken them south through mountainous, uninhabited areas with no biogeographical boundaries.

The Tayna customary powers reviewed this issue and made the political decision to keep the Tayna boundaries within "their" Territory of Lubero, and shifted the integral zone north. This decision, however, was made much easier since their model for community conservation had been taken up by two neighbouring *chefferies* to the south-east and south-west, with those communities designating integral zones that abutted Tayna's southern border (Figure 2). In addition, Tayna field staff were already actively training the staff from the two other Reserve projects of UGADEC that bordered Tayna to the south. Ultimately, the boundaries of the three reserves in question were decided upon after deliberations within the UGADEC Federation and a series of trips to the field to seek stakeholder approval.

Lesson learned 6: With technical advice, a local community NGO developed its own zoning regulations for their nature reserve and community zones consistent with an international approach to biodiversity conservation (Figure 3). The Tayna group developed the following zoning regulations that are in place today:

Integral zone: Level of protection is identical to that of a National Park, i.e., complete protection for all flora and fauna, and no exploitation of any natural resources at present or in the future. The few remaining small villages within the integral zone will be encouraged to relocate by offering "magnet centres" outside the integral zone that provide clinics, schools and alternative livelihoods. Appropriate tourism and scientific study will be encouraged and proceeds will go to the ***collectivité*** for reserve management and community development (managed by the customary powers).

Buffer zone: An area extending 5 km from the limits of the integral zone where current residents may remain and may continue their agriculture and pastoral livelihoods, but where no new agricultural clearing and no new immigration will be permitted. Subsistence hunting of non-protected species and extraction of NTFPs by residents will be permitted to continue, using traditional methods (snares, spears, bows, nets made from natural, i.e., non-metallic, materials). Harvest and growth rates of these non-protected species and production rates of NTFPs will be evaluated and monitored by scientific study (with full cooperation and participation of remaining residents), and if subsistence hunting of any individual species (or extraction of NTFPs) is not sustainable, hunting and extraction rights may be limited for appropriate periods of time or by season. Neither logging nor charcoal production will be permitted in buffer zones. Commercial mining in general will not be permitted, but small mining concessions to residents may be granted if consistent with the community conservation and development vision.

Development zone: Zones outside of the Nature Reserve, but within the ***chefferie*** where all legal activities are permitted (consistent with customary and national laws). These zones will receive conservation education and awareness-raising initiatives, and will be targeted for rural development.

Lesson learned 7: Community nature reserve boundaries are created in a context of stakeholder participation and agreements, political realities, and the location of important biodiversity. Because of this grass-roots approach, proposed boundaries can undergo substantial change before a consensus on their final configuration is reached. In this project, technical advice from international NGO partners related to determining a final configuration for the integral zone emphasized: 1) keeping the protected area within government-recognized administrative borders; 2) working collaboratively with neighbouring communities to increase connectivity of integral zones (this approach was supported by finding funding for neighbours); 3) efforts to incorporate high biodiversity zones and maintain connectivity through the creation of "mini-corridors".

In 2002, the Tayna group had noted on their map the presence of chimpanzees and primary forest north-east of their proposed reserve (two dotted circles in Figure 2a), but this was secondhand information provided by locals, since these areas were the most mountainous and isolated terrain in their *chefferies* (Figure 3). However, during a series of field expeditions by the Tayna staff during this time period, they verified this information and determined that gorillas were also found in some parts of this forested area. During these field trips, they discovered that there were no active villages in this zone and through engagement with local stakeholders living on the periphery of the zone, received agreements from them that they could shift their hunting activities away from the new reserve area. They therefore incorporated these zones into the Tayna Reserve by creating a small corridor that extended northeast (Figure 2a). This process was completed before the Tayna group submitted its next application to the National Government to become an officially recognized Nature Reserve (see below).

Obtaining legal status as a DRC protected area and creating a unique community-based management approach

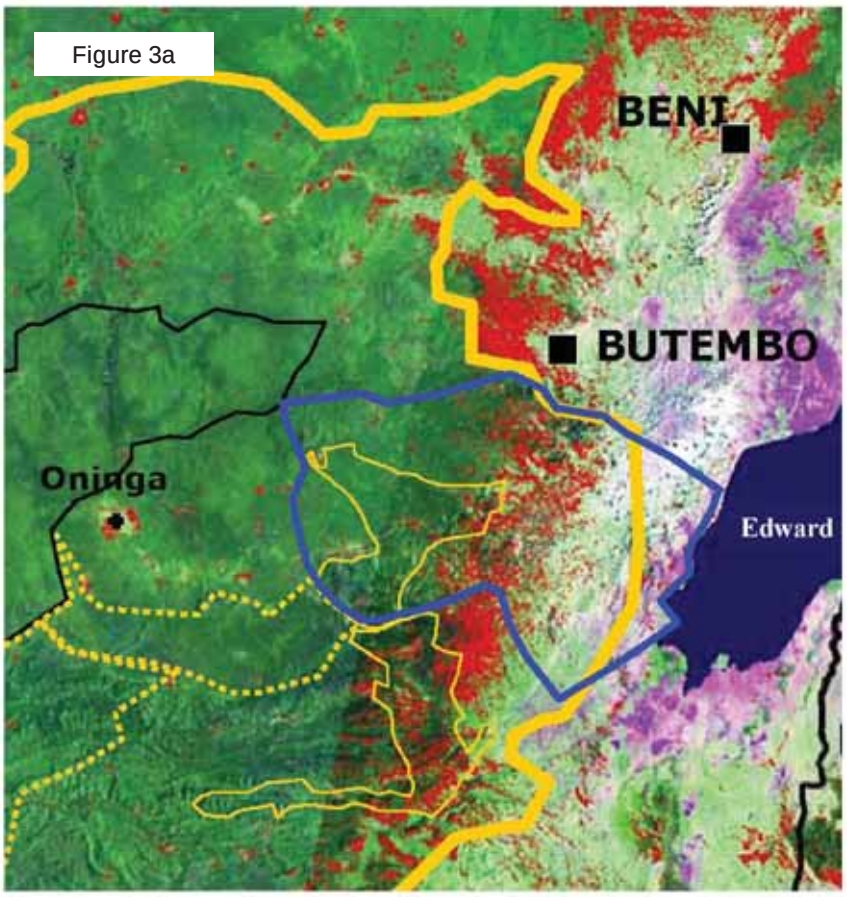
By early 2006, the Tayna group, as well as their neighbours to the south, the Kisimba-Ikobo *groupements*, submitted proposals to the Ministry of Environment and the ICCN to become officially recognized Nature Reserves. Each proposal included the following documentation:

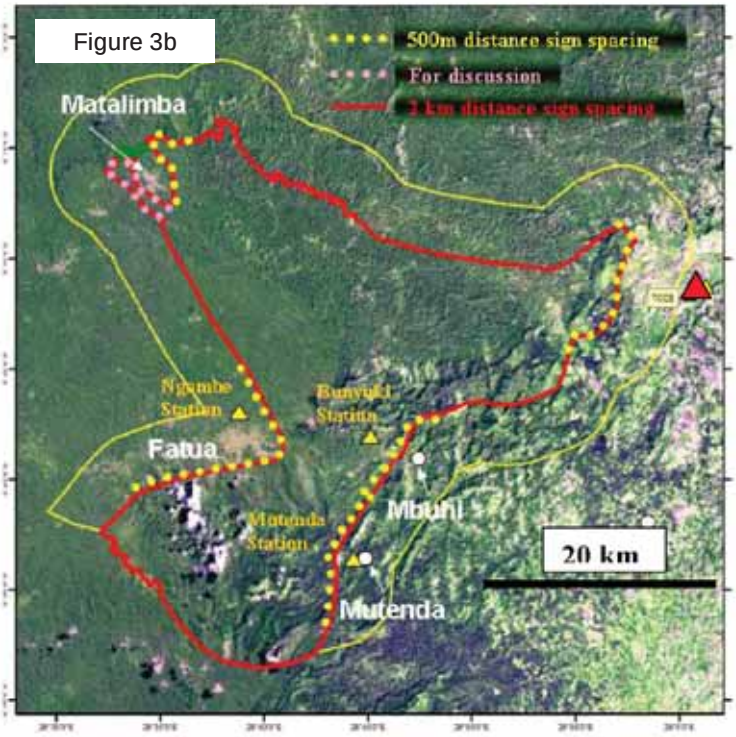
1. Official recognition by the government that the Tayna (and Kisimba-Ikobo) group had received NGO status;

2. A management plan for the reserves, including proposed administrative structures;

3. Documentation that the Tayna (and Kisimba-Ikobo) group had an

Figure 3. 3a displays the boundaries for the combined *chefferies* of the Bamate-Batangi peoples; 3b shows the integral zone for the Tayna Nature Reserve with buffer zone and location of signage for demarcation





active Memorandum of Agreement with the ICCN, describing their terms of cooperation;

4. Documentation that the Tayna (and Kisimba-Ikobo) group had notified and sought approval from the provincial and territorial authorities;

5. Agreements signed by local communities that they supported the Nature Reserve projects;

6. *Vacances de terres* (see above) signed by the local customary powers and land users indicating that the land found in the proposed reserves was not in use and would not be needed in the future;

7. The boundary limits for the proposed reserves (integral zones).

These proposals were reviewed by the Ministry of Environment and the ICCN, and were approved and signed into law by the Minister as two separate decrees creating the Tayna and Kisimba-Ikobo Nature Reserves.[20]

Once created, the two Reserves became part of the DRC network of protected areas under the mandate of the ICCN. Management contracts between the ICCN and each of the Reserves' community management groups created a co-management regime in which the local communities were responsible for management of the Reserve, overseen by the ICCN via annual reporting and the creation of a CoCoSi (Site Coordinating Committee) for each reserve.

Recent management activities

Physical boundaries demarcated

Late in 2007, the Tayna Nature Reserve became the first protected area in DRC to provide a complete physical delimitation for its boundaries. By 2006, despite the success of this community reserve approach, anecdotal evidence suggested that unclear boundaries were one of the limiting factors of Tayna's conservation capacity: field staff reported that much of the illegal extraction by local residents stemmed from a lack of specific knowledge about the placement of the boundaries rather than a disregard for conservation goals. To address this, a project was developed to place signage along the boundaries of the reserve, employing local dialogue committees. This was accompanied by an awareness-raising campaign.

The demarcation project was implemented through eight local dialogue committees in villages nearby the reserve, led by Tayna field staff and Tayna Center for Conservation Biology (TCCB) students. It began in late 2005 with a Tayna management meeting that developed and implemented the following step-by-step phases of the project:

1. An initial "Leaders" workshop, in which two representatives of each village dialogue committee were invited to the TCCB to gather feedback from local stakeholders and to develop the details for the workplan;

2. Field visits by Tayna staff to villages with dialogue committees to sensitize local stakeholders about the demarcation project;

3. Publication of 1000 brochures in French and Swahili that were distributed in these village meetings that described the Tayna project and the importance of demarcation;

4. Radio broadcasts that described the importance of the new project (via the Tayna community radio station, as well as two other commercial radio stations in the area);

5. Rotational field visits by Tayna staff to dialogue committees to install the signs with members of the villages;

6. The use of the demarcation project to achieve final consensus on boundary limits as the boundary signs were installed;

7. Establishment of a monitoring protocol managed by the dialogue committees in conjunction with the Tayna field staff.

This project, which was completed in late 2007, resulted in the placement of signs at 500 m intervals near boundaries with the highest human traffic (villages in the buffer zones), with boundaries in more remote areas of the forest having signs placed at 2 km intervals, often following well-known rivers and streams (Figure 3). Additionally, large signs were placed in four key villages. Local villagers, led by the dialogue

Lesson learned 8: A first priority activity for any community-managed protected area should be to provide a physical delimitation for its boundaries. Local people need physical boundaries to comply with conservation planning. In this project, we learned that a demarcation project needed to be done with and by local villagers in "dialogue committees". Their participation served to achieve consensus on the "micro"-specifics of boundaries and sensitized local stakeholders as to the exact placement of the boundaries. The work of placing the signs also provided temporary employment for local people. The project also provided a broader education campaign about the necessity of physical demarcation of the Reserve through printed brochures and radio broadcasts.

20 Available upon request, contact the author at ptmehlman@yahoo.com or Pierre Kakule at pktayna@yahoo.fr.

Examples of some of the signs demarcating the boundaries of the Tayna Nature Reserve.

committees and Tayna field staff, were hired on a temporary basis to install the signs (203 in total).

Completion of a business plan for the Tayna Reserve

The Tayna Reserve completed its management plan in 2008, and along with international partners decided that the management plan also needed an accompanying business plan that detailed recurring costs related to staffing and operations.

Convening of the CoCoSi (Site Coordinating Committee)

The contract with ICCN, in which the RGT was responsible for Reserve management, called for a yearly meeting of a CoCoSi identical to the standard management protocols for other DRC National Parks. The first Tayna CoCoSi was held in September, 2007 and a second was held in September, 2008. These were attended by the Tayna management group, the ICCN, Tayna's international partner – DFGFI, local stakeholders, and territorial authorities. This committee evaluated overall progress towards conservation and development goals, and created an activity and financial plan for each coming year.

Discussion and summary

The Tayna experience demonstrates is that there is no abstract formula or planning methodology to create a community-managed protected area. As conservation NGOs, we sometimes mistakenly believe that once we complete a project's logical framework of activities and budget, there is then a straight line along the continuum of conception to implementation to stable and sustainable operations. Nothing is further from reality. Unanticipated obstacles frequently emerge that require creative and adaptive solutions. Funding may not be secured, and when it does arrive, there are often shortfalls due to unforeseen events. Negotiations with local stakeholders can stall and sometimes break down. Key staff members may become ill or even die. Security can worsen. Governments and key policy makers change. Logistics somehow end up being far worse than imagined. None of this minimizes the role of planning. To the contrary, without a first road map, one can literally get lost in the wilderness. But we now realize that the first planning matrix will only partially resemble the path one takes to later planning iterations three or four years into a project. One cannot emphasize enough the role of adaptive and flexible management policies along the way. Reaching a stable management regime takes years.

The Tayna project was originally conceived from field experiences, discussions in village councils, and around campfires, rather than through paper planning documents. This approach better reflects how local

African groups conduct much of their customary governance and contrasts with a western, linear view of the future. Nevertheless, these two approaches developed into a unique synthesis between a local organization and western international conservation NGOs, with much learning along the way. The very organic nature of the project in fact became its strength, and the myriad ways in which we all needed to adapt provided a solid foundation for a novel approach to conservation in central Africa. As the Tayna group grew in experience and assimilated the technical advice of their conservation NGO partners, the log-frames, Powerpoints©, scientific articles, management and business plans blossomed. In retrospect, it is difficult to imagine how the project could have evolved otherwise. Without the initial "boots-on-the-ground" experiences and the love of nature the local people exhibit for their forests and animals, the abstract planning, administrative and scientific approaches would have been too disconnected from the very "nature" they were trying to protect.

This experiment in grass-roots community conservation continues. With the leadership provided by the Tayna Reserve, the approach has been scaled up to seven other sister projects in eastern DRC, and from that, a federation of these projects, UGADEC, has emerged. Later, using some elements of the Tayna model, the Sankuru Nature Reserve was created. In Equateur Province, the Tayna model has been almost exactly replicated by another community group, Vie Sauvage, which wishes to establish the Kokolopori Bonobo Nature Reserve (the Ministerial Decree is currently awaiting signature).

As the Tayna model is now being replicated, it clearly demonstrates what we have learned as the basic enabling conditions necessary to succeed in community conservation:

1. Strong motivation on the part of local communities to safeguard their biodiversity and to pursue integrated conservation and development initiatives;

2. The presence of well functioning customary powers, which provide the leadership necessary to motivate local communities and maintain an institutional foundation for well organized interventions;

3. A partnership with an international partner that encourages local leadership to flourish, can translate local aspirations about resource management, conservation and development into internationally recognized approaches for creating protected areas, and can provide the essential funding to develop and implement projects;

4. A national government with the political will to attempt novel approaches to conservation and local management regimes.

Without these basic enabling conditions, we believe it unlikely that the Tayna experience would have resulted in the first community-managed, nationally recognized protected area in DRC, nor would the model have spread to other areas.

A number of specific lessons learned from this experience may also be useful for international conservation groups to apply elsewhere to catalyze similar projects:

1. ***Look for the emergence of local groups***. Be attentive to any locally organized groups that emerge with ideas about conservation and resource management. Their mere presence probably indicates local motivation to act, and if due-diligence research confirms that they do indeed have potential, be willing to test them with incremental financial and technical support.

2. ***Translate local aspirations to global frameworks.*** Aid the local group to modify and translate their local aspirations and ideas into international (and national) frameworks. Here, it is important to create a knowledge-transfer process so that concepts of sufficient scale to preserve ecological processes and connectivity, protection of globally important species, ecosystem services, and technical and financial sustainability are integrated into their approach. Encourage local groups to become engaged at wider levels (provincial, national, regional, international) to increase their knowledge base.

3. ***Understand the local groups' interests.*** It is unusual that human communities do something for nothing. Be cognizant that the local group is quite aware of their opportunity costs. Through direct contractual *quid pro quo* arrangements providing benefits, and through extensive education about long-term benefits, ensure that local groups perceive their actions as enabling them to reach development objectives.

4. ***Moral, ethical and philosophical principles are essential.*** Often, as conservation NGOs, we are the first groups to reach isolated areas where biodiversity is still intact. Because of this isolation, local people may lack immediate, critical needs, most often related to health and food security issues. As a priority, find partners or donors that can help meet these needs as a gesture of goodwill.

Hungry, ill people are unlikely to be interested in long-term resource management. To ignore these needs is moral relativism and will not go unnoticed by local communities.

5. ***Foster independence and autonomy.*** We, as conservation NGOs, often believe we have most of the answers in our tool kits. Local groups know their social contexts best, and they need the freedom and the opportunity to conduct their own experiments to gain experience. Empowerment is not a top-down process, nor can it be fast-tracked. Project sustainability ultimately depends on the ability of local communities to manage their own natural resources. '

Chapter 3

Forest Concession Land-Use Planning: Lessons Learned

Cléto Ndikumagenge

1. Introduction

The area covered by forest concessions in Central African forest countries (Cameroon, DRC, Gabon, Congo, CAR and Equatorial Guinea) is estimated today to total 50 million ha, which is about 25 percent of the evergreen rainforest of the region. All lands belong to the State and concessionaires simply manage the resources for a set period of time. In most of the countries, Cameroon excepted, the zoning process has not yet been finalized. Nonetheless, there has been noticeable progress in the gazettement of forest concessions in these countries.

In its strategy of implementing the policy of conservation and sustainable management of natural resources in the Congo Basin, and more especially in accomplishing its Intermediary Result 2, CARPE is working with partners at all levels – micro-, meso- and macro-zone , but also at national and global level – to make the most of the lessons learned in its various areas of intervention, especially those to do with forest concessions.

The purpose of this paper is to present a summary of the history of the development of forest concession management in Central Africa, from colonial days up to the present; to highlight the main challenges (former and emerging) for better land-use planning (LUP) in forest concessions; to outline the main lessons learned from case studies analyzed in the Democratic Republic of Congo, in the Cameroon and Congo segments of the Sangha Tri-National Landscape; and to provide some guidelines on current trends.

2. Development of forest management from the colonial period to the present

2.1 From mining management to sustainable management of forest

The history of forest management in Central Africa demonstrates the evolution of sylviculture and land management since the 19th century.

In fact, from the 18th century to the 1950s, policies on the management of forest resources were State-driven and all forest management was geared towards the promotion of logging without any real concern about regulating logging nor preserving wildlife. Most of the logging was for household use. Forests were, in almost all cases, the sole responsibility of the State.

In the 1950s, the situation started to change as forest management and logging were mostly geared towards the reconstruction of Europe after the 2nd World War.

For a long time, logging activity was concentrated mostly around the coastline because of problems of transportation.

In the 1960s and 1970s, with the coming of mobile saws and better means of transportation, an increase in demand saw logging activity expand further and further inland although most of the land still remained unexploited.

A few trials were carried out in natural forests and they revealed that sylvicultural treatments before and after logging could significantly improve growth rates and consequently the volumes of marketable species.

Prompted by organizations such as IUCN, the necessity of taking conservation needs into consideration started to be felt. In 1975, the IUCN General Assembly organized in Nsele gave fresh impetus to the recognition of the importance of tropical forests to conservation.

In the 1980s, enormous efforts were made to develop programmes aimed at promoting conservation and regulating forest logging. This gradually evolved into programmes relating the conservation of forest resources to the development of local communities.

In the 1990s, some governments started to adopt laws to enable local communities to be involved in the management of forest resources.

During this period, concessionaires started to play an important role in management including the role hitherto entrusted to governments such as that of being responsible for the management of lands on which concessions had been granted.
The obligations of concessionaires continued to grow and included various responsibilities:

- Technical responsibilities such as the preparation of management plans followed by directives and standards, management of felling plots, etc.;
- Social responsibilities through the creation of jobs, the provision of goods and services to administrations and the local populations, contributions to local projects, etc.;
- Economic responsibilities through the contribution of processing units, and the creation and maintenance of roads;
- Social responsibilities through the paying of a number of fees and taxes in addition to those stipulated by law;
- Environmental responsibilities geared towards respect for biological diversity especially wildlife in production zones.

2.2 Progress made on certification

Over the past 10 years, a new era has been born with the advent of forest certification. Concessionaires and States are doing quite a lot for the certification of natural forests. Presently, the surface area under FSC certification has grown from zero in 2006 to more than 4 million ha in 2010.

3. Major challenges in forest concession management

3.1 Forest concessions and land tenure

In spite of significant progress within the framework of forest management, aspects of forest tenure are not yet harmonized in Central African countries. When it comes to large-scale zoning, apart from Cameroon, the other countries have still to complete their zoning plans.

The period granted to concessionaires varies from country to country depending on the regulations in force: it can be 30 years or more.

3.2 Challenges of biodiversity conservation in production forests:10 commandments for managing wildlife

A study carried out in the south of Cameroon in 2003 in a forest concession managed by a logging company called FIPCAM has shown that it is large mammals (gorillas, chimpanzees and elephants) that are facing the most pressure from logging.

Besides logging (that has as its corollary the disruption of habitats and the gradual disappearance of animal and plant species), there are many other pressures that are for the most part found outside of forest concessions. They include:

- the economic crisis of which one of the consequences is the decline in jobs in the public and private sectors, and the subsequent return of unemployed city dwellers to rural areas;
- the devaluation of the CFA Franc in 1994 and structural adjustment measures imposed by the World Bank and the IMF;
- new economic difficulties related to the reduction in oil revenues and associated jobs, thereby creating an attractive economic niche for the trade in bushmeat;
- the fall in price of cash crops (cocoa, coffee), coupled with poor sales of these export products, again causing the bushmeat trade to become a more important source of income for rural households in forest zones;
- the proliferation of more efficient hunting weapons aggravated by armed conflicts in the sub-region;
- the opening of new road networks by logging and mining companies thereby facilitating access to forest zones that were hitherto not accessible to hunters;
- the development of more efficient means of transportation;
- the growing demand for bushmeat in cities;

- the opening up of some regions that has led to an increase in outlets for the sale of bushmeat;
- the development of transborder trade and markets for bushmeat in urban areas;
- human immigration into logging and mining sites, and agro-industrial plants;
- huge inadequacies in the implementation of the law.

Some concessionaires have, in collaboration with conservation partners, set up some basic rules to reduce the loss of biodiversity and especially wildlife. These rules, that have been dubbed the "ten commandments", were outlined at Lopé, Gabon, in 2000. They are:

1. Promote knowledge and respect for the laws in force inside and outside the forest concession through close collaboration between all actors;

2. Create between funding bodies, administrations, logging companies and conservation communities, true partnerships with rights and obligations that are known and accepted by all;

3. Mainstream the problem of "wildlife management" in designing and implementing management plans;

4. Restrict access to the concession;

5. Ban all commercial hunting or hunting using non-selective techniques in the forest concession;

6. Manage immigration to the forest concession with relation to living quarters, permanent camps and industrial sites;

7. Put up strict regulations and instruments for efficient control in the concession;

8. Establish awareness-raising and education programmes on the issue of overexploitation of wildlife;

9. Promote the use of alternative sources of protein to satisfy the dietary needs of the populations;

10. Never give up!

3.3 How to reconcile the landscape approach with the management of forest concessions?

Landscapes are geographical areas where there is human activity and where there are physical and biological specificities for a given region, institutions and people who influence the latter, as well as cultural and spiritual values. Their scope has to be determined in terms of the targeted management objectives.

Among the main principles of forest landscape restoration are: (i) the identification of zones to be restored within landscapes taking into consideration the preservation of biodiversity, species, their habitats and ecosystems, and fostering the resilience of ecological systems; (ii) the promotion of a holistic vision while taking into consideration the management of large mosaics and the entire landscape; and (iii) the promotion of multi-actor platforms (government, civil society, communities and the private sector) for landscape management, to facilitate good moral, social, ethical and professional relations.

In the case of Central African forest concessions, most of them are contiguous to protected areas and are part of these large mosaics. Landscape development and management has to take into consideration the interactions between protected areas and forest concessions. The security of protected areas within a landscape depends on how sustainably they are exploited, the dynamics of the peripheral zones as well as the management of relations between the actors involved.

3.4 Emerging issues

There are emerging issues that have not been looked at in the case studies but that will have short and medium-term impacts on forest concessions.

Forest concessions and energy
The 13th World Forestry Congress in Buenos Aires (October 2009) highlighted the importance of bio-energy and its impact on the use of landscapes. In fact, bio-energy is used by at least 10 percent of the world's population and has pride of place in all developing countries.

As a result of the subsidies provided for research into first-rate bio-fuels, it is possible that land currently occupied by forest concessions will be given over to the production of bio-fuels.

The World Congress recognized the potential negative impact of the development of bio-fuels on agricultural and forest lands.

Importance of large plantations and their impact on forest concessions

With the development of environmental awareness due partly to climate change and the current economic downturn, there is good reason to ask if current land-use plans will be respected. Nobody can predict the evolution of the annual growth of plantations in the context of climate change. Will the trend be to produce timber in artificial plantations and leave natural forests for the conservation of biodiversity and carbon sequestration?

Similarly, with the much awaited development of bio-fuels in Africa, will large palm plantations that provide the opportunity, in the short term, for greater financial rewards than those provided by forests, not have the tendency to replace natural forests?

Impact of the UN-REDD Programme[1] on the management of forest concessions

The international community acknowledges the importance of Congo Basin forests in carbon sequestration. Although they represent only a relatively small percentage as compared to other types of forests in the world (especially temperate forests), they stock a relatively large volume of carbon as compared to these other types of forests.

The REDD process that consists of paying compensation to developing countries that have a net reduction of emission of greenhouse gases in order to mitigate climate change is topical today.

The Congo Basin countries that manage forest concessions want to have credits for the preliminary measures of sustainable management already undertaken, to develop suitable policies, incentives and reference scenarios that take into consideration demographical evolution, food security and energy needs.

The issue at stake in the long term is the future of management plans and land-use plans if the REDD mechanism is implemented.

The position of the Congo Basin countries on this issue is that "degradation in forest concessions should be taken into account on the same basis as deforestation".

Also, only the carbon market mechanism can generate the necessary financial resources for REDD and ensure sustainable funding.

1 The United Nations Collaborative Programme on Reducing Emissions from Deforestation and forest Degradation in Developing Countries.

4. Synthesis of main lessons learnt from on-going experiences

4.1 Experiences may vary but some common lessons can be learned

Within the framework of capitalizing on experiences and lessons learned by CARPE, three case studies on planning forest management in concessions were carried out:

- Land-use planning by the Wildlife Conservation Society (WCS) and the Enzyme Refiners Association (ENRA) in the Ituri-Epuli Landscape of the Democratic Republic of Congo;
- The gazettement process and management of forest concessions in the Cameroon segment of the Sangha Tri-National (TNS) Landscape, by the World Wide Fund for Nature (WWF); and
- The multi-organizational model of land-use planning and management of forest resources in forest concessions in the TNS within the framework of the Project for the Management of Ecosystems around the Nouabalé-Ndoki National Park (PROGEPP in French).

In spite of the diversity of the landscapes and the complexity of contexts, in the analysis there is some convergence of the main lessons learned in the management of forested lands of which the most important are:

4.2 Act locally and think globally to influence policies at national and regional levels

LUP processes always require the involvement of communities, local authorities, local, national and sub-regional administrations. In the case of ENRA, it is reported that despite the weakness of local authorities, they nonetheless represent the legal authority and ignoring them can compromise the conduct of other planning initiatives. Collaboration with local authorities has facilitated gradual collaboration with the Administrator of the Mambassa Territory through quarterly meetings and other strategic meetings.

In the case of Cameroon, it has been observed that supposedly "weak actors" can constitute a significant threat to biodiversity if they believe that management rules are detrimental to their interests. From this participatory process of gazetting forest concessions, it is clear that conservation is not a technical process but also and mostly a social process.

4.3 Promote the landscape approach and multi-actor partnerships

In the countries covered by the case studies, it has been observed that forest concession management and development must take into consideration the contiguous protected areas (Virunga National Park for the DRC, the Nouabalé-Ndoki National Park for Congo and Lobéké National Park for Cameroon). In Cameroon and Congo, it has been proven that the management of protected areas within a landscape depends on how the periphery is managed.

Tripartite partnerships involving the private sector, conservation NGOs and the local administration are often presented as a model to other sub-regions. It is thanks to multi-actor partnerships (CIB, WCS and the Ministry of Forest Economy for the Congo; ENRA, WCS and the Ministry for the DRC; and WWF, CEFAC and the Ministry in charge of Forestry for Cameroon) that management plans and land-use plans are developed.

In these partnerships, spelling out clear roles and responsibilities is crucial. In fact, conservation agencies must avoid conflicts and possible competition with administrations acting as technical support/advisory agencies to other actors. The TNS experience in the Cameroon segment brings to the fore the fact that the landscape conservation approach is

a “science of compromises” and that no actor has enough power to impose rules that others cannot understand or share in.

If well carried out, these partnerships result in the signing of collaboration agreements such as the “Mambele Agreement” (between local communities, safari hunting companies and the forestry administration that spells out the roles and responsibilities of each party with regards to sustainable management of wild fauna, and access to the various allocation units) and the anti-poaching agreement called the “LAB Agreement” (between logging and safari hunting companies, local communities, forestry administration and conservation NGOs). In the DRC, these partnerships have made it possible to sign collaboration agreements with ENRA and WCS. This also makes it possible to put in place and strengthen consultation fora between the forestry administration, conservation NGOs and forest concessions to evaluate and direct efforts towards the sustainable management of forest concessions (e.g., WWF and the SAFEC Company).

4.4 Acknowledge traditional land-use systems and the immediate interests of local communities

Regardless of the context, case studies have shown the need to master and take into consideration traditional land management systems and to preserve the immediate interests of communities.

In Cameroon for example, it is important to note that perceptions of land tenure vary between local communities and migrants – migrants are more likely to want to secure as much land as possible in protected landscapes (protected areas and forest concessions), and this creates conflicts between the various ethnic groups.

Experience has shown that it is only thanks to sincere and open collaboration between actors that a zoning plan may be developed on which the boundaries of non-conflicting usage can be superimposed. The process of landscape zoning is much more likely to succeed if all actors concerned can discuss and agree on how the boundaries of non-conflicting allocations can be superimposed (and overlap) rather than focusing all their attention on exclusive allocation.

In North Congo, PROGEPP is working to strengthen formal recognition of the rights of communities in hunting zones and to formally recognize the rights of pygmy communities in forest concessions.

4.5 Increasing role of South-South dialogue and sharing between landscapes

Thanks to the harmonization of sub-regional policies under the coordination of COMIFAC, there has been an important promotion of discussion and transboundary management to enable new experience sharing in concession and zoning management; those countries that are more advanced in land-use planning should aim to inspire others.

4.6 Role of science and new tools and methods to monitor landscapes

The complexity of landscapes requires the intervention of scientists who work in close collaboration with professionals and the administration to define new tools to monitor landscapes that allow for the various achievements (natural, social, financial, human, cultural, infrastructural) to be measured. The example of the Groupe Sangha that follows up the annual evolution of the TNS landscape is quite illustrative, for it makes it possible to capitalize on development and conservation using indicators or benchmarks.

Thanks to this group, there are several new tools to monitor landscapes such as modelling that allows for simulation of various scenarios; monitoring development indicators that allow for the monitoring of the evolution of landscape; visualization that allows communities to express their current and future views of the landscape through sessions; and the cyber tracker that makes it possible to improve on how to plan and carry out logging operations. The success observed may contribute to improving regulation.

5. Conclusions

- Thanks to the harmonization of policies and the commitment of partners such as CARPE and others, the Congo Basin has made considerable efforts to manage forest concessions in a sustainable manner through the drawing up and implementation of participatory management plans;
- Multi-actor partnerships allowing for the involvement of the private sector and NGOs will be strengthened in order to facilitate the implementation of management plans;
- In spite of efforts made in countries through the COMIFAC, the issue of forest tenure and access of communities to land is not yet clear, given that some countries are more advanced than others;
- As a result of market pressures and climate change, the role of forest concessions in providing fuelwood will become more important;
- Forest plantations and agro-industries, especially of palm trees and other plants used to provide bio-fuels, are playing an increasingly important role in countries;
- Opportunities and uncertainties generated by the REDD process will have consequences for the development of forest concessions. In fact, the future of forest concessions is not limited solely to carbon sequestration or environmental services that are essential for the future of the plantations; in addition, the human and economic dimensions of this area are inescapable. '

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Case Study 1

The Process of Gazettement and Management of Forest Concessions in the Cameroon Segment of the Sangha Tri-National Landscape

Zacharie Nzooh Dongmo, Alphonse Ngniado, Louis Defo, Leonard Usongo and George Akwa

Overview of forest concessions

The Cameroon segment of the Sangha Tri-National (Tri-National de la Sangha – TNS) Landscape covers an area of 1,470,799 ha, divided into permanent forest estate (1,197,707 ha) and non-permanent forest estate (273,092 ha). The non-permanent forest estate (also called the agro-forestry zone) is intended, among other things, for the development of community forestry, community hunting and the agricultural activities of the local people. The permanent forest estate includes the Lobéké National Park (217,332 ha) and forest concessions (980,375 ha). Forest concessions devoted to logging of hardwood include 14 forest management units, alongside seven hunting zones[1] (ZIC) and six community-based hunting zones[2] (ZICGC).

On the phytogeographical level, these logging concessions are situated in the transitional zone of the Dja evergreen forest, and the semi-deciduous forest containing specimens from the Sterculiaceae and Ulmaceae families. On the whole, the semi-deciduous forests are relatively greater in size. In all, 11 types of vegetation have been recorded.

This diversity of vegetation brings with it a relatively high level of biological diversity. In terms of flora, there are over 764 plant species including 440 tree and shrub species. In terms of wildlife, there are about 45 species of large and medium-sized mammals, over 300 bird species, 134 species of fish and 215 species of butterflies. Other taxonomic groups are also well represented. Amongst the mammals, the flagship (and highly threatened) species, such as elephants, gorillas, chimpanzees and duikers, occur in relatively high densities in some forest concessions.

The area is sparsely populated, with a total population of approximately 63,150 individuals, an average of 4.29 inhabitants/km^2. This population includes the minority Baka people (17 percent), the Bantu divided into several indigenous ethnic groups (Bakwele, Bangando, Boman, Mbimo, Konambembe and Mvon-Mvon) and several other outside ethnic groups. The populations of the urban areas and semi-industrial timber-processing sites are relatively high (21 percent and 15 percent of the total population respectively).

1 ZICs (*Zones d'Intérêt Cynégétique*) are hunting concessions that the State grants to business operators for safari hunting.

2 ZICGCs (*Zones d'Intérêt Cynégétique à Gestion Communautaire*) are hunting areas that the State grants to local communities mainly to satisfy subsistence hunting needs and for safari hunting.

Process of gazettement of forest concessions: methodology and main outcomes

Initial background

Over the years up until 1995, the Cameroonian forest was gradually distributed amongst loggers through the allocation of exploitation licences. In the Cameroon segment of the TNS Landscape, 16 operators had licences, and only a small area remained unallocated, made up essentially of areas of swamp forest, and including Lake Lobéké (see Figure 1). During this period, various bio-ecological and socio-economic studies were carried out by the World Wildlife Fund (WWF) and the Wildlife Conservation Society (WCS).

The results of these studies, coupled with interpretations of aerial photographs and satellite images, led to the proposal by the Canadian Cooperation Office (for the Canadian International Development Agency – CIDA) for a preliminary land-use plan (LUP) for the southern part of Cameroon; a plan that was adopted in 1995 (Decree No. 95/678/PM of 18 December 1995 establishing the indicative framework for land use in the southern forest zone).

This preliminary plan divides the Cameroon segment of the TNS Landscape into permanent forest estate (1,186,120 ha), non-permanent forest estate (224,000 ha), and an extractive zone of 54,256 ha. The permanent forest estate is made up of the Lobéké National Park (208,559 ha) and 14 forest concessions (977,560 ha) (see Figure 1).

Process of negotiating the boundaries of forest concessions

The process of gazetting forest concessions followed the steps laid down by Decision No. 135/D/MINEF/CAB of 26 November 1999 – "To lay down the procedures for the gazettement of the forests of the permanent forest estate of the Republic of Cameroon", which are:

- A preliminary technical report is prepared;
- The general public is notified;
- Local communities are made aware;
- The Gazettement Commission examines all feedback from the various consultations;
- Final texts are presented to the Prime Minister.

Preparation of the preliminary technical report

After the preliminary land-use plan, WWF, WCS and German Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit – GTZ) carried out further studies including bio-ecological aspects, socio-economic aspects and participatory mapping. The main outcomes of these studies were:

- Identification of the critical area of conservation which is now the Lobéké National Park on the basis of high concentrations and high densities of large and medium-sized mammals and other taxonomic groups such as birds;
- Mapping of areas used by local communities;
- Better knowledge of the distribution of wildlife and certain non-timber forest products (NTFPs);
- Identification of the main threats and pressures on the biodiversity of the area, and their origins;
- Establishment of a database on the demography of the local populations, areas of high concentrations (logging sites), the location of inhabited areas, and levels of development of different communities;
- Evaluation of the perceptions of the local populations about conservation and forestry, and the potential benefits;
- Development of consultation fora and of a network of local actors to promote consultation and knowledge sharing based on the social dynamics of the region.

The main findings obtained have helped to refine the boundaries of various allocation units and a technical report has been drafted for each of them, including the following items:

- The objectives of gazettement;
- The boundaries of the forest to be gazetted;
- A brief description of the area (topography, hydrography, vegetation, population, human and industrial activities in the area, accessibility, and a programme of work for the future);
- The description of normal use rights.

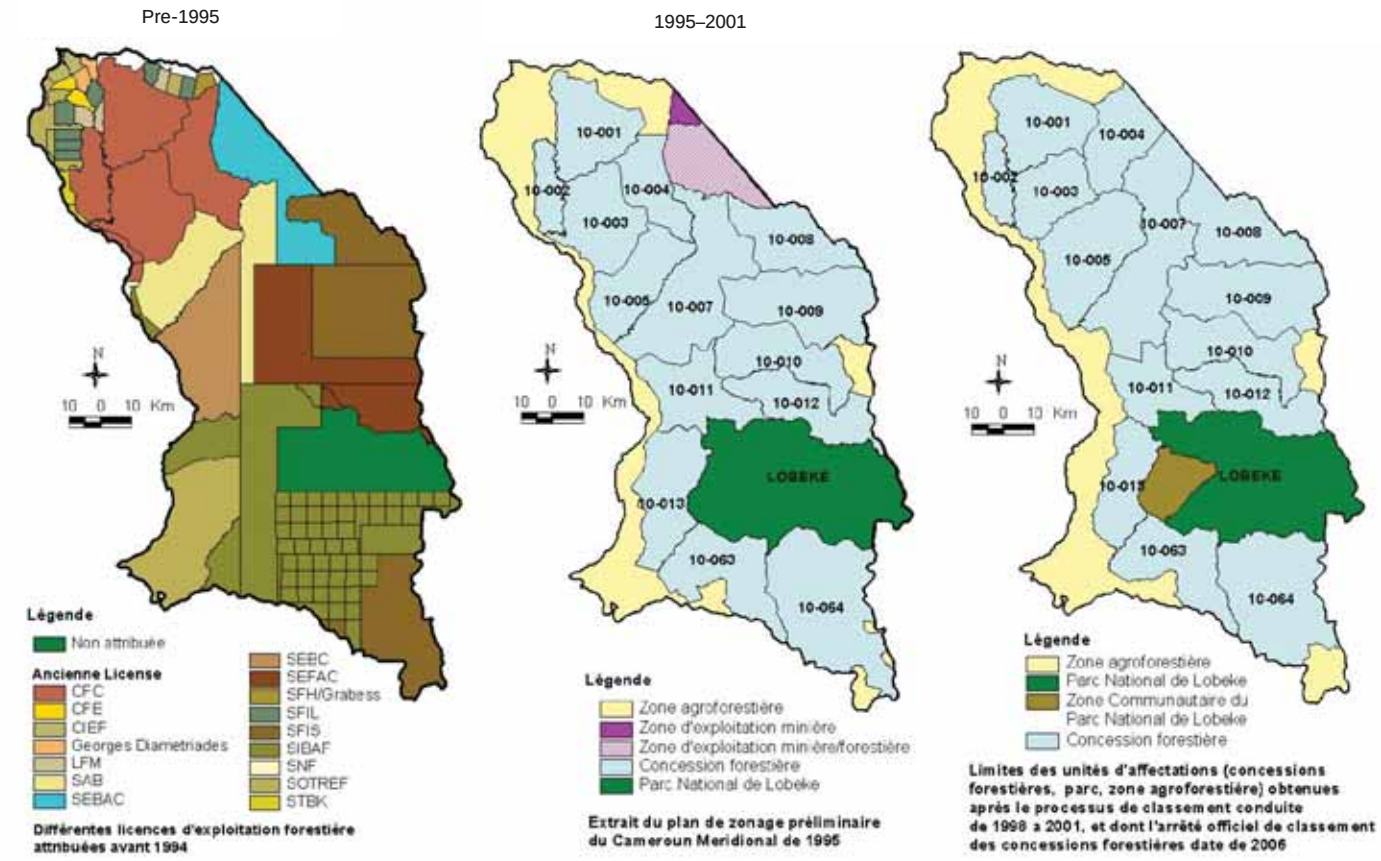
Public notice

Based on the technical report, a notice signed by the minister in charge of forestry was made public via the press and posters, together with a map (scale 1 : 200,000), and a deadline given for the receipt of any reservations or claims from local communities, to be addressed to the appropriate authorities (regional administrative headquarters and the Ministry of Environment and Forestry's regional officials).

Raising the awareness of administrative authorities, interest groups and the local population

Meetings were held with the administrative authorities and other stakeholders (including representatives of logging companies and local NGOs already operating in the area) who have a role to play in the gazettement of forests to explain the work to be done and what is expected of them. A meeting was scheduled in the two districts (Yokadouma and Moloundou) affected by the proposed gazettement. Discussions at the meetings focused on the objectives of the proposed gazettement, the principle of public participation in the management process of the forest stand, the next

Figure 1. The evolution of land allocation in the Cameroon segment of the TNS Landscape



steps (including a tour to raise public awareness and a consultation meeting on the gazettement) and the work plan of the Gazettement Commission.

As regards raising the awareness of local people, all the villages peripheral to the forest concessions to be gazetted were visited. During the meetings, following the presentation of the gazettement project and the role that the local people would have in the future management of these forest concessions, the various opinions, claims and grievances were collected and incorporated into the minutes. The negotiations focused *inter alia* on: (i) how to respect the use rights of the local population; (ii) compliance with the commitments of business operators, the forest administration and conservation NGOs *vis à vis* the local population; (iii) collaboration between local communities, logging companies and safari hunting; (iv) mechanisms for mitigating the repercussions from safari hunting and logging; (v) recruitment of local people as workers by the logging companies and safari hunting operators; (vi) the contribution of these companies to community development projects; and (vii) community access to the meat of animals killed by safari hunters.

During this consultation process with various interest groups and local communities, the local forestry administration, WWF and GTZ faced a number of obstacles, including (i) conflicts over land use; (ii) resistance on the part of local communities, logging companies and safari hunting guides to take part in discussions with conservation organizations; (iii) poor governance within the local administrations; (iv) weakness of traditional authority; (v) the level of poverty amongst the local people (average annual income below US$ 850); (vi) the high rate of illiteracy within local communities making awareness raising rather difficult; and (vii) the breakdown of social structures.

Work of the Gazettement Commission

Article 19 of Decree No. 95/531/PM of 23 August 1995 lays down detailed rules for implementing the forestry regulation, and a regional Gazettement Commission was created bringing together the representatives of all relevant administrations, local members of parliament, mayors and traditional authorities.

The meetings of this commission were held in the headquarters of the districts of Yokadouma and Moloundou. During these meetings, the minutes of various

awareness-raising meetings, as well as the views of third parties (deposited with administrative authorities following the publication of the draft gazettement), were examined. All relevant claims were dealt with, either by modifying the boundaries of the various forest concessions or by revising the technical reports on them (especially by taking into consideration the role and interests of the population in the future development of the various concessions).

The minutes of the Gazettement Commission, together with their opinions and the entire gazettement file for each forest concession, were forwarded to the minister in charge of forestry.

Preparation of texts submitted to the Prime Minister

Based on the minutes of the Regional Gazettement Commission, the final texts of the draft gazettement were prepared by the minister in charge of forestry and forwarded to the Prime Minister. This draft decree, outlining the objectives of gazettement as well as the boundaries of the forest to be gazetted, was accompanied by the following items:

- A basic map showing the boundaries of each forest concession, together with a more detailed map to the scale 1 : 200,000;
- A technical report detailing the objectives of the gazettement and outlining the use rights applicable to each of the concessions;
- The minutes of the meetings of the Regional Gazettement Commission;
- Reports taking into consideration the grievances aired by the local people.

Main outcomes

This participatory gazettement process, as compared to the initial project that was aimed at gazetting national parks only, culminated in the following outcomes (see Figure 1):

- The agro-forestry zone or non-permanent forest estate for the land-use needs of local people has been expanded, from 224,000 ha to 273,092 ha;
- The extractive zone of 54,266 ha has been redesignated, partly as a forest concession and partly as an agro-forestry zone;
- The number of forest concessions (14) remains the same, but their boundaries have been reviewed, and the total area has increased from 977,560 ha to 980,371 ha;
- The southern part of Lobéké National Park was expanded with the integration of a habitat complex, including the Bolo clearing, increasing its total area from 208,559 ha to 217,332 ha;
- The traditional use rights of the local populations were reinstated in each of the forest concessions;
- In the particular case of Lobéké National Park, an area has been created to take into consideration the wishes of the local population with regards to NTFPs (medicinal plants, wild yams, honey, wild fruits).

In general, this gazettement process has resulted in:

- A reduction in tensions and disputes between parties related to land use;
- The signing of a cooperation agreement known as the “Mambele Convention” between local communities, safari hunters and the forestry administration – an agreement that clarifies the roles and responsibilities of each party towards the sustainable management of wildlife, and access in the different units allocated;
- The signing of an agreement to combat poaching called the “LAB Agreement” between the logging companies and safari hunters, local communities, the forestry administration and conservation NGOs. This agreement clarifies the roles and responsibilities of each player and puts in place mechanisms by which they can contribute to the fight against poaching;
- The establishment of consultation fora between the forestry administration, conservation NGOs and forest concessionaires to evaluate and channel efforts towards sustainable management of forest concessions. Within this framework, relations between WWF and the logging companies have greatly improved, and a partnership agreement has now been signed between WWF and the SEFAC Group to combine their efforts towards sustainable management and certification.

Lessons learned

The forestry administration, WWF, GTZ and other partners have adopted a flexible approach in the gazettement of forest concessions in the Cameroon segment of the TNS Landscape, given the complex character of the zone. Feedback on the monitoring process highlights the following lessons to be learned:

General observations

- A sincere and open collaboration between stakeholders can lead to a land-use plan (LUP) in which the boundaries of areas for non-conflicting use may overlap;
- The process of land-use planning in the landscape is more likely to succeed if all stakeholders are able to discuss amongst themselves how the boundaries of non-conflicting allocations can overlap rather than focusing exclusively on the allocation.

The vision and attitudes of conservation agencies

- The landscape approach to conservation is a science of compromise. No one player has enough power to impose rules that others cannot understand or share and, indeed, the weaker players

can become a serious threat to biodiversity if they believe that management rules are being made against them. The conclusion to be drawn from this participatory process of forest concession gazettement is that conservation is a social process;

- Developing and managing landscapes goes beyond the concept of protected areas. The security of protected areas within a landscape depends on the sustainable use and dynamics of the peripheral zone as well as the management of relations between actors involved or affected;
- The process of negotiating the LUP is more likely to succeed if it is driven by the administrative authorities and facilitated by neutral resource persons. Conservation agencies should act as agents who provide technical advice, and should not be perceived as competitive agencies that advocate for conservation at the expense of the public interest.

Lessons learned from the methodology of the LUP negotiation process

- The experience of gazetting forest concessions has shown that multi-stakeholder collaboration in the process has a role to play in the resolution/prevention of conflicts upstream, in the consolidation of each stakeholder's right to natural resources, and that it catalyzes action and establishes a climate of trust between actors. It may seem a long and costly process, but it offers a long-term guarantee that the LUP obtained will be consistently defended by the parties involved, who have clearly understood their interest in protecting and ensuring the availability of resources on which their survival depends, as well as that of future generations;
- The methodology used to develop the LUP must include mechanisms to resolve conflicts of use, secure the use rights and development needs of all stakeholders, and ensure the creation of a climate of trust. Through this methodology, the negotiated LUP offers a better chance for actors to be involved in the development and execution of management plans of the various use units in a complex context such as that of this segment of the TNS Landscape;
- The commitment of public institutions at the micro, meso and macro levels is a prerequisite for a successful LUP development process and for the management of the various use units;
- The multidisciplinary approach, based on better knowledge of the environment by the facilitator (s) offer (s) potentially a good performance and strong commitment of the actors in the process of drafting and negotiating the LUP.

Process of drawing up development and management plans for forest concessions: methodology and main outcomes

The 14 forest concessions of the Cameroon segment of the TNS Landscape were awarded to nine logging companies. These companies are part of four major groups: (i) the THANRY/VICWOOD Group, made up of the CFC, SBEC and SAB companies, who were allocated 364,565 ha; (ii) the SEFAC Group (SEFAC, SEBAC, Filière Bois) – 406,815 ha; (iii) the ALPICAM -GRUMCAM Group (Alpicam, Habitat 2000) – 129,673 ha; and (iv) the STBK Group (STBK) – 89,322 ha (see Figure 2).

Methodology

The process of developing a five-year management plan and annual operational plans for logging concessions follows the guidelines of the legislative and regulatory framework in force.[3] The process differs according to which type of plan is being developed.

Figure 2. Distribution of forest concessions

Management plans

Management plans for forest concessions, generally drawn up by approved consultancy firms, will usually include the following steps:

- Carrying out additional surveys as required (socio-economic, management inventory, etc.);
- Identifying management options based on the findings obtained from the surveys;

3 Law No. 94/01 of 20 January 1994 on forestry, wildlife and fishery regulations; implementation Decree No. 95/531/PM of 23 August 1995 which lays down terms and conditions for implementing the forestry regulations; and subsequent sundry decrees and decisions.

- Presenting a public summary of management options to the main stakeholders affected;
- Validation of the document by an inter-ministerial committee.

a. Carrying out additional surveys

The process of gazetting various concessions has provided considerable data on the landscape. For each forest concession, the information available is analyzed, then additional socio-economic surveys and management inventories are carried out if needed, together with mapping of vegetation types. Within this framework, WWF has a large database that helps in identifying the specificities of each concession and what additional information needs to be collected.

Socio-economic surveys include demographic data, and data on the use of landscapes and natural resources by the local population. Management inventories of tree and shrub species are made on the basis of a sampling plan approved by the administration in charge of forestry; the sampling rate ranges from 0.5–1 percent. All stems of trees and shrubs with diameter at breast height greater than 10 cm are identified and treated differently according to their diameter class. The vegetation maps are drawn from analysis of aerial photographs.

b. Defining management options based on findings obtained

Based on the findings of the various surveys, the management plan document is developed, and is made up of the following parts:

- Biophysical features of the forest;
- Socio-economic environment;
- State of the forest (history, tree and shrub density, gross inventory volume and productivity of the forest);
- Development objectives for production forests that could either be exploited for commercial purposes or local communities allowed access for subsistence activities;
- Participation of the population in management (reminder of the rights and duties of the local population, peasant-forest committees);
- Duration and review of the management plan;
- Economic and financial balance sheet.

c. Presenting a public summary of management options to the main stakeholders affected

A summary of management options is presented and made public a month later during a meeting of all stakeholders. The purpose of this meeting is to present the expectations and duties of each stakeholder in the validated implementation of the plan.

d. Validation of the document by an inter-ministerial committee

In keeping with the regulatory framework, the adoption of the draft management plan takes place during a session of the inter-ministerial committee, whose members are appointed by the Prime Minister. This committee's mission is to examine the contents of the document and give their opinion.

Annual operational plans

The five-year management plan summarizes the actions outlined in the management plan for each five-year block. It deals with the major operations to be carried out (main infrastructure to be put in place, boundary demarcation of series of protection,[4] etc.).

The **annual operational plan** describes all the interventions and the terms and conditions of their execution on an annual basis. Determining these interventions is done on the basis of exploitation inventories at 100 percent of the annual allowable cut. According to the regulatory framework, information collected should include the species exploited by the concessionaire, the numbers that have reached the minimum management diameter, followed by the quality of their trunk, and topographic features of the environment (swamp, steep slope, running water). Counting is carried out using plots of 250 x 1000 m. The information is recorded on a grid, based on chaining after every 50 m. The gathering of these data results in distribution maps of tree stands, species to be logged and the road network; topographic and vegetation maps; and tables of stands and trees to be logged, with the volumes expected from each of them.

Main outcomes

General framework

The management plans of 13 of the 14 forest concessions of the Cameroon segment of the the TNS Landscape have been validated and are being executed. The annual operational plans for each of them are being developed in accordance with the regulations in force.

Some gaps observed and measures taken

From analysis of the management plans of the various concessions, it seems that wildlife management measures are not sufficiently taken into account. In the case of annual operational plans, the emphasis is on species to be exploited by the concessionaires; however, for sustained and integrated logging, other layers of information are essential. These are distribution maps of (i) seeds; (ii) saplings (for the next round of planting); (iii) areas of high concentrations of fragile animal species; (iv) areas of high ecological value such as clearings and bays; (v) NTFPs; and (vi) cultural and sacred sites for the local population.

To overcome these shortcomings, WWF, with financial support from USAID/

4 A protection series is a perimeter aimed at protecting a fragile ecosystem or an area of social and ecological interest (Law No 94/01 of 20 January 1994).

CARPE, has developed partnerships with two forest concessionaires interested in sustainable forest management and certification (SEFAC Group and CFE ceded to Habitat 2000 – ALPICAM). Within the framework of these partnerships, in order to enrich the management plans by better taking into consideration bio-ecological aspects and especially fauna, and the socio-economic aspects of sustainable logging, additional wildlife inventories and socio-economic surveys were carried out by WWF in six concessions with joint funding of two partners (40 percent for WWF and 60 percent for the concessionaire). The findings have led to the identification, in each concession, of areas of high concentrations of animal populations, corridors for migrating animals, sensitive habitats, and areas containing resources essential to the Baka people which should be considered when planning logging operations. Based on these recommendations and those of the socio-economic surveys, the SEFAC Group has made the following structural, organizational and functional changes:

- Strengthening the technical management unit (which already has a forestry engineer as coordinator), with the recruitment of (i) a sociologist charged with the co-management and other social aspects of sustainable logging; (ii) a cartographer charged with the management of the GIS database, the drawing of various maps (micro land-use planning map, road network map, lumberyard map, …); (iii) a forestry works engineer to guide logging technicians (fellers, haulers, drivers, …) on complying with management rules; and (iv) an environmental engineer to guide and monitor compliance with environmental standards;
- Setting up an anti-poaching committee to combat illegal hunting in their concessions and trade of bushmeat in populated areas (e.g., Libongo and Bela). The activities of this committee will include the organization of awareness campaigns, internal staff control, reporting of instances of involvement in poaching, and providing information to the local services of the Ministry of Forestry and Wildlife (MINFOF) to enable better organization of patrols to combat poaching;
- Logistical and financial support increasingly significant to the local services of MINFOF to organize patrols to fight against poaching. These contributions are estimated at US$ 20,000–30,000 per year;
- Better consideration of the specific needs of the indigenous Baka people in logging operations, including (i) developing a framework document for interventions for the Baka people; (ii) identifying and mapping their resources landscape within the concessions; (iii) the signing of co-management agreements for these areas; and (iv) increasing the number of Baka in the company's personnel;
- Facilitating, on the basis of socio-economic surveys, the creation of peasant-forest committees – fora for dialogue between the concessionaire and local communities;
- Drawing up a micro land-use map for the whole concession, highlighting areas of high animal concentrations, sensitive habitats, migration corridors for elephants, and Baka resource landscapes. Rules have been set to minimize the impact of logging operations.

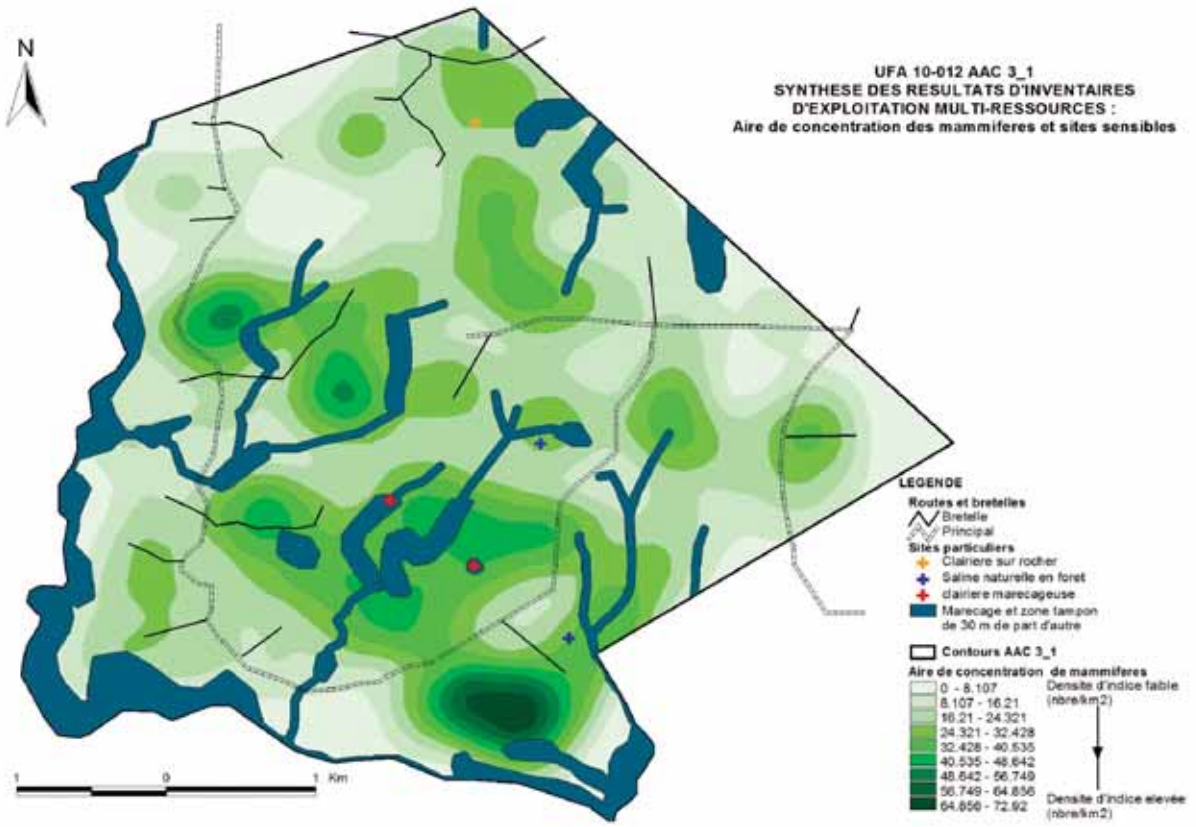
To address the shortcomings observed in the inventories of logging sites, WWF has developed a database of multi-resource inventories using the CyberTracker[5] programme, and trained technicians of the SEFAC group to use it. The unique feature of this programme is that prospecting is digital and not on cards as provided by the regulatory framework, and all information is geo-referenced. This information includes: all stems of tree species with a diameter of more than 50 cm, signs of the presence of species of large and medium-sized mammals, NTFPs, special ecological areas, sacred and cultural sites for local populations, elements of topography (swamps, running water, slopes) with their features, signs of human activities (hunting, fishing and gathering), and old logging infrastructure. According to the regulatory framework, only some of these data (stems of tree species with the minimum diameter, special ecological zones and elements of topography) are noted on the grid-scale cards.

The gathering of these layers of information collected with the CyberTracker allows for better planning of logging operations (for example, the road network map overlapping with areas of high concentrations of wildlife or the location of sensitive sites within the annual allowable cut area (see Figure 3)). Moreover, taking into account the number of future seedlings by diameter class allows the concessionaire to make projections for the next planting season, based on the estimated volume after 30 years with the combination of the diameter growth rate and mortality rates.

In the particular case of the SEFAC Group, the combined efforts of partners has led to the latter obtaining an FSC certificate for four of its concessions, covering an area of 314,655 ha. Within the framework of this partnership, WWF has focused on conducting additional surveys (on the basis of joint funding) and capacity building of technicians of the Group on various aspects of sustainable management. The SEFAC Group has committed itself to improving its logging operations by implementing the required standards following the recommendations of various studies, pre-audits and audits by approved firms.

5 The CyberTracker is a programme that works on a set made up of a small pocket computer linked to a GPS, that facilitates note taking on the ground and their direct transfer to a computer upon return to base. It makes it possible to collect simultaneously several types of data that are difficult to collect using standard data collection sheets.

Figure 3. Map of the road network overlapping with areas of high concentrations of wildlife, and the location of sensitive sites within the annual allowable cut (AAC) area



Lessons learned

- In the light of the various phases of the development and implementation of development and management plans for forest concessions, it is evident that sustainable forest management and certification are complex processes that require various kinds of expertise. The forest concessionaire alone cannot have all the specialties and implement all the requirements. It is therefore necessary to develop partnerships with organizations that can provide input into the process. In the case of FSC certification of the SEFAC Group, the partnership developed between WWF and the Group is a case in point. It follows in the footsteps of the partnership developed between WCS and the CIB which has resulted in the certification of the KABO Forest Management Unit, located in the Congolese segment of the TNS Landscape;
- The experience of partnership between WWF and SEFAC has shown, among other things, that if well managed and with a little determination, logging companies can make operational and technical changes to support the process of sustainable management;
- The innovative CyberTracker experience presented above is not inconsistent with the regulatory framework and makes it possible to improve on how to plan and carry out logging operations. The success observed can contribute in improving regulations;
- When forest management is almost all, or completely, done internally, by a service equipped with all the necessary skills (forestry engineers, a social science specialist, a GIS specialist ...), it has more chance of achieving satisfactory results in terms of sustainable management.

Case Study 2

ENRA Forest Concession Land-Use Planning in the Ituri-Epulu-Aru Landscape, Democratic Republic of Congo

Jean-Remy Makana

Introduction: Overview of the ENRA forest concession

With its large tracts of tropical rainforests, the Democratic Republic of Congo has been attracting many logging companies that are eager to tap into its enormous timber resources that are still little exploited to date. The near total breakdown of transport infrastructure, however, limits large-scale timber exploitation to forests along navigable sections of the Congo River and its main tributaries, confining industrial logging to western regions of the country. In eastern DRC, most logging is carried out by small-scale operators using chainsaws and selling timber to neighbouring countries. The ENRA (Enzyme Refiners Association) is the only industrial logging company operating in the region and is located east of the city of Kisangani, along the easternmost navigable section of the Congo River.

The ENRA forest concession is situated south-east of the Ituri-Aru Landscape in the north-eastern part of the Congo Basin forest block. The initial concession of 52,190 ha was granted to the company in 1982. Because of large-scale forest destruction in this concession by illegal settlers, ENRA requested and was granted an additional 28,800-hectare forest block to the west of the first concession in 2005.

The ENRA concession is entirely contained in the administrative collectivity of Babila-Babombi, Mambasa Territory, Ituri District in Orientale Province. The company's headquarters and wood transformation facilities are based in Beni, Nord-Kivu Province, just to the south of the Landscape.

The topography of the forest concession is gentle with occasional rolling hills. Elevation ranges from approximately 800 m in the west to 950 m in the east. The concession is covered by a dense network of rivers and streams that feed the Upper Ituri River and constitute the natural limits of the forest concession.

The vegetation in the area is a mixture of evergreen forest, including extensive areas of monoculture forest dominated by *Gilbertiodendron dewevrei*, and semi-deciduous forest with a canopy containing higher representation of major timber tree species including Iroko, Sapele, Sipo, Tiama and African mahogany. Secondary forests cover significant portions of the concession. These originate from both natural and anthropogenic causes. In the eastern and southern parts of the concession, forest degradation has accelerated over the past two decades leading to the conversion of large areas of closed forest into a mosaic of logged forests, regenerating vegetation and active agricultural fields.

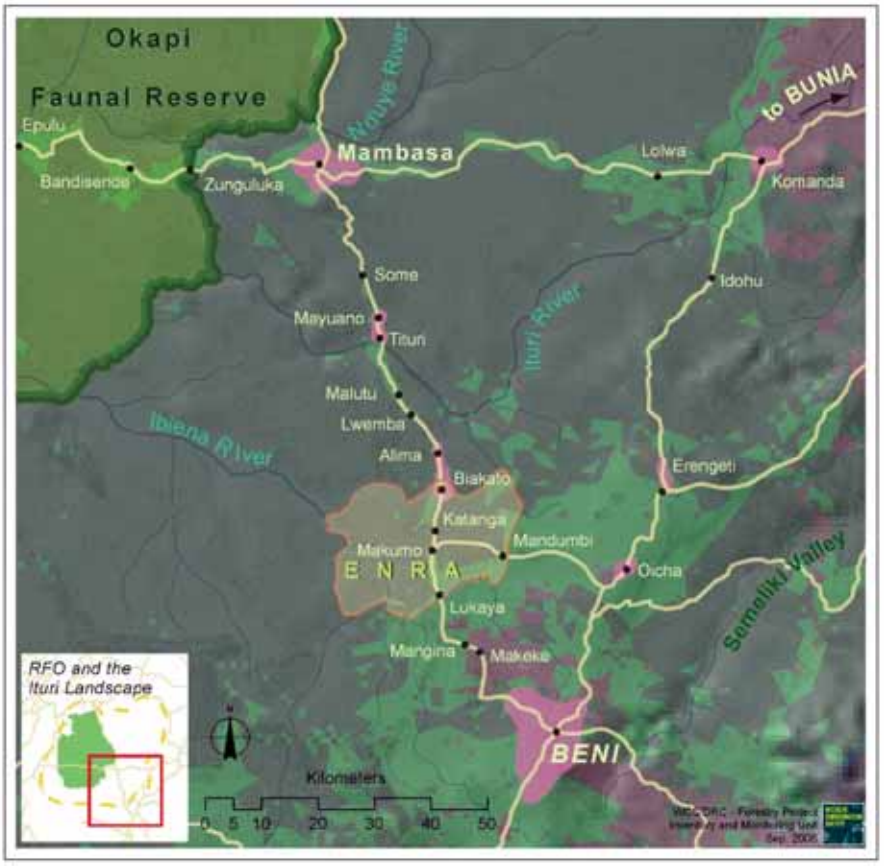
The forests in the ENRA concession contain high diversities of fauna and flora. Prior to logging operations, these forests harboured several species of large mammals important to conservation such as Forest elephant, Okapi and chimpanzee. Other large mammals that were present in the forest concession included the Leopard, Forest buffalo, Giant ground pangolin, Bush pig, Forest aardvark, Giant forest hog, Baboon and several species of *Cercopithecus* and *Colobus* monkeys, and Mangabeys. Informal interviews with Mbuti pygmies dwelling in the concession indicate that most of these large mammals have gone locally extinct, particularly those that require large tracts of undisturbed forest such as Forest elephant, Okapi, Leopard and Forest buffalo. The disappearance of those species in the concession can be largely attributed to the conversion of mature forest areas into farmland.[1] As indicated above, the concession is also rich in high-value timber species. The most abundant and commonly harvested species are Iroko, Sapele, African mahogany, Tiama, Olovongo, Kosipo, Mukulungu and Limbali.

In addition to its high plant and mammal diversity, the forest in the ENRA concession is important as a corridor between two forested protected areas, the Okapi Faunal Reserve and the northern sector of Virunga National Park.

Prior to commercial logging operations, the forests of the area were very sparsely settled. A few villages were located along an old mining road linking Beni to Mambasa that bisects the concession in a north-south direction. However, that has changed as the concession borders the heavily populated Kivu highlands that are a major source of immigration into the concession. The rebuilding of the Beni-

1 Recent wildlife surveys indicated that Forest elephant, Okapi, chimpanzee and other large mammals have disappeared in the logged and degraded forests of the concession. Chimpanzee presence was recorded in the new forest block, with a higher nest density than ever seen before in the Ituri Forest.

Figure 1. Okapi Faunal Reserve and the Ituri Landscape



Mambasa road for logging purposes in the earlier 1990s has facilitated human intrusion into the forest concession, dramatically increasing the human population density[2] and accelerating the rate of forest degradation. Major ethnic groups inhabiting the concession are the Bila, native to the land, and Nande immigrants who settled in the area after road construction by ENRA in the early 1980s. There is also an important population of nomadic, hunter-gatherer Mbuti pygmies. While the latter generally inhabit the forest interior, most of the population is located along the main transport routes. A few major population centres have recently developed in the concession because of immigration pressure. Biakato, the most important population centre in the concession, boasts a population of over 13,000 people.

The major subsistence activities in the concession are agriculture, mining, bushmeat hunting and small-scale trade in manufactured goods. Animal husbandry is minimally developed in the area. Major food crops grown in the concession include cassava, plantain, upland rice, maize and groundnuts. A few cash crops are commonly grown by immigrants and include coffee, oil palm and papaya. Cacao is only recently being cultivated in the concession area. Agriculture and bushmeat hunting constitute the main threats to the forests of the ENRA concession.

ENRA started logging operations in 1984 and has since continued without major interruption until the present day. ENRA is a relatively small company (almost 200 employees) harvesting on average less than 10,000 m^3 of logs a year.[3]

The major strength of ENRA, which makes it unique in DRC, is its production of a wide variety of processed products. The company has a parquet flooring plant that produces high-quality decorative parquet floors and panels for wooden ceilings from a wide range of species. Parquet floors produced from Iroko are the leading product of the company and they are mainly exported for European markets. In addition, ENRA runs a joinery/carpentry workshop that makes decorative doors and windows and high-quality furniture.

ENRA forest concession land-use planning methodology and results achieved

Methodology

The CARPE Performance Management Plan recommends that each macro-zone[4] in CARPE landscapes be covered by an integrated land-use plan (LUP). Currently, the ENRA logging concession is the only active Extractive Resource Zone[5] in the Ituri-Epulu-Aru Landscape. The goal of the WCS land-use planning process in the ENRA forest concession is to assist ENRA to produce a management plan for its concession. This plan is required by the new DRC forestry law and will

2 Rapid socio-economic surveys conducted in 2006 indicated that the human population density was ~ 34 people/km^2 in the concession.

3 Due to the enormous distance to its export point in Mombasa (Kenya), ENRA only exports added-value products, particularly parquet flooring, to Europe. All logs are processed locally in Beni, increasing logging benefits to the local population in the form of employment opportunities and access to high-quality wood products.

4 Macro-zones are land or forest areas designated for specific land-use objectives such as biodiversity conservation, rural development, commercial extraction of natural resources, etc. In its landscapes, CARPE has defined three different macro-zone types: protected areas, extractive resource zones and community-based natural resource management (CBNRM) zones.

5 An Extractive Resource Zone is an area designated for large-scale commercial exploitation of natural resources (i.e., logging or mining concessions, large-scale agricultural plantations, safari hunting reserves, etc.).

promote sustainable timber harvesting and biodiversity conservation. Because the ENRA forest concession has been settled by significant numbers of farmers, it is vital to conduct micro-zoning work to determine areas to be set aside for the needs of local populations already inhabiting the concession, and forest areas for timber exploitation. The major steps undertaken in the land-use planning process for the ENRA concession are:

- ***Collaboration agreement between WCS and ENRA:*** The first step in WCS's involvement in the ENRA concession's land-use planning process was to sign an agreement with the company to determine the objectives of, and the principles guiding, our collaboration, as well as the rights and obligations of each party.
- ***Assessment of the state of the forest in the concession:*** A preliminary evaluation of the state of the forest was conducted through a series of meetings between ENRA's leadership and timber harvesting team, and the traditional chiefs or customary landowners in the forest concession. In addition, satellite images were used to determine the scale of forest degradation in the concession.
- ***Sensitization meetings:*** Through meetings with ENRA's leadership, key stakeholders were identified. Informal and formal meetings were held with key stakeholders individually or in groups to explain the need for land-use planning to promote sustainable forest utilization and to determine the potential interests of local communities. Local state authorities at the collectivity and territory levels, and the local forestry administration service, were brought in to facilitate negotiations between ENRA and the local communities. This process has led to the signature of a collaboration accord between ENRA and local communities in which the rights and obligations of each party are spelled out.
- ***Participatory mapping of the extent of human settlements in the concession:*** A team composed of ENRA staff, the local forestry administration, and representatives of pygmy communities mapped the limits of human penetration into the forest concession. During this work, the boundaries of clan lands were delimited to help determine the level of customary dues paid by ENRA to each clan.
- ***Signature of an agreement between ENRA and local communities:*** Encroachment into the forest concession is facilitated by traditional landowners who give lands to new immigrants in exchange for meagre dues paid annually in the form of a goat or a portion of agricultural production. WCS facilitated the signature of an agreement between ENRA and traditional landowners aimed at stopping forest encroachment by prohibiting the "sale" of new lands to immigrants. The agreement also spells out ENRA's contributions to local development projects. Now the agreement has been signed, it must be validated by the district and provincial authorities.
- ***Forestry and biological surveys:*** Rapid forestry and biological surveys were used to evaluate the abundance of major timber species and the presence/abundance of key mammal species, particularly elephants, Okapi and chimpanzees, in order to guide the process of micro-zoning of the concession. During these surveys we also gathered details on the level of forest degradation in the concession.
- ***Human population census and socio-economic surveys:*** These surveys were conducted to document social organization, immigration pressures and human activities. Key elements recorded were the distribution of residents by localities (or clans), ethnic groups, length of stay in the concession (immigration pressure), major economic/subsistence activities, agricultural production, education, access to education and health care, market opportunities for agricultural products, native-immigrant relations, relationship with ENRA, etc. This activity was conducted by a mixed WCS-ENRA team.
- ***Participatory micro-zoning of the concession:*** The human population census and socio-economic surveys indicate a heavy and increasing presence of humans within the concession limits, particularly immigrants whose main activity is extensive farming. It will therefore be vital to clearly delimit areas devoted to subsistence agriculture and timber exploitation zones. A team composed of WCS experts, ENRA staff, and representatives of local communities will map the front line of human settlement, evaluate the needs of the existing populations for farmland, and propose limits for the agricultural and timber harvesting zones.
- ***Validation of micro-zones:*** Once the above step is accomplished, a meeting bringing together all key stakeholders will be organized to evaluate and validate the limits of the proposed micro-zones.
- ***Development of alternative activities in community development areas:*** ENRA, in partnership with ESCO-Kivu[6] and WCS, is promoting shade cacao cultivation and reforestation projects in degraded forest areas as a means of increasing farming income and slowing down the encroachment of people into new areas of mature forest. Other current or planned alternative

6 A private company dedicated to agricultural production.

activities include artisanal timber exploitation in agricultural zones, promoting the education of native children, and honey production by pygmies. Expert assistance from development organizations is critically needed with these activities to ensure effective local community participation in land-use planning processes.

- ***Production, implementation and monitoring of a management plan:*** The ultimate goal of the land-use planning process for the ENRA forest concession is the production and implementation of a management plan for the concession, as outlined in the above steps. Once the plan is produced and being implemented, it must be monitored to ensure continued effectiveness.
- ***Validation of the plan by higher State and forestry authorities:*** ENRA and WCS work closely with local State authorities at the collectivity and territory levels. Once the forest concession management plan is complete, it will be submitted to district, provincial and national authorities for validation.

Results achieved

The land-use planning process is still at an early stage in the ENRA forest concession. However, a few achievements have been accomplished:

- ***Improved relationship between ENRA and WCS:*** WCS is well-known in the Ituri region as a conservation organization concerned with wildlife protection in protected areas. Thus, there was a sense of suspicion or mistrust from ENRA towards WCS's activities in its concession. Effective collaboration between WCS and ENRA started only a year ago after ENRA realized that WCS's work in its forest concession was helping to improve the company's image locally, nationally and internationally. The company has now entrusted WCS to oversee all zoning work in the forest concession. This will certainly help accelerate the process of land-use planning in the concession.
- ***Strategy for the land-use planning process:*** A strategy document outlining the steps and process of land-use planning for the ENRA concession has been produced by WCS and approved by ENRA. This strategy plans the writing of a management plan for the forest concession by 2010.
- ***Collaborative platform for land-use planning:*** A platform has been put in place to coordinate and monitor activities related to land-use planning in the ENRA forest concession. It includes ENRA, WCS, representatives of local communities and immigrants, local State authorities (collectivity and territory levels), the local forestry administration, ESCO-Kivu, and local NGOs (PAP-RDC and SOS Nature). Significant results achieved through this platform are:
  - Quarterly meetings of all key stakeholders since 2006;
  - Signature of an agreement between ENRA and local communities in 2007.
- ***Accurate data on the state of the forest and on human population in the concession:*** Through field evaluations, interviews, forestry and biological surveys, and socio-economic surveys, precise information has been gathered on:
  - The level of forest degradation;
  - The size and distribution of the human population, and its activities in the concession;
  - Timber abundance;
  - The presence and spatial distribution of key wildlife species.
- ***Fundraising to develop alternative activities:*** WCS has received a grant from the IUCN National Committee of The Netherlands to promote shade cocoa plantations and to support artisanal timber exploitation by local communities in the ENRA concession buffer zone.

Lessons learned

The importance of active involvement by the concessionaire

The concessionaire is responsible for producing the management plan for the concession as required by the new forestry legislation in DRC. The CARPE programme recommends that CARPE partners assist private operators or government organizations responsible for the management of each identified macro-zone to produce management plans for their zones. However, the activities of CARPE partners can only be successful if the legal management authority of the macro-zone is actively involved in the process. Initially, the major constraint encountered in the land-use planning process for the ENRA concession was ENRA's resistance to collaborating with WCS. This resistance was overcome after regular and public debates between ENRA and representatives of local communities with the involvement of local authorities and State officials and with technical advisors from WCS. The land-use planning process is now progressing well. Thus, as we learned, the first step when working with private operators or government agencies in land-use planning must be to convince them of the necessity of the process. In the case of timber concessions, the publication by the central Government of application measures of the new Forestry Code related to forest management in timber concessions was of great importance for enticing

timber operators to seek help in forest management processes.

State authorities are key players in the land-use planning processes

In Ituri-Aru, as elsewhere in DRC, local State authorities are generally weak and ineffective. However, they represent the legal authority for management of natural resources. If ignored, they can seriously obstruct the successful realization of land-use planning initiatives. In addition, the sustainability of land-use planning depends on the involvement of State officials and forestry services in the process. In the ENRA concession, collaboration with local communities was moving very slowly until the Administrator of the Mambasa Territory threw his weight behind the process. Since then, quarterly meetings have been systematically organized and an agreement has been signed between ENRA and local communities.

It is therefore crucial to involve local State authorities and forestry administration in all activities related to the land-use planning process in concessions to avoid the development of resistance to the process and to guarantee the sustainability of this work beyond the CARPE funding period.

The necessity of taking into account the regional context

Eastern DRC has experienced many social problems in the recent past, the most important being land shortage due to high human population density and growth, and civil unrest. Successive rebellions have resulted in the almost total collapse of the government institutions responsible for land management. This situation facilitated the uncontrolled settlement of sparsely populated forests by immigrants in search of available agricultural lands. The encroachment of forestlands in the ENRA concession has also been exacerbated by the eviction of farmers from the Virunga National Park. It is difficult for an NGO to deal with such issues on a case-by-case basis.

Effectively dealing with issues of human encroachment in production forests requires that external forces and the regional context are taken into account in the land-use planning process. For example in this case, the regional LUP (e.g., landscape-level LUP) should set aside areas designed to absorb immigration pressure, and put in place strategies to channel new immigrants to designated areas in order to reduce pressure on the production forests.

The importance of understanding traditional and legal land tenure systems

In the Kivu highlands, land belongs to individuals and can be rented or sold, whereas in the forested regions of the Ituri Landscape, land belongs to the community. Although the traditional chiefs or clan elders in the Ituri Landscape have the authority to grant usufruct rights to outsiders, they actually cannot sell the community land. Currently, landless immigrants from the Kivu highlands are flocking into the forested regions with the aim of acquiring land for themselves and their children, ignoring the local land tenure philosophy (this is different from the situation in the Okapi Faunal Reserve where immigrants tend to be temporary residents because they cannot actually acquire forestland for themselves). The land acquisition rush is accelerating forest degradation because new immigrants are widely scattered in the forest concession to ensure that each has enough land area for his descendants. This difference in land tenure systems between the native population and the immigrants has a potential to create ethnic clashes in the future when native people realize their previous generations sold out their traditional forestlands to immigrants.

These views totally ignore DRC forestry laws that stipulate that all forestlands belong to the State, which has the exclusive right to rent or sell land to private individuals or companies. WCS, in partnership with the local forestry administration, is conducting a sensitization campaign with both local communities and immigrants to increase their knowledge of national forestry laws. These efforts are however hampered by the unavailability of the application or enforcement measures[7] of the forestry code.

The need to understand both individual and community interests

ENRA interventions in local development activities are generally oriented towards community projects that benefit the wider society (e.g., constructing schools and dispensaries, fixing roads, etc.). However, traditional chiefs with customary authority to allocate land to immigrants have personal needs that are not satisfied by community projects. Thus, the chiefs use their customary rights to grant the concession forestlands to immigrants and they receive direct payments. It is crucial that this cultural aspect be taken into account in the land-use planning processes, particularly in logging or mining concessions where a private company is claiming control of the land by the virtue of a contract signed with a “distant” government institution with little local community involvement.

Even members of the community do not always value the long-term benefits of community projects and land-use planning. It is important to think about immediate benefits, such as hiring local residents in logging teams or as labourers for construction work, and financial support for the education of selected native youth. '

7 Enforcement measures are detailed regulations and procedures taken by a ministerial decree and intended to explain how a law will be applied.

Case Study 3

A Multi-Organizational Model of Land-Use Planning to Conserve Wildlife and Forest Resources in Forestry Concessions

John R. Poulsen, Connie J. Clark and Bryan K. Curran

Introduction to PROGEPP

In the Republic of Congo, the Project for the Management of Ecosystems in the Periphery of the Nouabalé-Ndoki National Park (PROGEPP in French) manages wildlife in four forestry concessions surrounding the Nouabalé-Ndoki National Park. PROGEPP, a partnership of the Congolese Ministry of Forestry Economy (MEF), the Wildlife Conservation Society (WCS) and the Congolaise Industrielle des Bois (CIB), was established in 1999 with two objectives: 1) to protect the Nouabalé-Ndoki National Park (NNNP) from hunting pressure coming from logging operations and increasing numbers of immigrants; and 2) to manage wildlife in the concessions for sustainability. Unlike conservation of most protected areas, PROGEPP's goal is not to abolish hunting. Rather, the idea is to reduce hunting to sustainable levels, which likely means the elimination of commercial hunting, so that indigenous people and CIB workers have access to wild meat. The project seeks to evolve towards a locally-managed solution where sufficient incentives exist to ensure that local people and local law enforcement officials work towards the sustainable management of wildlife.

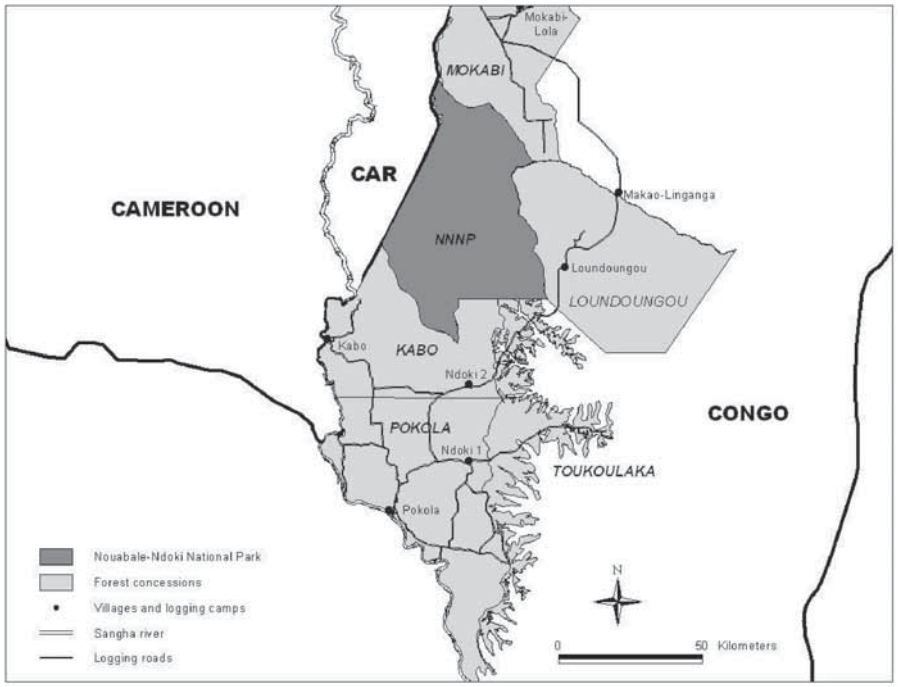
Together the concessions (Kabo, Pokola, Loundoungou and Toukoulaka) and NNNP form a landscape that covers approximately 20,000 km^2 and comprises a vast stretch of lowland forest rich in African mahoganies and home to some of the continent's most endangered species: Forest elephants, Western lowland gorillas, chimpanzees and Bongo. The park largely protects the biodiversity of the region, but the survival of wide-ranging species such as elephant and Bongo also depends on their protection outside the park borders. The forests of the logging concessions also provide natural resources (food, construction materials, animal protein) critical to the livelihoods of indigenous forest peoples. To conserve these natural resources, PROGEPP created a wildlife management system based on four key principles: regulating access to wildlife resources through forest-use planning; promoting selective hunting through law enforcement; involving communities in wildlife management; and developing economic and protein alternatives to hunting and bushmeat.

First, we work with the MEF, CIB and local communities to establish formal hunting zones based on the traditional hunting territories of local people. Second, we collaborate with the MEF to enforce wildlife laws, with the goal of protecting biodiversity and endangered species and keeping hunting at sustainable levels. Third, we work with communities to help them manage their own wildlife resources and to arm them with information about ecology and conservation. Fourth, we experiment with alternative activities to hunting to provide protein and income to local people. Management activities are constantly adapted to the reality on the ground, which is assessed through the analysis of monitoring data on wildlife populations and human threats to them. PROGEPP uses a variety of research and monitoring methods to quantify hunting pressure, bushmeat availability and consumption, densities and distributions of wildlife populations, and ecological processes critical to forest regeneration. Monitoring results guide management decisions and aid in the formulation of regional and national policy.

Land-use planning in the CIB concessions

Land-use planning within the CIB concessions has occurred at two different levels. The first level of planning defines where logging can take place, is driven by an interest in maximizing timber production and economic profit within the limits of sustainable forestry norms, and is defined by National Forestry Management Directives. These directives define five types of "*series*", or land-use categories: 1) the production series is set aside for logging operations and economic production; 2) the conservation series guarantees the existence of timber species and protects biodiversity, wildlife and landscapes; 3) the protection series safeguards fragile habitats, particularly watersheds, watercourses, swamps and soils that could be degraded by erosion; 4) the community development series is reserved for use by local populations to exploit natural resources for their livelihoods and community development; and 5) the research series delimits areas that can be used

Figure 1. Map of the project area, including the Kabo, Pokola, Loundoungou and Mokabi concessions and the Nouabalé-Ndoki National Park



for ecological and forestry research. In the Kabo concession, 72.3 percent (2,140 km^2) of the area is included in the production series, 20 percent (593 km^2) in the protection series, 5.1 percent (151 km^2) in the conservation series, and 2.6 percent (76 km^2) in the community development series. The entire area is included in the research series.

The second level of land-use planning involves the creation of hunting zones within the production and community development series. Other non-timber forest products (NTFPs) can be exploited throughout the concessions, with the exception of the protection series which, by Congolese law, is off-limits to any form of exploitation. Through a series of meetings with local villages, PROGEPP created three types of wildlife-use zones: village hunting zones, conservation zones and protected zones. Village hunting zones reserve access to the forest for hunters from the adjacent village and are subdivided into zones for indigenous villagers, residents of logging sites and the controlled hunt (a monthly hunt organized for CIB Congolese employees). Based on traditional hunting territories, the demarcation of village hunting zones took place following months of discussions with local villages and after careful identification and description of traditional land-use patterns for both Mbenzélé (pygmy) and Bantu inhabitants. Conservation zones prohibit hunting with firearms, but permit hunting and trapping with traditional weapons; fishing and gathering are allowed throughout the year. Protection zones conserve areas of particular importance for large mammals (e.g., the buffer around the park borders and large natural forest clearings) and all hunting, either modern or traditional, is prohibited. The conservation and protection zones serve to protect populations of game and key habitat, and presumably serve as a source of wild animals to replenish wildlife stocks in neighbouring hunting zones. The Kabo concession, for example, is divided into village hunting zones (1,396 km^2, 47 percent of the concession), conservation zones (1,154 km^2, 39 percent of the concession), and protected zones (413 km^2, 14 percent of the concession). It is important to emphasize that hunting by traditional techniques (spear, crossbow, hand-woven nets, etc.) by Bantu or semi-nomadic pygmy communities (Mbenzélé) can occur year-round in both the village hunting zones and conservation zones (86 percent of the concession).

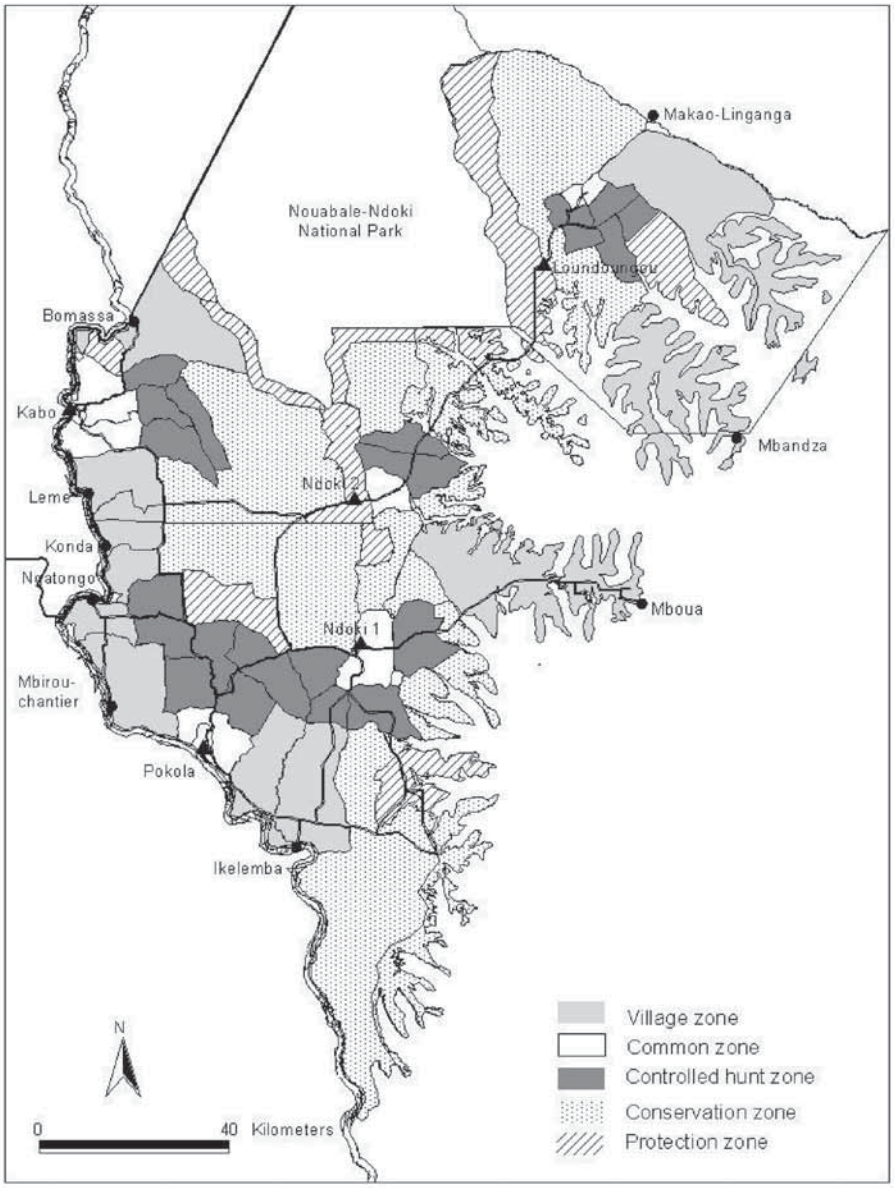
The adoption of the management plans by the government formalized both land-use planning systems in the Kabo and Pokola concessions. Land-use planning within the Loundoungou concession (which has been merged with Toukoulaka to form a single concession) has already been accomplished, and in theory, should be legally established with the adoption of a management plan in the coming years.

PROGEPP conservation and wildlife management activities take place within and in consideration of these different access zones. Within the community hunting and NTFP zones, PROGEPP works with local communities to raise awareness of hunting laws and conservation principles like sustainable off-take, threatened and endangered species, and adaptive management. Awareness-raising efforts include teaching formal environmental education classes in local schools, village meetings, and the use of multi-media sources such as television, radio, posters and theatre. We also work with local communities to increase capacity and involvement in the management of their natural resources through the organization of resource management committees in local villages and semi-nomad camps. Resource management committees offer a conduit for information exchange with local communities and a structure for involving people in the development

of hunting rules and zones. PROGEPP seeks to empower communities to make and implement wildlife management decisions (e.g., developing hunting rotations around villages, reducing harvest of rare species or developing systems to restrict the use of hunting zones by outsiders, if necessary). The forest lifestyle and semi-nomadic culture of the Mbenzélé have led to a relative lack of formal organization and representation compared with villagers. At present, policy decisions (e.g., determining which areas are to be set aside from logging or hunting, or where and how CIB workers can hunt) are primarily made by the logging company, the government, the project, and elite members of villages. Resource management committees will hopefully ensure that the Mbenzélé, like villagers, will be involved in policy decisions.

Across the concessions, PROGEPP eco-guards enforce Congolese wildlife laws. CIB company rules prohibit the transport of hunters and bushmeat in logging company vehicles; therefore, eco-guards stop and search all vehicles at roadside posts at intersections along the logging road network. Eco-guard forest patrols focus on areas within the concession where illegal hunting is thought to be taking place, or in areas with high densities of protected species like elephants, gorillas and chimpanzees.

Figure 2. Map of project area with the hunting zones in the Kabo and Pokola concessions, and proposed zones in the Loundoungou concession



Synthesis of lessons learned

Land-use planning within the CIB concessions surrounding the NNNP has been a multi-year process, involving many different actors from industry to government to international conservation organizations to local communities, including semi-nomadic peoples. Through this process, several important lessons have been learned.

1. Multiple actors should be involved in land-use planning

Logging concessions generally serve multiple purposes in addition to timber production. Most forestry concessions served as home to indigenous peoples and as habitat for wildlife long before concessionary rights were sold to logging companies. Before logging began in the CIB concessions, for example, nearly 12,000 people lived in permanent villages and temporary camps, making their living from the forest. Therefore, timber production should be perceived as an economically important activity introduced into a previously existing landscape of ecological, livelihood, economic and cultural activities. As such, multiple stakeholders have interests in the forests within timber concessions and all must be incorporated in the land-use planning process.

To incorporate all actors, there must be a platform by which they can express their interests, particularly local communities that tend to be less empowered than formal organizations like companies, NGOs and worker

unions. By working directly and frequently with local communities, PROGEPP social teams helped promote indigenous people's rights (including conservation of their traditional territories) to the company and the government. In this way, their interests and needs in terms of natural resources were incorporated into the management plan. Later, once the formal plan was drafted, village leaders and local people were invited to open fora to express their opinions, opposition, interests and needs. In addition to making the land-use process as open as possible, there should also be a mechanism for conflict resolution for situations when stakeholders simply cannot come to agreement.

2. Land-use planning should be based on data and balanced by economic and social needs

In addition to listening to the voices of local actors, zoning should be based on rigorous biological and socio-economic data. First, inventories need to be conducted to determine the abundance and spatial distribution of animal species, timber species and NTFPs across the concession. Just as logging companies base their annual exploitation on the location of their target timber species, hunting off-take, natural resource harvest and/or the designation of protected areas within concessions should be based on surveys of wildlife and other natural resources. Second, once the different types of land-use zones have been designated, it is important to determine procedures for harvesting the resources. For example, if natural forest clearings are protected as habitat for animals, then buffer zones around them where logging and/or hunting is prohibited must be based on an analysis of both animal behaviour and their habitat needs. In many cases, the optimal conditions for conservation (e.g., a buffer of 15 km around forest clearings used by elephants) are not achievable, and must be balanced by the economic and resource needs of the timber company and local people.

3. Land-use planning should be formalized

Land-use plans must be formalized and made public. Even if all stakeholders have participated, negotiated and agreed upon the zoning and rules for exploiting resources, the procedures and principles must be incorporated into a formal management plan. First, this ensures that the plan is in agreement with national (and sometimes international) laws and standards. Second, this ensures that outside actors respect the plan. For example, after the adoption of the Kabo concession management plan in 2006, a MEF official delivered a large game (buffalo, Sitatunga, etc.) hunting permit to a group of expatriate hunters. However, by consulting the Kabo management plan, which does not include provisions for safari hunting, the mistake was immediately recognized and the hunters were quickly directed to a different forestry concession where hunting is permitted.

4. Roles of stakeholders should be clearly defined

The roles of all the actors operating within the logging concession should be well defined by formal protocols describing rights and responsibilities. The definition of roles not only assigns responsibility for certain aspects of management to the appropriate stakeholder, it also prevents overlap or duplication of effort by different organizations. This is particularly important for wildlife management and enforcement of hunting laws. For example, if eco-guards are employed to enforce hunting laws, it must be clear who manages them and who is responsible for their actions, and failure or success. This protects other actors who could be blamed for their failure to accomplish goals or follow laws and procedures. For natural resource management, other responsibilities that must be clearly assigned to a stakeholder include: 1) assuring food security of concession workers and local people; 2) collecting the biological and socio-economic data necessary to make decisions; 3) incorporating local peoples into resource management; 4) managing different forest resources: wildlife, timber, NTFPs, fisheries, etc.; and 5) resolving conflicts among institutions and other stakeholders.

A final note on the definition of roles and responsibilities, it should also include an explicit recognition of all the actors to be consulted during a management activity or decision. Even though the logging company may be responsible for the construction of roads, it must consult other stakeholders to guarantee that roads do not cross important habitat for gorillas or traverse a cemetery sacred to the Mbenzélé people. The list of actors to be consulted should be defined and clear, and should be based on criteria such as the proximity of people to an activity, their livelihood interests, etc.

Conclusions and recommendations

The land-use planning process has largely succeeded in the CIB concessions because it incorporates multiple actors and is based on data collected over many years. Before management plans were written, WCS, CIB and MEF had completed studies on wildlife populations, bushmeat, NTFPs and timber species, in addition to socio-economic studies of the movements of semi-nomadic peoples, their traditional territories, and annual demographic censuses of the human populations within the concessions. The government-adopted management plans formalized the land-use planning and defined the roles of different actors through individual protocols of collaboration (e.g., the PROGEPP protocol defining the roles of MEF, WCS and CIB in wildlife management within the CIB concessions). While land-use planning for the Kabo and Pokola

concessions has been completed, planning for the remaining concession is advanced and will be completed in the coming couple of years.

Land-use planning in forestry concessions comes with its own set of challenges: the first and most difficult challenge is to find common ground and common goals. It is possible that a logging company adopts the attitude that its lease of the concession makes the company the only legitimate actor. But local communities and local or international NGOs should not be dissuaded from working with the company because 1) it may be the only option for mitigating environmental damage and resource loss; and 2) a strong partnership means that multiple organizations can share the responsibilities and cost of resource management. Moreover, logging companies have a great deal to gain by partnering with conservation organizations. By collaborating with NGOs that seek to manage natural resources, protect human rights, or improve food security, the company can benefit from an improved image and have access to new sources of financial resources (e.g., loans from the World Bank). A greener image can attract new clients and open new markets, allowing the company to earn greater profits from its wood (see discussion of certification below). In addition, where public organizations work to improve living conditions, health care and food security, the company benefits from a healthier and more effective workforce.

There is a trend towards better land-use planning and forest management in central Africa. Central African governments have recognized the need for management plans for concessions, and at least in the case of the Republic of Congo, the existing forestry laws correspond to or even surpass internationally recognized standards. Moreover, the Congolese government is slowly starting to enforce its own legislation: nine management plans are advanced in their development, including the Kabo and Pokola concessions which have been adopted and received Forest Stewardship Council (FSC) certification. Of the 69 forest management units, 50 percent are committed to the process of sustainable forest management planning. As land-use planning evolves across central Africa and standards become more rigorous, management of forestry concessions will necessarily consider the livelihoods and interests of local people and the conservation of natural resources and wildlife.

The trend in land-use planning and forest management is also partially driven by the growing market for certified wood, particularly in European countries that are starting to require that imported wood comes from legal and sustainable sources. Three forestry concessions (including the Kabo and Pokola concessions) have now been certified by the FSC in central Africa, and several companies have committed to seeking certification in the coming years. Companies only receive certification if their logging procedures meet the standards of the organization that bestows the certificate which is assessed by independent audits of the company. Auditing is a systematic process of verification, usually conducted at the level of the forestry concession, to determine whether the operation meets a predefined set of criteria or performance standards. If the operation meets the minimum standards, a certificate is granted. If not, corrective actions may be requested (CAR). The corrective actions must be completed in a specified time-frame for certification to be achieved. Subsequent spot checks and monitoring audits are then conducted to keep the certificate valid. For producers like CIB, certification brings more systematic management systems, potential market access and improved image. For conservation, certification provides a mechanism for influencing management practices; and for consumers, it provides information on the legality and the environmental and social impacts of the wood being purchased. To date, the only internationally recognized performance-based scheme issuing certificates for tropical forests is the Forest Stewardship Council (FSC).

Certain exemplary companies like CIB have made considerable investments in infrastructure and procedures to promote sustainable forest management, social development, and wildlife management. But to promote land management and conservation at a regional scale, forestry laws should be applied to all companies and all concessions without exception – central African countries need to enforce their own laws. Finally, beyond enforcement of hunting laws, forestry laws and certification schemes fall short when it comes to wildlife management and biodiversity conservation. Although most certification bodies address wildlife conservation to some extent, their principles and guidelines are typically focused on protection of endangered species and protection of critical sites and habitats. But protection of endangered species is not a sufficient goal for biodiversity conservation and resource management, particularly where local communities rely on bushmeat as a critical source of protein and income. In these situations, land-use planning and management should implement regulations that exceed the standards of certification schemes. The PROGEPP model of wildlife management in forestry concessions serves as an example of what can and should be done to achieve sustainable harvest of wild game and prevent local extirpation of non-endangered species. Certification standards and national laws should be strengthened by considering the following aspects of wildlife and natural resource management:

1. Pre-logging inventories of wildlife (both protected and hunted species) should be conducted to identify the presence, approximate abundance and distributions of key wildlife species.

2. Pre-logging assessments of the hunting practices and needs of local communities living in the area should also be conducted, including the evaluation of tenure and hunting rights.

3. Once the pre-logging assessments of wildlife have been conducted, the goal should be to maintain wildlife populations at or near pre-logging levels. To allow some off-take by local communities, and to take into account yearly variation in wildlife populations and error in measurement of wildlife densities, maintaining populations within 10–20 percent of their pre-logging levels may be practical.

4. Explicit access regulations and adaptive management protocols should be developed to prevent local depletion of important game species while simultaneously assuring monitored, legal hunting access to the local communities that most depend on wild meat.

5. Land-use planning in forest concessions should be viewed as part of a wider land-use planning process that integrates multiple concessions, or concessions and protected areas. A single forestry concession managed in isolation may be too small for the long-term conservation of wide-ranging species, not to mention that the effort and money invested in conserving species will be wasted once animals stray across borders into unmanaged lands. '

Chapter 4

Community-Based Natural Resource Management Land-Use Planning: Lessons Learned

Adonis Milol and Cléto Ndikumagenge

Community forestry: A priority for CARPE and its partners

Community forestry as a management method is by definition not limited solely to the management of forests by local communities to produce timber. It also includes the harvesting of non-timber forest products, exploiting bushmeat, biodiversity conservation, and other environmental, social, cultural and religious services (Colchester *et al*., 2003).

On the basis of this broad definition, the concept of community management contributes to Intermediate Result 2 of CARPE Phase II that aims to strengthen governance within institutions, improve policies and laws related to natural resource management, and build the capacity of civil society and communities involved in the management of forest resources.

Involvement of communities in the management of renewable resources: Analysis of recent developments

Who should join forces with whom?

The issue of involving communities in the management of forest resources lies at the heart of a controversy that, to this day, is still unresolved – that is, participatory management. Who should join forces with whom? Participatory management is in itself the culmination of an evolution in policies on the management of forest landscapes in Central Africa. It marks a clear break from views held prior to the 1992 Rio Conference, where protection (conservation) and exploitation of resources were the only pillars of forestry policy.

Whenever natural resource management is discussed in the context of the Congo Basin, it is difficult to dissociate the issue of resources from that of land tenure, since “a landscape only has economic stakes because of the resources it contains; and resources (land, water and plant) can only be important from an economic and social view point, on condition that they are useful”, as an eminent socio-economist rightly once said (Weber, 1998).

This marks the switch from the notion of protection to that of management. Protection implied prohibiting human activity, and aimed above all at perpetuating the existence of animal and plant species. Environmental management entails accepting that humans are a dominant element in the natural environment and that the impact of their actions on the latter may and should be beneficial for all (Bahuchet *et al*., 2000).

Voluntary or imposed participation?

Powerful civil society lobbies had to bring pressure to bear on States to prompt them to adopt the idea that wildlife was only wild by name, given that in reality it is the result of a symbiotic relation between man and his biotope. Forests, as they appear today, are the outcome of several transformations induced by human actions in a perfect balance between disadvantages and advantages. Destruction causes a collapse of this fragile balance in several ways.

Involving members of local forest communities in the management of ecosystems that they have been living in for ages, in order to better conserve them, has therefore become a panacea since 1992. Man is no longer a secondary character in conservation programmes and has instead become a key actor.

Actors with divergent interests

This ecological viewpoint, derived from "ecological capitalism", is based on the ideas of resources, wealth and access. The more wealth and wellbeing that resource use generates, the more users will be concerned about the conservation of these resources.

Unfortunately, in developing this new approach, a distinction was made between urban élites and rural people. The former should, according to this new way of thinking, be distanced from any sustainable development initiatives carried out locally, because they are liable to hijack them and subvert their original objectives.

As for the latter, the "real beneficiaries" of these initiatives, they should be prepared to take ownership of them and implement them, by using their traditional know-how and customary codes that may not necessarily be environmentally friendly.

There is a clear preference for local actors to the detriment of external actors even though their influence on the activities of local communities is obvious. Is this not one of the primary inadequacies of this conception of local development?

Participatory management and all its derivatives seems to be based on the desire to establish equity; the desire to repair an injustice that until now kept forest populations away from all forestry activities and thus contributed to breaking the interdependence that seemed to prevail in all relations between forest dwellers and forest resources.

However, there is a lot of criticism with regard to how this involvement was conceived.

There are those who believe that the current strategy is implausible: that is, offering the local populations, dependent on forest resources, alternatives to their traditional activities so that they can turn away from the resources, but still have sufficient incomes to provide them with the necessary goods and services to support their livelihoods and wellbeing (Weber, 1998).

After more than a decade of attempting to balance participatory management with sustainable management, and trying to achieve local development while also conserving resources, the scientific community has been obliged to face up to some unpalatable truths: poor practices in the environment have not stopped. Local populations have not yet taken on board the participatory management methods that have been proposed to them. Poverty has scarcely been alleviated in conservation zones. Pressure has increased in quite a number of cases, influenced by factors that are external to the forest and that are generally driven by the market.

In conceiving participatory management strategies, it was thought that the individual should be relegated to the background and the group brought to the fore. The community approach was supposed to absorb individualism for optimum results, and to have effects on all individuals of the same group.

Unfortunately this has also been shown to have its limitations, due to social changes, characterized by a deterioration in the forms of community control (Lavigne-Delville, 1996) over private, individual and family property, at the same time as the influence of customary authorities is declining in forest zones.

Lessons learned

The three case studies presented in this chapter describe three different experiences of community management in three landscapes of the Congo Basin.

They consist of three multi-stakeholder partnership initiatives, involving civil society, the administration, and local communities, aiming to achieve the sustainable management of natural resources in the three landscapes. All three initiatives were facilitated by an international NGO working for the conservation of ecosystems.

In two of the case studies, land-use planning was carried out by the local population using participatory mapping. These two experiences were coordinated by the Wildlife Conservation Society (WCS) in the Lac Télé-Lac Tumba Landscape, and the Salonga-Lukenie-Sankuru Landscape, in areas where conservation objectives were at odds with the vital needs of the population. These two experiences describe the ups and downs on the road to arriving at an acceptable compromise for all actors; many difficulties required new and ingenious approaches to continue moving in the right direction.

The third case study describes supporting the acquisition and management of community forests by people living in the Sangha Tri-National (Tri-National de Sangha – TNS) Landscape, and was carried out by the WWF Jengi Program.

Of the three case studies, it is the one that best illustrates the difficulties of community management, because it deals with a case where the financial and political stakes were already clear, as compared to the other two whose populations were still at the initial stage of the project and could not yet perceive the outcomes. Instead of the potential or real benefits generated by the commercialization of community forest products boosting local development in the TNS Landscape, in quite a number of cases they fuelled violent conflicts between the beneficiaries.

These three experiences are concrete examples of the types of partnerships that may make it possible to reconcile the conservation of ecosystems with the welfare of the local population. All three also demonstrate that community management is not in itself a panacea. The complexity of the legal status of protected areas, lengthy administrative procedures, the weak technical capacity of the local populations, and the financial and political stakes are just some of the obstacles to effective appropriation of the participatory management opportunities offered to the population within the framework of mitigating the negative impacts of conservation policies and objectives.

The TNS Landscape case study illustrates well the fact that bad governance is far from being the preserve of public institutions, for community managers at the local level are just as likely to indulge in less than transparent practices.

From all of these developments, the main lesson learned is that the outcomes of participatory management are just some of the factors that will impact on the future of the forests. The city-forest relationship is another factor that contributes to the ups and downs of forest management. This may be the moment to start developing strategies for the controlled involvement of the much-feared “urban élites” in local development and ecosystem conservation strategies. They are undoubtedly key actors in overcoming the numerous hurdles that remain to be tackled by all the actors who have for decades been seeking to integrate conservation and development successfully. '

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Case Study 1

Community Land-Use Planning in the Lac Télé Community Reserve (Lac Télé-Lac Tumba Landscape)

Hugo Rainey and Felin Twagirashyaka

Lac Télé Community Reserve and periphery

In the forests of the Republic of Congo, the confluence of the Sangha, Likouala-aux-Herbes, Oubangui and Congo rivers forms an area of 63,500 km^2 of wetlands. Seasonal floods are a characteristic feature of the riparian habitats of both the Congo River and its tributaries, and determine the habitats and species distributions in these areas. The topography is predominantly a featureless alluvial plain at an altitude of 300–320 m; and the soils are classified as gleysols, due to the flooding and waterlogging throughout the year.

The Lac Télé Community Reserve (LTCR) lies in the heart of the swamp forests of the Likouala region of north-east Republic of Congo. The reserve was created by presidential decree on May 10, 2001 with the goals of conserving biodiversity and guaranteeing sustainable use of natural resources. The reserve is situated between the Sangha and Oubangui Rivers and covers 4,400 km^2 of which 90 percent floods for at least part of the year. Only an island of *terra firma* forest divided by the Likouala-aux-Herbes River, and small patches of *terra firma* on which villages are located, do not flood. The LTCR is surrounded by rivers: the Likouala-aux-Herbes, the Batanga, the Bailly and the Moundougouma. Lac Télé, after which the reserve is named, is in the northern half of the reserve in the middle of the swamp forest. Apart from 5 km of tarmac road, all travel in the LTCR is by boat, although in the dry season some areas are linked by footpaths. The reserve contains a rich diversity of habitats including swamp forest, seasonally flooded forest, riparian forest, mixed forest and seasonally flooded grassland savannah. The habitats on the periphery of the reserve are generally similar with the addition of large areas of *Raphia* palm swamp to the east and south-east.

Annual rainfall in the region averages 1,600 mm although there is considerable variation, for example, from 1,200 mm in 2005 to over 2,200 in 2007. There are two rainy seasons, with peaks in August–November and May–June. The main dry season is in December–March, although this varies from year to year and no month is completely dry. Temperatures vary little over the year with an average annual temperature of 26.7°C. The average daily maximum temperature is 32°C and the average daily minimum is 22°C. In the flooded habitats of the LTCR and its periphery, variation in rainfall results in corresponding changes in the water level throughout the reserve. The highest water levels normally occur in September–December and the lowest in February–June. However, the Sangha and Oubangui rivers are linked to the reserve by surface and subterranean aquifers and the water levels in these rivers also have a great influence on levels in the reserve. For example, as the catchments of these two rivers lie partially in the savannahs of Cameroon and the Central African Republic (CAR), very heavy rainfall there in July–September 2007 resulted in severe flooding in the LTCR several hundred kilometres away.

Communities

The Lac Télé Community Reserve has a population of over 16,000 (2005 data, WCS unpubl.) of whom over 90 percent are indigenous Bomitaba people. The majority of the remaining inhabitants are Congolese who have immigrated to the reserve with a small proportion from neighbouring countries. On the edge of the reserve, most villages are Bomitaba with a small number of indigenous semi-nomads in the northern periphery. Few semi-nomads reside in or on the periphery of the reserve for any length of time. The population increased at an average rate of 2.5 percent per annum in the period 2001–2005. The majority of people in the LTCR and its surroundings are young: 59 percent of people are under the age of 20. The rate of immigration into the reserve is low as there is scarcely any employment here; swamp forest is of little current value for timber exploitation, and there is little permanently dry land suitable for intensive agriculture. Each Bomitaba family group or lineage has ancestral rights over traditional community territories for use of natural resources through activities such as fishing, hunting and agriculture.

Most of the protein consumed by local communities comes from fish (91 percent) with only 6 percent coming from bushmeat and even less from livestock. This is different from other

Flooding in the LTCR in 2007.

rural communities in Central Africa where bushmeat is usually the primary protein source. Many local people earn large sums of money during the dry season by catching and smoking fish for export. Only in the *terra firma* villages is fishing less important as they have limited access to fisheries. Agriculture is practised by most families and the main staple is manioc. Other activities include hunting, gathering non-timber forest products (NTFPs) and small-scale commerce.

Wildlife

Large populations of gorillas were discovered in the Likouala swamp forests in the early 1990s and subsequent surveys have estimated the population of gorillas in the reserve at over 10,000 individuals. Recent surveys of the reserve periphery have identified large gorilla populations to the west of the reserve and also at very high densities (5.3 individuals/km^2) in the *Raphia* swamp to the south-east. The total gorilla population in the reserve and periphery is estimated to exceed 20,000. Chimpanzees are also found in the area's swamp forests, but at a lower density. The three largest mammal species are elephant, hippopotamus and buffalo which were formerly found in their thousands in the reserve, but were decimated by hunting in the 1960s–1980s. These populations are now recovering and may now be seen close to villages. The fisheries are very productive in the Likouala swamps and, although a definitive inventory has not been completed, there may be a number of endemic and undescribed species here. Waterbirds are abundant in the reserve, many of them feeding on fish. Two species, Purple herons and African darters, are found in internationally important numbers and the site is designated both a Ramsar site and an Important Bird Area because of the size of their populations.

Threats

The principal threats to biodiversity and natural resources in the reserve are: illegal hunting and the commercial bushmeat trade; overfishing (current intensities are unknown and, given the population's reliance on fisheries, this is of huge concern); planned construction of new roads and prospecting for oil; bushfires; population growth; zoonoses (including the epidemic which decimated the Cane rat population several years ago); Ebola which could spread from western Congo; diseases potentially transmitted by livestock to wildlife entering the reserve from Impfondo; and avian influenza potentially introduced by imported domestic fowl.

LTCR project and management

The Lac Télé Community Reserve and its periphery are managed by a partnership of the Ministère de l'Economie Forestière (MEF) of the Congolese Government and the Wildlife Conservation Society (WCS) which has worked here since 1990. This successful collaboration has developed activities to describe the reserve's wildlife, forests and socio-economic characteristics and to address the threats mentioned above. Specific activities include: the development of community participative management; education and awareness-raising; law enforcement patrols; biological surveys and monitoring of large mammals, waterbirds, fish and herpetofauna; and bushmeat and fisheries off-take monitoring.

Lac Télé community land-use planning methodology and results

Each Bomitaba and semi-nomad family group or lineage in and around LTCR has ancestral rights over traditional community territories for use of natural resources such as fishing, hunting, collection of NTFPs and agriculture. Additionally, each family has customary laws, many of which are related to natural resource management. Social changes with the passage of

colonial rule, one-party socialism after independence, civil war and the current regime have resulted in an erosion of traditional authority and a corresponding decline in community management of natural resources.

The Lac Télé Community Reserve has a moderately low human population density as much of the forest and savannah is seasonally or permanently flooded. This factor, along with the very limited employment opportunities compared to areas with logging concessions, results in land being used for non-commercial subsistence activities, and in low levels of immigration. The focus of land-use planning in LTCR has therefore been on community-based natural resource management (CBNRM). WCS in collaboration with MEF has been working with communities to reinvigorate community management of natural resources in the Likouala swamps, including fisheries, forests and wildlife. Our goal has been to develop each community's vision of natural resource management based on traditional management. We have engaged with communities to develop community natural resource management plans which will then be incorporated into the overall LTCR management plan.

The goal of the community land-use planning programme implemented in and around LTCR by WCS and MEF is to reinvigorate traditional land-use rights and use customary laws, reinforced by modern laws, to provide communities with authority over their land. This has three major objectives:

- to create a sense of ownership over territories by local communities which will encourage a long-term view of natural resource management;
- to provide security of tenure for communities over their traditional territories;
- to reduce the threat of marginalization and eviction of communities by immigrants, politicians, land-grabbers and commercial interests.

Community meeting on traditional land-use rights and customary laws.

As part of the process of developing community management, WCS carried out a census of all the inhabitants of the reserve in 2005. This was very intensive, but has given us an unparalleled insight into the socio-economic characteristics of the villages and the changes that have occurred in recent years. The census served two main purposes for the purpose of community land-use planning: (a) to identify the family lineages and heads of families within each community; and (b) to assess the rate of population change within the reserve (the previous census was carried out in 2001). The census also provided detailed information on education levels, diet, livestock numbers and other data which will inform management decisions.

WCS then started a process of working closely with each family lineage in the reserve to identify traditional territorial limits, different use zones and to describe the customary laws which applied to natural resources. Our socio-economic team worked with family leaders to indicate territorial boundaries by creating maps drawn in the sand.

Traditional zoning of territories included villages, agricultural land, fish ponds, lagoons and river pools, hunting and NTFP collection zones and sacred sites. These included both current and historical village locations as many villages were formerly hidden in the forest to escape raids during pre-colonial tribal wars. Subsequently, during the colonial period, some villages were moved to easily accessible rivers and combined with other villages to facilitate taxation. The sand mapping was used to facilitate the participation of the elders and large numbers of the villagers. The LTCR team oriented the discussions where, together with some villagers who were able to read, they drew the sand map sketch on a IGN[1] map of 1/200000 using features such as rivers, roads or other visual reference points which were easily identifiable on

1 Institut Géographique National.

Participatory mapping in the LTCR.

the map and in the field. Some points on limits shown by the populations were collected with GPS. Once in the office, the drawing on the IGN map, with help from the GPS points, was digitized in ArcView to become a geo-referenced map (see Figure 1). We then returned to the villages to verify the accuracy of the mapping with communities. Customary laws related to natural resource management are quite varied, but contain many common themes which will facilitate their implementation and, indeed, many of which should be incorporated directly into the LTCR management plan.

As we were working with so many older people in each village, we also documented the history of each territory in order to understand their origins (some of which have disjunct borders). This historical analysis could provide a solid basis for the delimitation of each territory and could help mitigate future territorial boundary disputes. Territories have been bought and sold in the past and used to pay off debts. This process attracted great interest from many communities and we received comments such as "this will take us back to the time when our ancestors managed their land". The mapping and participatory process required significant investments of time, personnel and logistics.

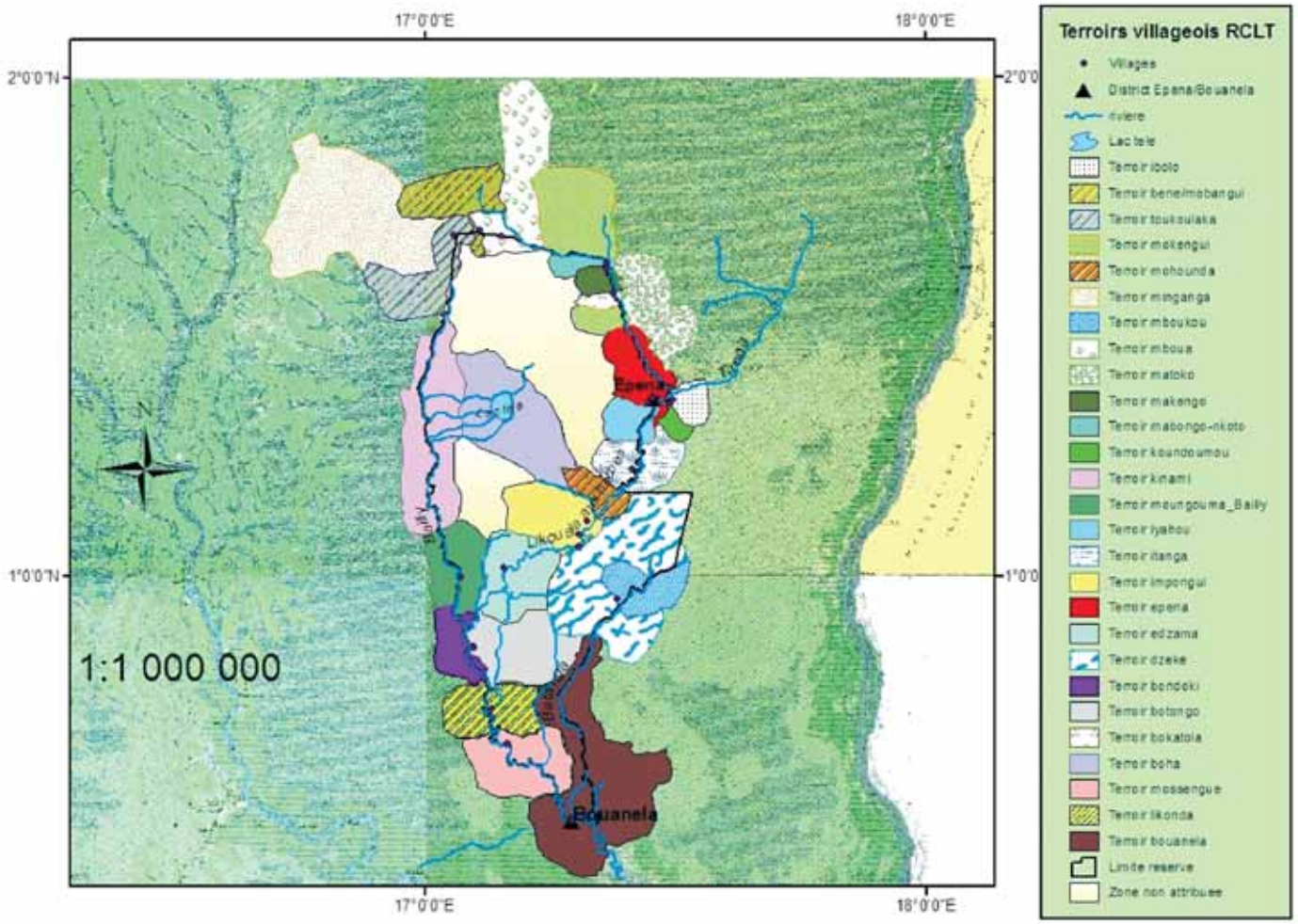
Community natural resource management plans will be developed for each village and these will include identification of traditional authority and family lineages over each area of land; maps of each traditional territory including different use zones; and customary laws for traditional natural resource management. Each community and its traditional territories and customs will therefore be incorporated into the LTCR management plan. Once approved by the government and signed into law, this management plan will give legal status to community rights over their traditional territories and to their customary laws (within national laws).

Lessons learned

The key factors for successful development of CBNRM here are the following:

- High proportion of indigenous (i.e., non-immigrant) inhabitants (90 percent Bomitaba) with traditional territories and customary laws: the indigenous Bomitaba have strong incentives to manage the reserve for the future as they are not likely to move on, i.e., because they have a long history here, they regard it as their homeland which should be managed sustainably with technical encouragement from WCS and MEF.
- Low potential for immigration and limited land available for immigrants: all villages are located on *terra firma* islands within the LCTR (and periphery) as flooding is so widespread in the wet season. Almost all islands are currently occupied by villages thus there is little room for further settlement. Additionally, local resource management and ownership

Figure 1. Community territories for all the LTCR villages



of fisheries prevent outsiders exploiting fisheries and hunting is limited compared to other sites. Also there are few clinics, schools, roads and other factors which might encourage local immigration.

- Relatively high productivity of fisheries albeit with limited room for expansion: as mentioned above, all current fisheries are occupied by families with long-term ownership, therefore there is limited room for fisheries expansion. This reduces the potential for overexploitation. Empirical observations indicate that fisheries are probably sustainably exploited.

Our work with local communities in the Lac Télé and Likouala swamps has been essential for the success of the overall project here. However, careful consideration must be given to the resources required for implementation of CBNRM and it must also be understood that natural resource management is not necessarily equivalent to or sufficient for conservation management. The goal of community land-use planning is to establish sustainable community-based natural resource management. This is a long-term goal, so here we review our success in attaining intermediate objectives and the factors which have aided or constrained our land-use planning activities. Additionally, we also comment on how this programme has had additional effects which have supported the conservation objectives here.

Our land-use planning team succeeded in their goals of working with all communities in and around the LTCR to identify families holding traditional rights and authority, traditional territorial limits and customary laws. Here we detail how we were able to achieve this with the limited available funding and logistics we are able to deploy in the LTCR:

- *Personnel strengths.* The socio-economic team consisting of three dedicated and highly motivated individuals [leader Faustin Otto

(FO), Gerard Bondeko (GB) and Roger Mobongo (RM)]. Both FO and GB have relevant university degrees, GB and RM are Bomitaba and all three speak Bomitaba, a dialect of Lingala. RM is also a trained boatman, so the team was independent and flexible. The personalities of the individuals in community-related work are always crucial to success and all three members of the team have gained the confidence of the communities. FO, in particular, made it his mission to complete this work and, as he has worked with WCS in LTCR since 2001, he had considerable knowledge of traditional community management. Working with the project management team, he designed the programme based on discussions with communities and this ensured that it was based on the communities' vision and requests, rather than imposed by external management.

- *Resource dedication.* The team was dedicated to this programme for four years with few other activities to hinder their work; they spent many months in the field, often for more than half the year. Additionally, as the reserve is so large and it can take two days to travel by boat from north to south, significant resources were required for this work. This was particularly important as importing fuel and other supplies to the Likouala swamps is very demanding as there are no roads to this region in the heart of Africa and for half the year the rivers are not navigable by cargo boats. Thus significant investments of time, scientific and logistic personnel, finances and management oversight were required.
- *Community motivation.* Local communities in the Likouala, although motivated by party politics, receive little investment from national or regional government. As this programme was designed to re-invigorate traditional authority and customary rights, it was popular amongst communities who have to be self-reliant for survival. Each community had their own vision for community natural resource management and their requirements for fishing, gathering NTFPs, subsistence hunting, etc. Our role was to ensure a harmonization of community efforts with the national laws applicable to natural resource management and conservation.

As related above, this methodology requires a significant investment of time and resources, outstanding personnel and motivated communities. By reducing the overall level of detail required for understanding communities and traditional management at a site, it may possible to increase the speed of application of community land-use planning to new areas in the Likouala swamps. However, whether this will achieve the same level of community support and success remains to be seen. Community land-use planning outside the LTCR is being carried out using this reduced investment approach. For example, we will not carry out a census and the identification of all individuals in each family lineage will not be required. Thus, the approach is faster and should be completed more rapidly. The personnel involved in such a programme must be very carefully identified as they must not only be able to communicate with communities, but they must also be able to empathize and establish a rapport with them. Additionally, they must have the stamina to carry out such a wide-ranging programme. No mean feat when dealing with 16,000 people over four years.

The primary conclusion of this review of our approach to land-use planning is that it has been successful in its goal of providing a framework of community-based natural resource management acceptable to all management actors, including communities, technical staff (i.e., protected area managers) and local politicians and government. The support given to this process by all actors has been wide-ranging. This is of particular importance in a country which has suffered civil war and experienced limited development in recent decades. As mentioned above, sustainable natural resource management does not necessarily equate to conservation management.[2] Individuals may be motivated by local needs, and external pressure by traders to hunt for ivory and bushmeat is considerable. Thus, CBNRM may reduce threats to forests and wildlife, but localized and targeted threats to some of the world's most threatened species, such as elephants and gorillas, require governance activities such as law enforcement patrols. Education and outreach play a strong role in informing people of their rights and laws, but there is no holy grail of community management without external threats. That means that communities need strong incentives to manage their community territories. Additionally, in the period before colonization, local hunting and trading may have exerted little pressure on local resources. However, modern external pressures on their territories such as illegal non-local hunters and bushmeat traders are omnipresent and difficult to stop. Great demand for bushmeat and ivory, mainly from urban centres, means that local communities can have difficulties

2 Conservation management will focus on species or habitats of conservation concern. For example, we are focusing on gorilla management in the LTCR as the population of this species here is of international importance. This involves patrol teams and community management in combination. If we only carried out CBNRM (community-based natural resource management), we would have few gorillas as this would focus on NTFP and fisheries management. Communities themselves do not have the legal authority to prevent individuals from inside or outside the community from hunting there. They may have the moral authority, but without support from government-authorized patrol teams, they will not be able to prevent hunters with military weapons, or traders illegally buying bushmeat or ivory, from carrying out their unsustainable activities.

in maintaining traditional management. Neither community management nor law enforcement can exist in isolation if conservation is to be successful. As mentioned above, communities are no longer isolated from demands that national and international trade place on them. Large cities create a huge demand for bushmeat and international trade has increased the price of ivory. Thus, traditional management needs to be augmented by modern enforcement and technical input by government and partners to ensure that community natural resources are not rapidly exhausted by new threats. An additional outcome of the approach we have implemented in the LTCR has been the confidence that the communities now have in the conservation project partnership between MEF and WCS. As each community family has had direct positive contact with members of the conservation project, the level of trust they have in our objectives and presence in their villages and traditional territories is very high. Given the isolation of some of these villages, the welcome given to us by communities and the ease with which dialogue has been opened is hugely important. This goodwill is likely to provide considerable benefits to the conservation project in the long term. '

Case Study 2

The Process of Allocating and Managing Community Forests in Cameroon: Case Studies from the Sangha Tri-National and the Dja-Odzala-Minkébé Tri-National Landscapes

Alphonse Ngniado, Louis Defo, Claude Chendjou and Zacharie Nzooh Dongmo

Community forests in Cameroon are sanctioned by Law No. 94/01 of 20 January 1994 on forestry and its Implementation Decree No. 95/531/PM of 23 August 1995. One of the main objectives of this law is to promote the participation of the population in the conservation and management of forest resources, so that these resources can contribute to improving their living standards. The terms and conditions as well as regulations relating to the allocation and management of community forests are outlined in the *Manual of the Allocation Procedures and Management Regulations for Community Forests.* Various bodies and organizations are involved in the implementation of the community forest process in south-east Cameroon, including WWF through its Jengi Project.

WWF Jengi Project

Background

The WWF Jengi Project has been in place in south-east Cameroon since the mid-1990s. It focused mainly on inventories of large mammals and then on the creation of three new parks – Lobéké, Boumba Bek and Nki. In 1998, it extended its range of activities to include sustainable forest management, co-management and access to resources as well as benefit sharing.

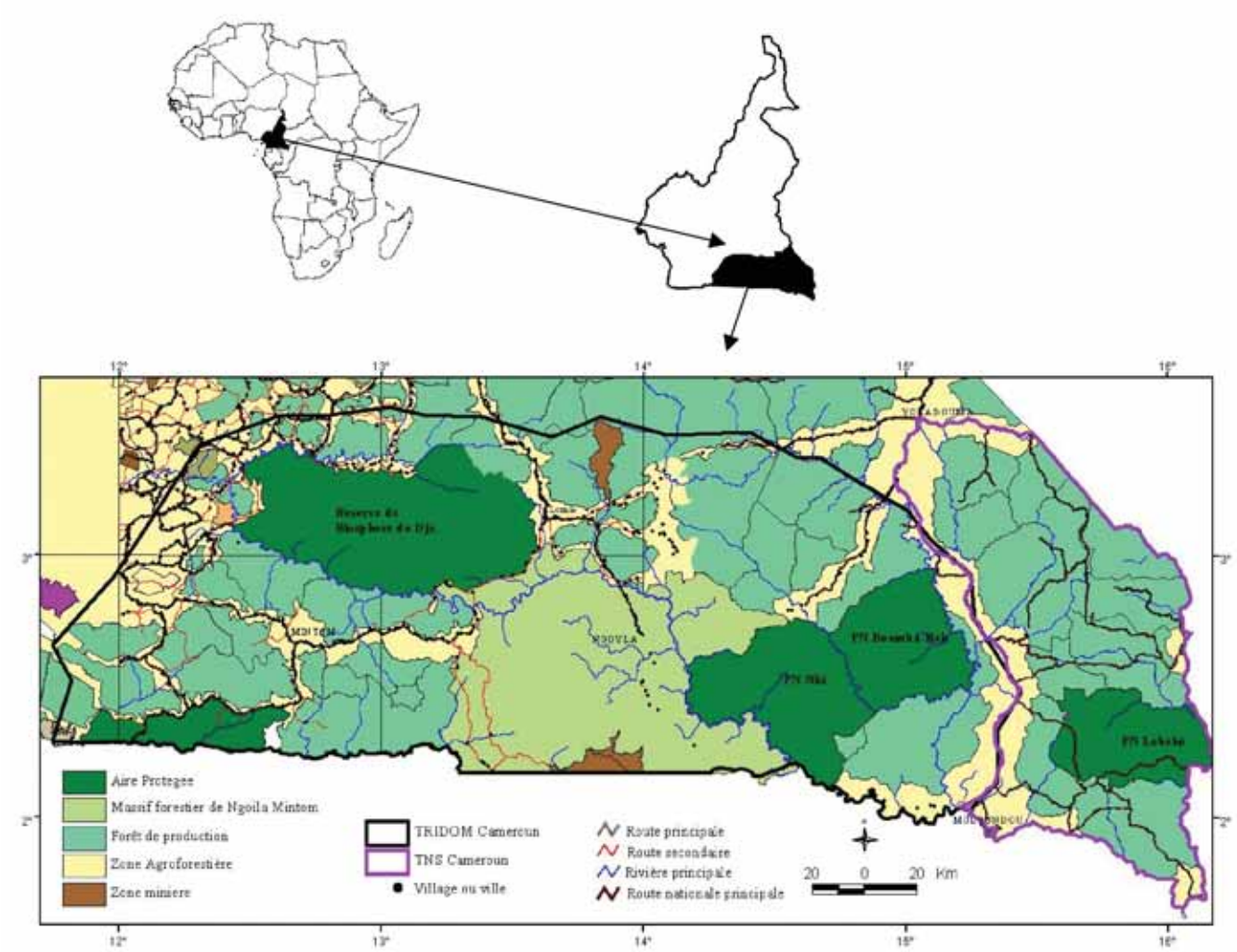
Objectives

The objectives of the Jengi Project are:

- To ensure the sustainable management of wildlife in multiple-use zones;
- To ensure the efficient and collaborative management of protected areas;
- To reinforce the sustainable management of logging activities through solid partnerships between the government, the private sector and village communities;
- To put in place a systematic ecological monitoring programme to study the status of the environment during logging activities;
- To improve transboundary conservation activities in collaboration with key partners and various institutions.

There are ten community forests with management agreements in the Cameroon segment of the Sangha Tri-national (Tri-National de la Sangha (TNS)) Landscape and the Dja-Odzala-Minkébé Tri-national (Tri-national Dja-Odzala-Minkébé (TRIDOM)) Landscape. These agreements were granted through a contract with which the forestry administration entrusts to a community a portion of forest in the agro-forestry zone for it to manage, conserve and exploit in the

Figure 1. Location of the Cameroon segments of the TNS and TRIDOM Landscapes



best interests of that community. It is accompanied by a simple management plan that outlines the activities to be carried out. Fourteen forest portions have been granted or are in the process of being granted to local communities. How have these forests been granted and managed? What is the WWF Jengi strategy to guide the communities? What are the lessons learned from the community forestry process in the TNS and TRIDOM landscapes?

The Cameroon segments of the TNS and TRIDOM Landscapes

The Cameroon segments of the STN and the TRIDOM Landscapes are situated in the south-east and have surface areas of about 1,471,000 ha and 112,000 ha of forest respectively (see Figure 1). They are made up of five protected areas (the Lobéké, Boumba-Bek, and Nki National Parks, the Dja Wildlife Reserve and the Mangame Gorilla Sanctuary). Their peripheral zones are made up of production forests, mining zones and agro-forestry zones. Community forests are created in the agro-forestry zones.

The process of allocating community forests

By law, a community forest is a forest in the non-permanent forest estate that is subject to a management agreement between a village community and the administration in charge of forestry. Its surface area cannot be more than 5,000 ha. Between applying for, and finally being allocated, a community forest, the community has to fulfil several conditions of which the most important are: constituting a legal entity, preparing a Reservation File, drawing up a simple management plan (SMP), and signing a management agreement.

Constituting a legal entity

In order to qualify for the granting of a community forest, the village community has to be constituted into some kind of acceptable legal entity such as: an association, a cooperative, a common initiative group, or an economic interest group. This is to be done after awareness-raising meetings on community forestry have been organized in the community concerned. If the community is receptive to the process, a general assembly meeting is organized during which the statutes and rules and regulations are drawn up, and a legal entity that represents all the social components of the community (villages, women, men, Bantus, Bakas) is set up. Its members are elected democratically. All important decisions are taken by the general assembly; those which relate to the community forest or to the management of revenues should also conform to the requirements of the SMP.

Once the major decisions have been taken, small commissions can be set up to monitor the use of the funds and the implementation of the project, under the supervision of the steering committee of the association presided over by a delegate or a president.

According to the SMPs, revenues raised from logging should finance, as a priority: the functioning of the entity as an enterprise, to guarantee the sustainability of jobs and incomes; the exploitation of the timber and non-timber forest products (NTFPs); any other project that might create jobs and incomes (fishponds, community farms, etc.); and community projects (such as a health centre, school, well, community centre, etc.).

Preparing a Reservation File

Once the process has been accepted by the community, a file called a Reservation File has to be prepared and submitted to the Minister in charge of forestry, consisting of: a stamped application specifying the objectives set for the community forest; a map showing the location of the forest (and proof of its surface area); documents showing the name of the community concerned as well as the address of the head of the legal entity; a description of the activities previously carried out within the forest; the curriculum vitae of the person designated by the community to manage the forest; the minutes of the consultation meeting held at the headquarters of the legal entity and presided over by the administrative authority (at which the objectives for, and boundaries of, the community forest are determined); the statutes of the legal entity, and an up-to-date list of its members. The Ministry's technical services for community forestry will verify the surface area (5,000 ha maximum) and the location of the forest to ensure that it does not encroach on a permanent forest estate or any other pre-existing titles. If no irregularities are found, a reservation authorization valid for 18 months is granted to the community to allow it to complete the final procedures for obtaining the land.

Drawing up a simple management plan (SMP)

The reservation authorization gives the community the right to draw up and submit a simple management plan to the Ministry of Forestry and Wildlife (MINFOF). The SMP stipulates the activities to be carried out, the rules for managing the timber and non-timber resources sustainably, as well as managing the revenues generated by selling forest products so that they contribute to the wellbeing of the community. The SMP should include a description of the forest and of the community; a micro land-use plan (LUP) based on inventory findings (conservation, agro-forestry and production zones), five-year and annual work plans, results of socio-economic studies and a natural resource inventory, and a community development plan.

As soon as the SMP has been drawn up, six copies of it must be deposited with the regional forestry service to be passed on to MINFOF where it is studied and then approved or rejected by a multi-disciplinary validation commission.

Signing a management agreement

A favourable response from the validation commission allows the community to prepare and sign the management agreement. This agreement gives the entire community, through their legal entity, the exclusive right to exploit timber and non-timber resources in the forest for 25 years (with an option to renew) with motor saws and mobile sawmills at their disposal for felling and light processing. The sawn timber is moved from the processing point in the forest to the break-bulk yard by the roadside, where shaping is done manually. The person in charge of managing these activities has to submit an annual work plan as well as an annual progress report to the forestry administration.

WWF strategy for assisting communities

Community forestry has an important role to play in conservation since, if well managed, it creates jobs and strengthens the local economy, thus contributing to improving the living conditions of local people. Therefore, to help overcome the obstacles related to the process of obtaining and managing community forests, the WWF Jengi Project and other partners provide various kinds of support to local communities. The approach is simple and participative: first, meetings are held to raise awareness of the concept of community forestry. After this, specific requests for assistance may be presented to WWF. A memorandum of understanding (MoU) between the community and WWF Jengi is drawn up and signed, and mechanisms are put in place for monitoring and evaluation of

the MoU commitments, and for conflict management.

Awareness-raising meetings

Aware of the fact that local people may have a very limited knowledge of the process of obtaining a community forest, WWF Jengi, in collaboration with some local NGOs that have expertise in this domain, organize awareness-raising meetings for communities. WWF Jengi gives priority to villages bordering the Lobéké, Boumba-Bek and Nki National Parks.

Requests for assistance

After the awareness-raising phase, communities that want to apply for a community forest, but lack the expertise to do so, may ask for assistance from WWF Jengi through a letter addressed to the regional coordinator. In their request, they have to specify the type of assistance expected (technical, financial, material …). The final commitment is conditional upon the applicant community accepting WWF's MoU.

Signing the Memorandum of Understanding between the community and WWF Jengi

The MoU is signed during a meeting in the community concerned, at which the terms of the MoU are made public. The MoU clearly defines the actions to be carried out, the expected outcomes, and spells out the commitment of the two parties to achieving the defined objectives.

Implementing the Memorandum of Understanding

In addition to assisting the community with the administrative procedures associated with applying for a community forest, WWF, through its MoU with the community, focuses on the following actions: managing the funds generated by the community forests; evaluating the project's achievements; and conflict management.

Managing the funds generated from logging

Several capacity-building sessions are held for the steering committees of the legal entities responsible for the management of the community forest, and for the revenues derived from its exploitation, to enable them to:

- Identify priority actions for the community (planning social projects);
- Secure funds (setting up procedures for taking in, holding and disbursing funds);
- Monitor and evaluate the projects carried out.

Monitoring and evaluation of the implementation of the MoU

The monitoring and evaluation of the MoU is done through quarterly evaluation meetings with members of the steering committee, WWF Jengi Project staff, local NGOs working on community forestry, and the forestry administration.

Conflict management

Capacity-building sessions on the identification and management of potential conflicts that may arise within the community were organized. These sessions were aimed especially at the members of the legal entity, to help them prevent conflicts by encouraging communication i.e., collating and transmitting information on the management of the community forest to all communities involved.

Table 1. Allocation of community forests for the period 2001–2007

Years	Number of CFs allocated	Legal entity of the communities concerned
2001	1	Mbialebot
2003	1	Bibimbo
2004	1	Mpemog
2006	3	Djankora, Essayons voir, Mpewang
2007	4	Asmimi, Zenkadjel, Morikoaye, Biemo

Outputs

Allocation of community forests

The first community forest of 5,000 ha was granted in 2001 to the Mbialebot community. The table below gives details of subsequent allocations.

The ten community forests cover a surface area of about 47,560 ha, representing about six percent of the total area of the non-permanent forest estate in south-east Cameroon. The table shows that the number of community forests has increased significantly since 2004, which is largely thanks to the actions of WWF and its partners.

Technical and financial management of community forests

Because the community's technical capacity tends to be inadequate, and there is a lack of financial resources to purchase their own timber-processing equipment, they are often obliged to sign sub-contracts with business operators. This can lead to problems, including:

- Operators being suspended by the forestry administration for non-compliance with the stipulations of the SMP. The most common causes are not respecting the boundaries of the annual felling plot, and felling trees with trunks of a smaller diameter than the prescribed minimum;
- Conflicts between members. Several conflicts have occurred in communities of which the most recurrent are those related to leadership struggles between steering committee members, and a perceived lack of accountability in the management of funds generated by the sale of products;
- A shortage of logging partners. The often poor state of local roads, combined with the distance of the zones concerned from big cities such as Yaoundé and Douala, discourages business operators from investing in community

Table 2. Projected and actual timber exploitation figures in some community forests

Legal entity	Year	Projected quantity (m^3)	Logging carried out			
			Species	Qty (m^3)	Price per m^3 (CFA Francs)	Revenues generated (CFA Francs)
Bibimbo	2004	1010	Sapele	70	80,000	5,600,000
	2005		Ayous	50	40,000	2,000,000
Mpemog	2005	1000	Sapele	94	20,000	1,880,000
			Ayous	54	10,000	540,000
Mpewang	2006	1000	Sapele	20	20,000	400,000
Mbielabot	2003	1025	Sapele	100	18,000	1,800,000
	2006		Sapele	100	18,000	1,800,000
	2006		Assamela	92	18,000	1,656,000
TOTAL	—	4035	—	580	—	15,676,000

forests. Those that do invest often pay much less than they would for areas closer to major cities;

- Machinery break-downs. The machines are old and cannot run for long, leading to low production and output.

The above table gives an illustration of planned and actual exploitation figures in some community forests.

From this table, it can be seen that the four forests produced only 580 m^3 of the 4035 m^3 projected, that is, 14.37 percent. This can be attributed on the one hand to MINFOF's delay in signing the Annual Logging Certificate and the transportation documents for logged wood (way bills), and on the other hand to the European market (where almost all the timber is sold) which is very demanding with regard to high-value timber. Only three out of a possible 15 tree species have been logged so far: Sapele with a volume of 384 m^3 (66.2 percent), Ayous with a volume of 104 m^3 (17.93 percent) and Assamela with a volume of 92 m^3 (15.86 percent). The timber logged generated a total revenue of 15,676,000 CFA Francs (FCFA); the average price per m^3 of timber of any species stands at FCFA 27,000. This price oscillates between FCFA 10,000 (Ayous in Mpemog) and FCFA 80,000 (Sapele in Bibimbo) depending on the contracts with subcontractors. It should however be noted that the price of FCFA 80,000 observed in Bibimbo includes handling charges that the community has to bear instead of the subcontractor.

Achievements of community micro-projects

Community micro-projects are the outcome of surveys and meetings organized within communities. They are included in the development plan, and they are funded from benefits generated by sale of timber harvested from the community forest and other sources previously identified in the community (council and State contributions). Five years after the granting of the first community forest, these micro-projects are still not very visible in the villages. This creates suspicion and even scepticism amongst some members of the community with regards to the capacity of members of the legal entity in particular, and even of community forestry in general, to stimulate socio-economic development in villages. The micro-projects surveyed support schooling, the creation of casual jobs, and some construction jobs (a shed and a classroom).

Lessons learned

Management of legal entities

An evaluation of legal entities shows that compliance with the statutes, rules and regulations is mixed. Membership rights and annual contributions are almost never paid and the average membership per legal entity is 43 members, a relatively low number compared to the number of inhabitants per village. This could be explained by the population's general lack of interest in community concerns on the one hand, and inadequate awareness on the other hand. As regards representation of the various social groups, members are mostly Bantu men (80 percent); Bantu women represent only 12.94 percent and the Bakas are in a small minority (7.06 percent). It is also noted that there is little involvement of members in decision making. For example, drawing up contracts with loggers and other service providers is done by mutual agreement and most often with delegates of the legal entities, without the real involvement of other members of the community. Instituting good

Table 3. Community development projects

Legal entity	Achievements
Bibimbo	Contributions to the salaries of part-time teachers Payment of the salaries of workers
Mpemog	Enrolment of 20 students and two undergraduates in their respective institutions (FCFA 500,000) Construction of a classroom Grant to the Catholic Church (FCFA 15,000)
Mpewang	—
Mbielabot	Construction of a shed in Gribe (FCFA 3,000,000) Scholarships to students and pupils (FCFA 500,000)
Essayons Voir	—
Djankora	—

governance within the management body of community forests, and real participatory management, remain a priority in the days ahead.

Awareness, information, education and training on community forestry

This phase is executed by WWF Jengi in collaboration with NGOs and the forestry administration. Given the varying management difficulties described above, this type of support and guidance should be maintained throughout the entire community forestry process.

Reservation files

The reservation procedure is long. The files, prepared by the communities and deposited with the local administration in charge of forestry, are then forwarded to the central administration in charge of forestry. The process of examining and approving these files, and issuing a reservation document, takes about one and a half years. The procedure should be revised so that the whole process is carried out at the local forestry administration level, and the manual of procedures should be revised and simplified.

Exploitation of community forests

The exploitation of community forests is entrusted to business operators (subcontractors) who bear all the costs of exploitation. They pay the legal entities a price per m^3 comparable to an "owner's tax" that enables them to cover running costs and make a small profit but not enough to allow them to carry out planned development projects.

Small-scale logging, under the control of the community or through subcontracting, offers significant job opportunities for the local youth. A large proportion of the community can be involved in various tasks related to logging operations. However, for the communities to take charge of logging their forests, they need access to loans to buy their own sawing equipment, and their technical capacities need to be built up to enable them to use the equipment efficiently and comply with the stipulations of the management plan.

Conflicts within communities

An evaluation of the running of the management bodies shows that conflicts related to the management of community forests are of diverse origins. The most common are between families and the members of the legal entity. Families claim "ownership rights" over the forest lands where community forests have been created. But in reality, these are only customary rights, given that the land tenure code and forestry law make the State the sole owner of almost all lands and forest resources of the country. Conflicts between members of the legal entity and the forest manager are usually due to a lack of accountability in the management of funds generated from logging. Conflicts between village chiefs and the manager are usually about the chiefs wanting to have monthly salaries from community forest revenues. Finally, conflicts between legal entities and neighbouring villages can arise from not respecting boundaries. In order to overcome these problems, various interventions will be necessary, including: the development of simple and transparent management mechanisms, especially the putting in place of a simple accounting system; training all members of the steering committee on their respective roles; establishing project preparation and monitoring commissions; and organizing regular meetings between communities.

Case Study 3

Lessons Learned from the Monkoto Corridor Community-Based Natural Resource Management Zone in the Salonga-Lukenie-Sankuru Landscape

Lisa Steel and Alfred Yoko

Introduction

Located between the two sectors of Salonga National Park (SNP), the Monkoto Corridor has been a site of conflict between government and local communities since the 1940s when villages were moved away from their ancestral lands and closer to roads. Additional relocations occurred between 1954 and 1958 for administrative reasons associated with the planned creation of a protected area. A third series of relocations was carried out by the *Institut Congolais pour la Conservation de la Nature*[1] (ICCN) in 1970 when Salonga National Park was officially created (d'Huart, 1988; WCS, 2004). This history of forced movements has led to long-lasting conflict over land in the Park and the Monkoto Corridor where relocated communities were settled on the land of existing villages.

Since 1970, relations between ICCN and local communities have continued to deteriorate due in part to problems associated with: ambiguous policies on resource use in the park and bordering rivers; declining resources outside the park; and a negative perception of anti-poaching activities. These problems, which were highlighted during socio-economic studies carried out by WCS and WWF (WCS, 2004; Colom, 2006), represent a threat to the sustainable management of community resources.

In 2006, WWF initiated its community assistance and environmental education programme in the inhabited part of the Monkoto Corridor (5,581 km^2) (see Figure 1). This programme is one component of a larger initiative for the Salonga-Lukenie-Sankuru (SLS) Landscape (104,144 km^2). WWF, its Consortium[2] and partners[3] are working with the government of the Democratic Republic of Congo (DRC) and other groups to develop, implement and monitor an integrated land-use plan (LUP) for the landscape. The landscape LUP is based on the designation of different macro-zones and the development of associated management plans defining resource use and governance. Within the SLS Landscape, the inhabited part of the Monkoto Corridor is classified as a community-based natural resource management (CBNRM) zone.

The CBNRM approach is aligned with ICCN's draft "National Strategy for Community Conservation: 2007–2011". The goal of the ICCN strategy is to promote sustainable participatory management of natural resources by (1) assuring that communities are better engaged in the conservation of natural resources; and (2) promoting activities that link conservation to development and contribute to the improved livelihoods of communities through revenue generation.

Physical and administrative features of the Monkoto Corridor CBNRM zone

The Monkoto Corridor is located in the Tshuapa District of Equateur Province. Both the territory and principal town within the corridor bear the name Monkoto and the CBNRM zone encompasses two sectors: Nongo and Monkoto. The corridor's limits within the SNP are delineated by two rivers – the Loile and Luilaka – which both flow in a north-westerly direction and eventually empty into the Ruki, which meets the Congo River at Mbandaka.

The corridor is critical to ICCN operations in SNP with the park's principal station located in Monkoto and a second to the east in the village of Mondjoku, on the Loile River. An absence of bridges and ferries and the degraded state of the roads limit transport within the corridor to boats on navigable rivers, motorcycles and bicycles. There is, however, an operational airfield in the town of Monkoto.

Socio-economic characteristics of the Monkoto Corridor CBNRM zone

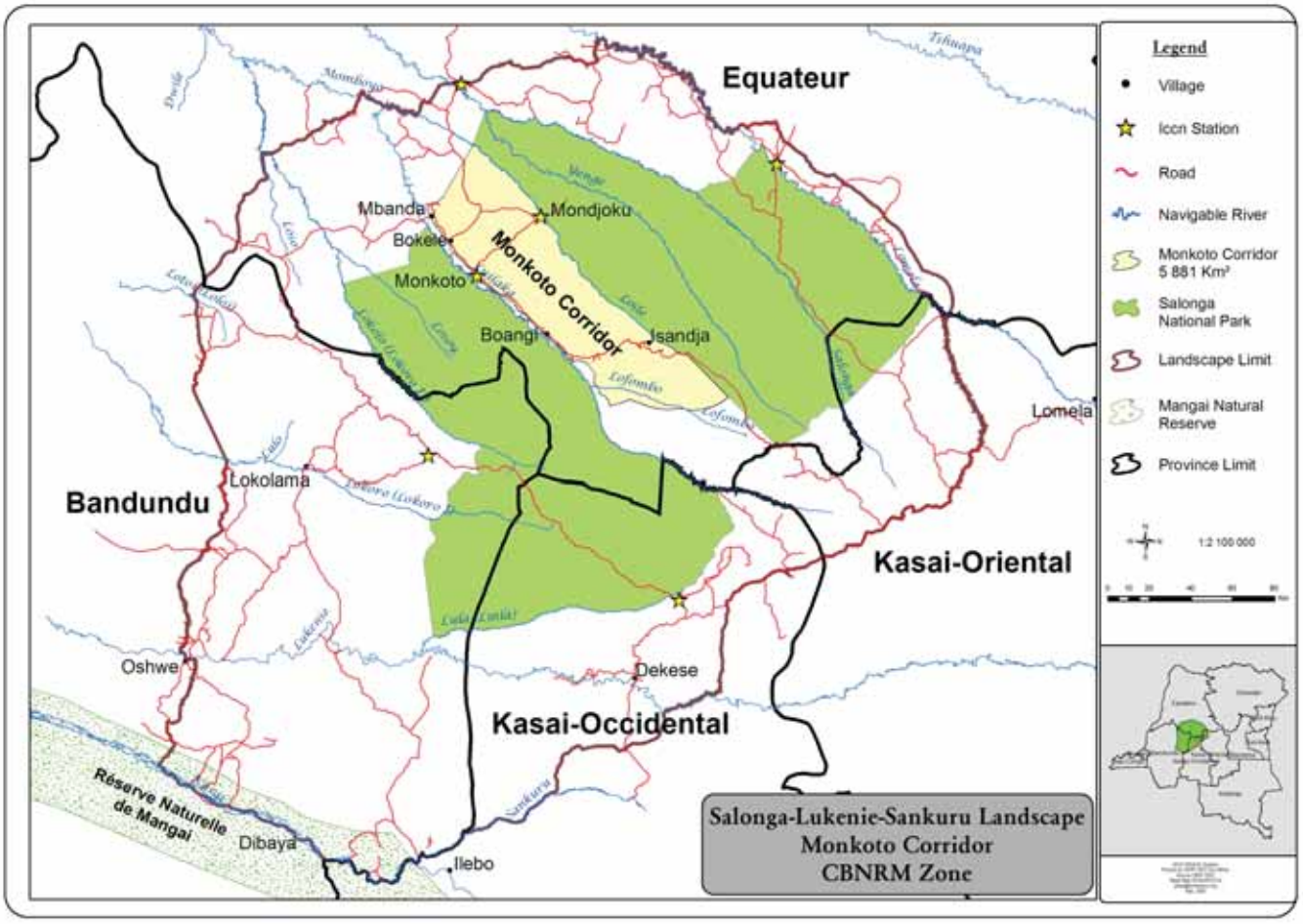
The majority of the Monkoto Corridor CBNRM population is Mongo (Nkundo and Mbole sub-groups) although there

1 In 1970, the *Institut Zairois pour la Conservation de la Nature* (IZCN).

2 Pact, Wildlife Conservation Society (WCS), Zoological Society of Milwaukee (ZSM).

3 International Conservation and Education Fund (INCEF), Global Action Coalition (GACC – DRC national NGO), *Institut Africain pour le Développement Economique et Social* (INADES), Center for Tropical Forest Science/Smithsonian.

Figure 1. The Salonga-Lukenie-Sankuru Landscape and the Monkoto Corridor CBNRM zone



is one Batwa village. As throughout the landscape, subsistence and economic activities are restricted primarily to agriculture, hunting, fishing and the collection of non-timber forest products (NTFPs). However the corridor area reported more subsistence and economic activities than the rest of the landscape with a higher number of households engaged in artisanal work and commerce (Colom, 2006). Agriculture is low-yield and farmers lack access to improved cultivars, markets and knowledge of better agronomic practices.

As recently as 1997, the company ENTRIAC (*Entreprises industrielles, agricoles et commerciales*) operated palm oil, coffee, cacao and rubber plantations in the area. While Monkoto communities speak favourably of ENTRIAC, an estimated 80 percent of their workforce of over 1,200 workers was brought in from the Kasais. Moreover, several villages lost their land to ENTRIAC plantations.

Biological characteristics

The Monkoto Corridor represents an important biological link between the two blocks of the SNP. In a recent report by a UNESCO monitoring mission[4] (Aveling *et al*., 2007), the authors recommended that a biological corridor be established between the two sectors of the park allowing for the movement of species and genetic exchange. The area south of the proposed CBNRM zone may present the best option for such a corridor.

Large mammal surveys have only been completed in a small segment of the Monkoto Corridor (WCS, 2005), south-east of the limit of the proposed CBNRM zone. WCS has initiated and will complete corridor surveys in 2008. Forest elephants and other characteristic fauna of the region are known to frequent the corridor and there

4 SNP is a World Heritage Site.

have been Bonobo sightings on the periphery of the town of Monkoto.

Legal status

The Forest Code of 2002 makes reference to (1) local community forests (*des forêts des communautés locales*) (Article 111); and (2) local community concessions (*concessions aux communautés locales*) (Article 22). There is an on-going debate over the exact definition of the two terms, which will affect the elaboration of implementing decrees. In the absence of a clear and appropriate legal mechanism for the validation of CBNRM zones, an alternative approach may be to establish "management contracts" between Monkoto Corridor communities and the appropriate legal authorities. This approach would start by obtaining recognition of the contract by local government officials and their provincial counterparts. This process should be inclusive of not only the Ministry of Environment representatives but also of other relevant ministries (e.g., rural development, agriculture, interior, mines) in order to avoid conflicting land or resource attributions.

The unique location of the Monkoto Corridor between the two blocks of the SNP heightens its ecological value. There is no legal definition for protected area buffer zones in the DRC,[5] however, it is likely that ICCN and the Ministry of Environment will be willing to advocate for a form of management which encourages "community conservation".

Approach to CBNRM land-use planning and results

The goal of planning is to develop land use and management plans that contribute to the Strategic Objective of the CARPE programme[6] as well as to the desired conditions of the Landscape and the CBNRM area as determined by stakeholder groups. The methodology used in the SLS Landscape is based on guidelines provided by CARPE/USAID and the United States Forest Service (USFS). The processes and management plan components to be included in the road map or Strategy Document for CBNRM land and management plan development include:

Processes:

- Creation of a planning team;
- Information and data gathering plan;
- Stakeholder participation strategy;
- Creation of a strategy for the formal recognition of plan.

Management plan components:

- Unique value;
- Characteristics of CBNRM area;
- Desired conditions;
- Objectives;
- Micro-zoning and guidelines;
- Implementation plan;
- Monitoring plan.

The stage of development of the different processes and management plan components varies. While important inroads have been made in stakeholder participation and a plan for information and data collection, activities such as the creation of a planning team and the definition of objectives and desired conditions have been deferred until stakeholder groups have gained the capacity and knowledge to participate in the decision-making processes.

Consequently, in the following presentation of results, four elements of the planning process have been highlighted: (1) baseline information collection; (2) the creation and implementation of a stakeholder participation strategy; (3) participatory mapping; and (4) investments in community development. As capacity building is seen as a critical activity throughout the CBNRM land-use planning process, it has been integrated into each of these elements.

*Element 1: The collection of **baseline information** on the socio-economic and biological characteristics of the area.*

In the Monkoto Corridor, CBNRM information collection is an on-going process. Previously collected information on the socio-economic characteristics and the biological value of the corridor were what led to its selection as a priority CBNRM zone and have been important for the identification of different stakeholder groups. Additional types of information collection, including threats and opportunities analyses and participatory mapping have been or are being implemented together with communities and their representatives. Further details are provided in subsequent sections.

*Element 2: The implementation of a **stakeholder strategy** that incorporates: (1) platforms of consultation, collaboration and management; (2) activities geared towards informing communities and building capacity; and (3) a communication strategy.*

Platforms of consultation, collaboration and management are the launching points for work with communities and other stakeholder groups. Over time they will evolve into the different levels of governance of the CBNRM zone. At the highest level, these structures will be inclusive of a larger group of actors including government representatives.

In the Monkoto Corridor CBNRM zone, the first step in working with communities was to create platforms of collaboration and consultation bringing together representatives of different villages. Four different ***thematic groups*** were created: (1) forest, wildlife and agriculture; (2) fisheries and freshwater management; (3) local chiefdoms and good governance; and (4) civil society

5 Although there is a reference to 2–10 km in one draft decree under discussion.

6 "Reducing the rate of forest degradation and loss of biodiversity through increased local, national, and regional natural resource management capacity".

and local development. Representatives were selected by villages based on their role in the use and governance of natural resources as well as their social status (including members of local NGOs and associations). Representing 113 villages, these 205 volunteer "environment counsellors" serve as intermediaries between WWF, ICCN, partner organizations and local communities. They are responsible for the two-way flow of information between thematic groups and communities as well as organizing and supporting activities such as participatory mapping.

As a consequence of the work of environment counsellors:

The villages of Betamba and Likwela report that they no longer permit "foreigners" to hunt in their forests because they are considered one the principal causes of the decline in wildlife numbers and the increase in commercial hunting.

Along the roads between Monkoto and Mbanda and Monkoto and Yongo, villages have stopped using small gauge nets and poison when fishing.

With the assistance of the environment counsellors, ***village management committees*** have been initiated in 62 villages. These nascent structures are responsible for: (1) the planning, regulation and monitoring of natural resource use; and (2) the future elaboration of community development and natural resource management plans; and will serve as the conduit for larger-scale land-use planning and management plan development in the Monkoto Corridor CBNRM zone.

WWF promotes the values of free prior and informed consent in their work with communities. Communities are provided with the ***information and capacity*** to determine and implement their own sustainable development vision and to accept or refuse to participate in the process of land-use planning. As a secondary benefit, their increased understanding and capacity should enable them to participate more actively in national debates on zoning, land tenure, revenue sharing from natural resource-based industries and other initiatives that may impact their resources and livelihoods.

In the SLS Landscape, thematic group representatives were guided through the process of analyzing the impact of their activities – both positive and negative – on their land, water and natural resources. The different thematic groups then identified improved land and natural resource management practices using information provided by experts in agronomy and natural resource management. In the thematic groups "local chiefdoms and good governance" and "civil society and local development" an emphasis was placed on legislation, the importance of natural resource governance and the concept and potential benefits of community forest management. As a follow-up to these different analyses and discussions, the environment counsellors reflected on their visions for natural resource management in the corridor. The shared vision was to ***"assure the improvement of livelihoods of local communities by re-establishing and sustainably managing the forest and fauna of the area".***

In August 2007, WWF partnered with the national NGO, *Avocats Verts* (Green Lawyers), and held a workshop for environment counsellors and local authorities (157 participants). The goal of the workshop was to introduce communities to Congolese laws on natural resource use and to influence future management decisions. Legislation on nature conservation (wildlife exploitation, management and trade; protected areas), fishing, freshwater resources and forests (Forest Code of 2002) was distributed and debated. Prior to the workshop, most participants had no access to or information pertaining to environmental laws. At the end of the workshop, participants highlighted three lessons learned: (1) the relevance of the material to ICCN and other local authorities in the area and the importance of their participation in similar, future workshops; (2) that their present use of natural resources is in many cases illegal under Congolese law; and (3) that there are numerous contradictions between customary practices and norms, and national legislation.

Many communities in the SLS Landscape lack access to radio and other sources of information. Also a large portion of the population is illiterate or unable to understand media service communications in Lingala and French. Communication strategies, often in the form of environmental education activities, are a way to better inform and involve a larger number and different segments of the population as well as to change behaviour over time. A recent initiative by the Consortium's newest partner, the International Conservation and Education Fund (INCEF), will support the development and execution of a community-based media campaign. Communities and partners such as ICCN, together with national-level counterparts, will be able to translate threats, lessons learned and other information into a locally targeted, culturally appropriate format. A list of themes identified for production includes the importance of SNP, rights of indigenous people, promotion of collective action, monkey pox, bushmeat trade and poaching. A second programme being implemented by WCS in collaboration with RARE, a US NGO, uses a form of social marketing that aims to educate youth groups in the corridor on the importance of Bonobo conservation and the threat of bushmeat trade.

*Element 3: The use of **participatory mapping** and complementary*

information to inform decisions on zoning and the development of regulations on natural resource use, access and governance.

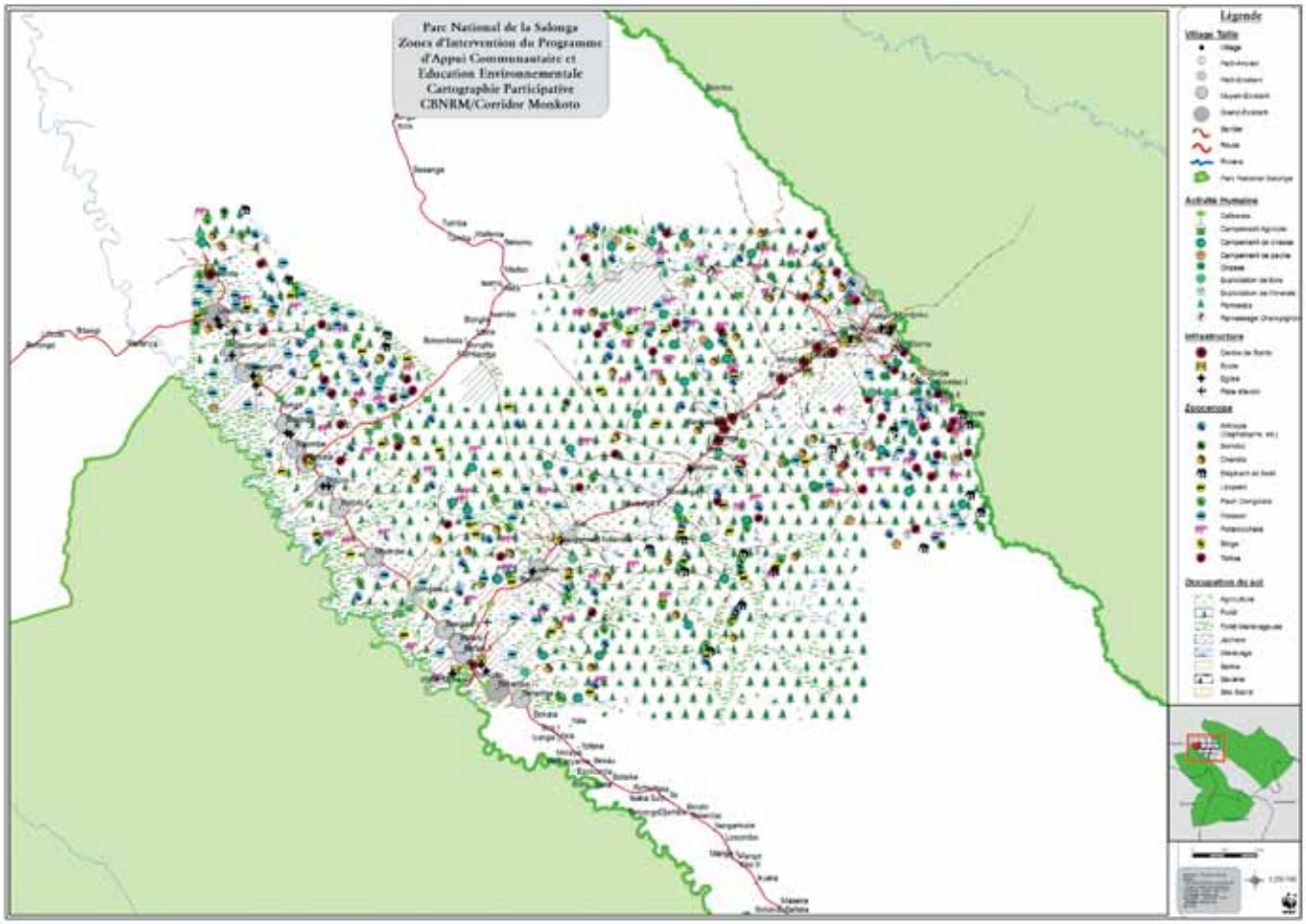
Participatory mapping is an important community tool to be used to define or validate existing community zones (micro-zones) and associated rules governing resource use in these different micro-zones. The maps are also a powerful tool when negotiating community rights of access to land and resources with the private sector (e.g., logging companies, agro-industrial groups), government and conservation groups. With the assistance of their trained environment counsellors, 81 villages have elaborated nine maps covering 2,110 km^2 (38 percent) of the Monkoto Corridor (Figure 2).

Concurrently, WCS is carrying out large mammal inventories in the Corridor. In recognition of the Corridor's status as a community zone, WCS has taken the innovative approach of training and deploying inventory teams comprised of WCS personnel and representatives of corridor villages and NGOs. The results of this study will be superimposed with participatory maps to further refine zoning and resource regulations in the CBNRM zone and identify options for a biological corridor between the two blocks of SNP.

Element 4: Investment in ***rural development and income-generating activities.***

Asking communities to self-regulate unsustainable practices such as commercial hunting, without providing economically viable alternatives, is short-sighted and, in the long term, will jeopardize the durability of CBNRM land-use planning and management efforts. Feedback from communities in the Monkoto Corridor has shown that the communities and individuals most reluctant to participate in different land-use planning activities are often the most outspoken about insufficient attention to community development.

Figure 2. Preliminary results of participatory mapping in the Monkoto Corridor CBNRM zone



Therefore investing in sustainable rural development and income-generating activities is a tangible means of demonstrating the links between good natural resource management and governance, and improved livelihoods.

Within SLS, the Landscape Consortium has initiated numerous activities aimed at improving livelihoods. These activities included conducting a commodity chain analysis of local products which found that products with an interesting profit margin included maize, mushrooms, fumbwa (*Gnentum africanum*), fish, caterpillars and copal (Rokotondranisa *et al*., 2006). Consequently, a group of Monkoto women decided to join forces and create a central market location for the selling of lucrative NTFPs such as mushrooms while aspiring to attract the interest of external buyers in the future. Other groups have increased maize production and the Consortium partner Pact is conducting further research on the merits of the copal trade. In 2006, with support from the CARPE/USAID Small Grants Program, seven local associations and NGOs benefited from financial support for projects promoting increased agricultural and domestic animal production. As a part of this support, small grant beneficiaries and other local community-based organizations (CBOs) received training in improved agricultural and animal husbandry techniques. More recently, a second series of small grants was distributed in 2008 thanks to funding from the European Union.[7] The projects of the nine recipients included the rearing of pigs and chickens; increasing the production of beans, groundnuts/peanuts, rice, maize and cowpea; and environmental education in schools.

During the course of implementing these activities it became apparent that the CBOs lacked functional capacity. The CBOs lacked information on the differences between NGOs and associations and did not have the understanding or organizational capacity to design and implement economically and socially viable activities. This capacity is not only important from a livelihood perspective, but is critical if local civil society is to take a greater role in environmental protection; advocating for community rights and concerns; and monitoring the implementation of CBNRM activities. To address this deficiency, the SLS Landscape Consortium has sought the assistance of INADES (see footnote 3), a national and regional NGO, to organize a series of capacity-building workshops.[8] In early 2008, the first two workshops were held for Monkoto Corridor associations and NGOs. Additional workshops are planned both locally and in three other areas in the landscape.

Lessons learned from the CBNRM land-use planning process in the Monkoto Corridor

Contributing to poverty reduction is critical

Communities demand clear and concrete actions demonstrating the links between conservation, sustainable natural resource management, poverty reduction and improved rural conditions. It is critical to start investing from the beginning in building community capacity to develop and implement sustainable income-generating activities through support to associations, village groups and NGOs. Without this capacity, the long-term impact of investments in community activities will be limited.

Tools such as commodity chain and cost-benefit analyses and the development of business plans can be important tools for assisting communities to identify sustainable income-generating activities. However, the full value of these tools will only be realized if and when linkages between producer groups and commercial entities are established, which is particularly challenging in such a remote location.

Greater emphasis should be placed on establishing links with organizations working in rural development, agriculture and small business as well as other sectors such as education and health. Investment in rural development is also an important tool to gain the trust of reticent stakeholder groups.

The process of land-use planning in CBNRM zones is only as valuable as the ability to secure community contractual or concessionary rights

The *de facto* rural systems of land use, resource use and governance contradict the *de jure* status of the State as the legal title holder of all the country's land and resources. Communities refer to land and resources as "theirs" and traditional authorities continue in practice to wield considerable control over the distribution of agricultural lands and to a lesser extent the use of fishing and hunting areas.

Although contradictions between customary local law and formal national laws prevail and the debate on the definition of community forests is on-going, it is necessary for conservation organizations to proceed with CBNRM initiatives in order to meet urgent conservation and livelihood objectives. By using a more inclusive and decentralized approach, starting with securing the buy-in of local and provincial government officials who can then be used to galvanize the support of their colleagues in the relevant national ministries, there is a far greater likelihood that these efforts will be accepted by the government. At the same time the results of this work

7 From the project « Renforcement des capacités de gestion de l'ICCN et appui à la réhabilitation d'aires protégées en RDC » (9 ACP ZR 4).

8 Organization and functioning of a CBO, establishment of legal status and internal regulations, self-promotion, business plan development.

can contribute to resolving the on-going debate over the meaning of local community forests and local community concessions in the Forest Code and corresponding implementation legislation.

It is important to build the capacity of local communities to participate in national dialogues

Communities are eager to participate in the development of laws and other initiatives impacting their future, and their voice is critical to these discussions. However, given communities' lack of familiarity with national laws and policies, in order for them to participate as equal partners, they must first be provided with the knowledge and tools to participate. National-level decision making on processes such as land-use planning should not move at a pace that excludes the time necessary to build their capacity and create a forum for their viewpoints to be heard.

If women are to be important vehicles of change in communities, targeted strategies will need to be developed to ensure their participation in CBNRM planning and management processes

Unfortunately, until now the participation of women in CBNRM activities has been very limited. To increase the involvement of women it will be necessary to develop an approach that takes into consideration time constraints and socio-cultural impediments to their full participation. For example, only a few have been nominated as representatives to the thematic groups and men defend their absence by stating that they are unable to travel away from their family and responsibilities to participate in meetings and workshops. As with socio-economic study focus groups, it may be necessary to consider organizing separate, village-based meetings for women to ensure that they are fully informed of the activities to date, to obtain their input, and to collaboratively work together to develop a strategy for their long-term inclusion in the development and management of the Monkoto CBNRM zone. An adaptive methodology is equally important when working with groups such as the Batwa. '

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Chapter 5

Role of Alternative Livelihoods in a People-Centred Approach to Conservation: A Case Study in Creating a Community-Managed Conservation University

David Yanggen

1. Introduction

1.1 Overview

The U.S. Agency for International Development's Central African Regional Program for the Environment (USAID/CARPE) has adopted a "people-centered approach" to conservation. This approach recognizes that, given the widespread and acute poverty prevalent in the Congo Basin, conservation efforts will only be successful in the long term if local populations find viable alternatives to current natural resource use patterns that degrade the environment. This approach therefore necessitates a balance between conservation via the exclusion of individuals from protected areas of high biodiversity, and conservation via the promotion of alternative livelihoods that allows individuals to use natural resources in a more sustainable manner (USAID/CARPE, 2006).

In the CARPE people-centred approach to conservation, helping people is not considered an ancillary social objective inserted into the conservation programme, but rather an *a priori* condition needed to achieve the programme's conservation objectives. Put another way, the promotion of alternative livelihoods for communities is a necessary means to a conservation end. For CARPE, with its mandated strategic objectives of biodiversity protection and reducing deforestation (USAID/CARPE, 2008), the end has been clearly established as biodiversity conservation. While CARPE's help to communities in the form of support to alternative livelihoods provides a positive outcome in human terms, the reason that CARPE as a conservation programme supports these activities is that without them the conservation objectives will not be achieved.

The overall purpose of this article is to explore the relationship between livelihoods and conservation in order to explain in a detailed and rigorous manner why CARPE supports alternative livelihoods to achieve its conservation objectives. As a part of this analysis, this document reviews three CARPE lessons learned case studies of how CBFP[1]/CARPE Landscapes have incorporated alternative livelihoods into their conservation programme.

1 Congo Basin Forest Partnership, a multilateral initiative for conservation in Central Africa. CARPE is the U.S. Government's principal contribution to the CBFP.

1.2 Background

CARPE is a regional initiative that began in 1995. The Strategic Objective of CARPE is to reduce the rate of forest degradation and loss of biodiversity through increased local, national and regional natural resource management capacity in nine central African countries.[2] During its first phase (1995–2002), CARPE's purpose was to increase knowledge of Central African forests and biodiversity, and build institutional and human resource capacity. Currently in its second phase (2003–2011), CARPE has three main goals:[3]

i) the implementation of sustainable natural resource management practices;
ii) the improvement of environmental governance in the region; and
iii) the strengthening of natural resources monitoring capacity in Central Africa (USAID/CARPE, 2008).

The first goal, by far the largest component of the overall programme, corresponds to CARPE's landscape programme. This component involves the implementation of field-based conservation activities including sustainable livelihoods in 12 different large-scale Landscapes constituting in total nearly 80 million hectares spread across seven different countries. The programme classifies three types of "macro-zones" within the broader landscape: protected areas (PAs), CBNRM[4] zones (Community Forests) and extractive resource zones (principally logging concessions but including mining, oil extraction and agricultural plantations). A key component of the landscape programme involves land-use planning (LUP) and the development of management plans for macro-zones and the entire Landscape.

USAID/CARPE moved its management team from Washington DC to Kinshasa, the Democratic Republic of Congo (DRC), in 2003 in anticipation of the shift from Phase I to Phase II. This move also corresponded with a major scaling up of field activities from a base[5] of US$ 3 million/year in Phase I to a base of US$ 15 million dollars/year in CARPE Phase II starting in fiscal year 2004. The second phase of CARPE is in fact divided into two phases, Phase IIA (2003–2006) and Phase IIB (2007–2011).

1.3 Formalizing a people-centred approach to conservation

Toward the end of Phase IIA, CARPE/USAID commissioned an external assessment of the expanded programme to evaluate the results achieved in Phase IIA and to make recommendations for Phase IIB (Weidemann Consortium, 2006). Several of these recommendations are pertinent to the direction that CARPE/USAID has taken in terms of the livelihoods component of its conservation strategy.

First, the external assessment suggested that greater emphasis needed to be put on livelihoods activities in support of conservation objectives. In order to do so, the report gave three specific suggestions. First, it recommended that new partners should be brought into the landscapes that have competencies in rural development. Second, it noted that, among the three categories of CARPE "macro-zones", a preponderance of funding was being spent by CARPE landscape partners on protected areas. In order to achieve the broader landscape objectives it would be necessary to "place growing attention on addressing threats and opportunities in forest concessions and with communities". Forest concessions and community zones imply human multiple use of forest areas and are therefore closely linked to livelihoods issues. Finally, the report suggested establishing some minimal level of required funding for development activities with local communities to better integrate them into conservation objectives.

In response to the external assessment's recommendations, the CARPE/USAID management team took the following measures as reflected by the terms of reference (TOR) for the Phase IIB RFA[6] funding proposals (USAID/CARPE, 2006). The new TOR required an explicit "Strategy Document" that outlined the steps necessary to elaborate a landscape-level management plan. A template was developed by the US Forest Service which describes in detail the required components of a strategy document. One key component involves the identification of macro-zones, including all three categories, within each landscape.

This planning requirement was an effort to move away from a PA focus to a landscape-level focus that included an emphasis on community areas and extractive zones as well as the environmental interrelationships that exist between all the macro-zones at a Landscapes level. To further reinforce this integrated landscape-level approach, the TOR required that at least 50 percent of budgetary resources be spent outside PAs.

Finally, the TOR mandated that the Landscape lead conservation NGO's[7] form consortia including "complementary organizations with the competencies necessary to carry out complex landscape planning and the execution of landscape plans". In addition, a minimum skill

2 Burundi, Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon, Republic of Congo, Rwanda, and Sao Tome & Principe
3 Known as "Intermediate Results" or "IRs" in the language of USAID.
4 Community-Based Natural Resource Management.
5 This does not include matching funds from other donors or complementary U.S. Government funding such as Economic Support Funds (ESF) from the State Department or the Great Ape Conservation Fund from the Fish and Wildlife Service.
6 "Request for Assistance" – a USAID mechanism for eliciting project funding proposals.
7 World Wildlife Fund (WWF), Wildlife Conservation Society (WCS), Conservation International (CI) and African Wildlife Foundation (AWF).

set for the consortia was required to include competencies in PA management, biological and socio-economic monitoring, livelihoods and economic development, participatory community development, natural resource governance, sustainable forest management and gender. By specifying these minimum competencies, the USAID/CARPE management team intended to further guide the potential recipients in their selection of consortia partners and the list clearly reflects an increased emphasis on the promotion of alternative livelihoods for local communities.

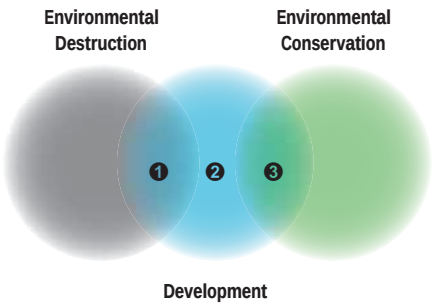
1.4 Conservation *vs* development: a false dichotomy

Prior to Phase IIB, the language used to describe CARPE activities generally made a distinction between activities that promoted "conservation" and activities that promoted "development". For example, even the 2006 external CARPE evaluation called for a "more precise approach to balancing conservation and development activities in the landscapes". The report further suggested establishing a "development window" to search for development funding to complement conservation funding in the landscapes (Weidemann, 2006). This use of language implies that development funding is by its nature distinct from conservation funding. Indeed, a frequent sentiment expressed by individuals working in conservation NGOs in the Congo Basin was that money spent on development activities within a conservation programme resulted in less funding being available for conservation activities.

Clearly not all development activities promote conservation objectives. Clearing forest areas for large-scale ranching or building a factory that pollutes both the water and air may indeed provide employment, augment individual incomes and increase a country's gross national product and therefore contribute to "development", but are antithetical to conservation objectives. However, where unsustainable natural resource use by local communities exists, development activities in the form of sustainable alternative livelihoods can support conservation. For example, if a programme of small animal husbandry provides an economical source of protein and thereby reduces bushmeat hunting, does it make sense to classify this as a non-conservation "development activity"? Similarly, if permaculture[8] or wood lots reduce the felling of forests are they not part of a conservation strategy? The dichotomy between conservation and development appears at best inaccurate, at worst misleading.

Figure 1 indicates that certain development activities lead to environment destruction (area 1), others are environmentally neutral (area 2), and others support environmental conservation (area 3). The CARPE approach is to engage in a environmental threats-based analysis to identify those livelihood activities that are currently leading to environmental destruction (area 1) and seek to promote sustainable alternative livelihoods that contribute to conservation (area 3).

Figure 1. Relationships between environment and development



Perhaps an even more important question is whether conservation efforts can succeed without support for alternative livelihoods? Three of the principal causes of environmental degradation in the Congo Basin are bushmeat hunting, slash-and-burn agriculture and harvesting of fuelwood from natural forests (CBFP, 2006). All of these activities are characteristic of rural communities in the Congo Basin living in poverty.

For example, in the DRC, which contains over 50 percent of the basin's forests, 59 percent of the population lives in extreme poverty subsisting on less than US$ 1.25 a day[9] and 76 percent of the population is undernourished (World Bank, 2007). The predominant livelihood activities of rural communities in the DRC likewise include slash-and-burn agriculture, hunting, fishing and gathering of forest products. Fuelwood/charcoal is the principal source of energy for cooking. These activities all involve extraction from the natural resource base and thus can contribute to environmental degradation. Further, with a demographic growth rate of 3.1 percent, the population of the DRC is expected to increase from 68 million in 2010 to 108 million in 2025, i.e., an increase of 40 million in only 15 years (United Nations, 2008).

If these livelihood activities are the principal causes of environmental degradation, can conservation objectives be achieved solely by restricting poor rural households' access to these resources on which their very survival depends? Aside from the moral implications of depriving vulnerable populations of basic sustenance, consider for a moment the logistics. Given that there are millions of rural households in the Congo Basin living in remote and highly dispersed environmentally sensitive

8 Permanent agriculture as an alternative to shifting slash-and-burn agriculture.

9 The Millennium Development Goals measure of extreme poverty.

areas with little or no presence of the State, conservation strategies based uniquely on denying individuals access to these natural resources are simply not logistically feasible. In sum, given the extreme poverty, rapid population growth and the high dependence on natural resources for survival combined with the logistical difficulties and negative moral implications of denying poor people access to natural resources, a conservation strategy which does not promote sustainable alternative livelihoods will not achieve its environmental objectives.

1.5 A typology of livelihood-conservation linkages

This sub-section proposes a specific typology of how livelihood activities can contribute to conservation. This typology can help to analyze the type of linkage that exists between livelihoods and conservation as well as to better design livelihood activities to meet conservation objectives. Table 1 displays the four-category typology.

Table 1. A typology of livelihood-conservation linkages

Threat-based	Interdependency
Quid pro quo agreements	Unlinked

The threat-based linkages have already been referred to in Section 1.4. As mentioned previously, hunting, slash-and-burn agriculture and fuelwood collection are three principal causes of environmental degradation in the Congo Basin. In the case of a threat-based linkage, a conservation organization identifies the particular threats in the area it is working and proposes livelihood alternatives that are direct alternatives to the identified threat. For example, in the case of hunting, a logical alternative is small animal husbandry such as chicken, goat and/or pig raising. For slash-and-burn agriculture, improved soil fertility management (e.g., leguminous fallows, chemical and/or organic fertilizer amendments, etc.) can allow longer use of a given parcel and decrease agricultural expansion into the forested areas. In addition, improved seed and other productivity-enhancing practices (including for aforementioned fertility practices) can allow farmers to produce more using less land and thereby reduce deforestation. Tree plantations are a further example of a threat-based livelihood alternative to the felling of trees for fuelwood in natural forest areas.

Interdependency linkages imply that a livelihood activity depends on the conservation of the natural environment. Perhaps the most famous example of these is the Brazilian rubber harvesters who extract rubber from natural forests in the Amazon and who have strongly resisted forest conversion to other uses, notably ranching. They have been strong advocates of forest conservation precisely because their livelihoods depend upon it. In the Congo Basin, a few of the most common non-timber forest products (NTFPs) that depend on the conservation of the forest are forest honey,[10] medicinal plants and caterpillars.[11] If these and other forest-based products can be promoted through greater commercialization to markets which, in turn, increases local communities' incomes, then a constituency for forest protection can emerge.

Aside from NTFPs, ecotourism is another important example of how a livelihood activity depends on conservation of the natural environment. If the natural environment is destroyed, then tourists will no longer spend money to visit a site. The critical question here is whether or not local communities are receiving benefits from touristic activities. For example, is there revenue sharing of park entrance fees with local communities? Do the local communities own or work in businesses that provide goods and services to tourists (e.g., hotels, restaurants, artisanal products, cultural shows, etc.)? Are individuals from local communities employed in the park as rangers, guides and maintenance workers? If local communities are integrated into tourism activities such that the benefits of tourism outweigh the previous benefits received from extracting natural resources within the park,[12] then a local constituency for environmental conservation will emerge.

Interestingly, safari hunting is an activity that combines both forest-dependent products and tourism. Forest animals are indeed forest "products" that depend on conservation of the forest as a habitat needed for their survival. Safari hunting is a touristic activity that has the potential to generate significant revenues to local communities as typically safari hunters pay hefty fees to hunt. If local populations receive significant benefits from safari tourism, then they will have a direct stake in fighting illegal hunting. If there are no longer game animals to hunt, then the safari hunting and its accompanying revenues to communities will cease.

The third type of livelihood-conservation linkage is through *quid pro quo* agreements. A *quid pro quo* agreement means that one party agrees to do something in return for the agreement of another party to do something else. In this case, a conservation project agrees to fund a livelihood activity in return for a local community agreeing to restrict their use of certain natural resources

10 In some cases, forest dwellers traditionally referred to as pygmies fell trees in order to harvest honey for subsistence consumption which would not be sustainable in a commercial context.

11 Caterpillars are consumed as an important source of protein in the Congo Basin.

12 In fact, certain extractive activities within a park are not unsustainable or environmentally destructive. Subsistence fishing, the collection of "dead" firewood, the gathering of traditional fruits, nuts and medicinal plants all may be compatible with ecotourism activities and, if so, should be encouraged as they lower the opportunity cost to local communities of establishing a protected area.

such as hunting and farming in a protected area. For this category, the livelihood activity may not be directly linked to an environmental threat or interdependency.

A conservation project, for example, may agree to build wells for clean drinking water or install electrification to run small-scale mills to transform grains and cassava into flour, neither of which typically have a direct link to conservation. In some cases, the agreed-upon support to a local community may not be a direct livelihood activity that provides current household sustenance needs, but rather an activity that indirectly supports livelihoods such as provision of schools and medical facilities. A payment for environmental services (PES) is generally another example of this type of agreement as one party (e.g., a buyer of a carbon credit) agrees to pay another party (e.g., a local community) if they agree to provide an environmental service (e.g., the protection of a forest).

The critical issue for a *quid pro quo* agreement is that it should be formally recognized by both parties so each clearly understands and accepts their rights and obligations. Given the emphasis put on land-use planning in the CARPE programme, a logical place to formalize these types of agreements is in the context of a management plan. These plans establish restrictions concerning natural resource use but they also generally have a section on support to communities in the form of development activities.

The final category of livelihood-conservation relationships is where there are no linkages. Support to agriculture, for example, that doesn't improve soil fertility or isn't linked to production in already cleared areas may result in increased clearing of forests for cropping. In the case of community health projects, there is no *a priori* reason to believe that healthier individuals won't hunt more animals and fell more trees if there are no formal linkages between support for health projects and environmental conservation.

2. A review of the livelihood-conservation case studies

2.1 Introduction

The CARPE lessons learned initiative included three case studies of the integration of livelihoods into conservation programmes. The three case studies are based in the Salonga-Lukenie-Sankuru Landscape, the Maringa/Lopori-Wamba Landscape and the Maiko Tayna Kahuzi-Biega Landscape. This section reviews these case studies using the typology presented above and synthesizes the lessons learned as identified by the authors.

2.2 The Salonga-Lukenie-Sankuru Landscape case study

WWF, the leader for this Landscape (abbreviated as the Salonga Landscape), included PACT[13] as part of its consortium for CARPE Phase IIB. PACT is an NGO with competencies in community development and has taken on the bulk of alternative livelihoods activities in the landscape. PACT started off with a threat-based analysis of environmental degradation and identified slash-and-burn agriculture, commercial hunting and indiscriminate overfishing as the principal conservation threats (Makambo, 2010).

To date, PACT has focused on the promotion of groundnuts as an alternative to slash-and-burn agriculture. Groundnuts, a nitrogen-fixing leguminous crop, were found to have high potential to grow in fallow areas already deforested thereby obviating or at least minimizing the need to clear new forest areas. Furthermore, while not yet implemented, small animal husbandry and fish ponds have been identified as two potential solutions to commercial hunting and overfishing reflecting once again the threat-based approach of PACT.

PACT has also put substantial emphasis on *quid pro quo* type agreements that link livelihood and conservation objectives. These agreements are formalized in the establishment of "Simplified Management Plans" (PAGS)[14] for CBNRM zones. In order to work more effectively with communities to develop these plans, PACT has supported the creation of local natural resource management committees as communal platforms to make decisions about conservation and livelihoods. Members sign a "charter of responsibilities" that identifies both their rights and responsibilities. In order to further increase the buy-in of local populations, PACT uses a variety of participatory research techniques that helps the communities themselves identify problems and solutions that are incorporated into the management plans.

In addition, PACT uses value chain analysis to identify the products that have a reliable market and positive profitability. However, a major constraint to all commercial livelihood activities in the Salonga Landscape is a lack of transportation to markets due to the remoteness of the landscape, poor infrastructure and corruption. PACT is currently engaged in developing a business plan that includes transportation costs in its financial calculations and is evaluating options for improving commercialization routes. In this context it was recognized that an additional product, copal (a type of tree resin prized for its natural beauty), given its small size and high price, could be commercialized much more easily than more voluminous products and is being promoted as a livelihood alternative.

13 Participating Agencies Collaborating Together.

14 In French a "plan d'aménagement et de gestion simplifié".

A summary of the lessons learned identified by PACT in Salonga are as follows. Support to livelihoods is a necessary precondition to conservation. Communities are very difficult to engage in the development of a management plan for improved natural resource management if material improvement in their wellbeing is not included up front. Simply put, communities are more concerned about their daily survival than conservation. There is therefore a need to find alternative activities that harmonize the two. In addition, there is a critical need to improve transportation routes to markets. Otherwise alternative livelihood activities will lead to surplus production beyond subsistence needs and no increased revenue for local communities. Finally, there is a need to reinforce the capacities of local communities to enable them to engage in natural resource management planning decisions and attain economies of scale for the production and commercialization of products from alternative livelihood activities.

2.3 The Maringa/Lopori-Wamba Landscape case study

The African Wildlife Foundation (AWF) is the leader for this Landscape (abbreviated as the MLW Landscape). The MLW Consortium has a number of institutions active in alternative livelihood-related activities. AWF takes the lead on landscape planning, biodiversity conservation and conservation enterprises. The World Agroforestry Centre (ICRAF) promotes innovations in land-use practices to create alternative and additional sources of livelihoods, including the domestication of high-value and threatened tree species, and NTFP enterprise development. The WorldFish Center (WF) provides expertise in sustainable fisheries management. The Netherlands development organization *Stichting Nederlandse Vrijwilligers* (SNV) leads on multi-stakeholder consultation and civil society strengthening. Finally, a regional NGO, the Network of African Women for Sustainable Development[15] (REFADD), focuses on gender issues throughout the landscape planning process.

The MLW Consortium uses an explicit threats-based analysis to select livelihood activities. Their approach began with socio-economic and biological surveys in diverse areas of the landscape. The results of these surveys were then discussed with relevant stakeholders in a "Threats and Opportunities Analysis" workshop in 2004. A central conclusion of that workshop was that, due to the collapse of marketing infrastructure, the costs and risks of the commercialization of crops such as coffee, maize, rice and cassava had increased substantially. As a result, many households had moved deeper into the forest in order to hunt forest animals which offer a higher value-to-transport-cost ratio. At the same time, these same households engaged in slash-and-burn agriculture for subsistence needs in primary forest areas leading to particularly damaging environmental degradation.

As a solution to this threat-based problem analysis, the MLW Consortium decided upon a combined approach of supporting agriculture production and commercialization. On the production side, small grants to local community-based organizations helped finance the acquisition of improved germplasm,[16] and agricultural tools. On the commercialization side, the consortium helped arrange and pre-fund a barge to transport agricultural products from the Landscape to the Kinshasa market, a distance of roughly 1500 km.

The MLW Consortium has also engaged in *quid pro quo* agreements with local communities in the context of land-use planning. The consortium strongly insists on the participatory nature of this approach:

> *The very basis of our approach is participation of and ownership by the local communities of the landscape LUP process…final decisions depend on a participatory assessment of needs and opportunities and collaborative decision taking with the beneficiaries, who are the local communities and government (Dupain* et al., *2010).*

In the context of support to agriculture, the project has worked with local communities to identify micro-zones for agricultural production outside of primary forest areas. Through *quid pro quo* agreements embedded in the LUP process, farmers may only receive project support if they agree to limit their production to these agreed-upon micro-zones.

A final component of the MLW Consortium strategy is based on the interdependency linkage between livelihoods and conservation in the form of ecotourism. With support from the Consortium, the Lomako Yokokala Faunal Reserve in the MLW Landscape was officially gazetted in June 2006. An agreement was facilitated with ICCN,[17] the DRC National Parks Agency, that the local population will be involved in both the development and execution of the reserve's management plan.

The core of this interdependency strategy, according to the MLW Consortium, is to ensure that the reserve will create more benefits for local communities as a protected area with tourism revenue generated by international visitors than as a source for commercial bushmeat hunting. In order to achieve this goal, the Consortium has been constructing tourism infrastructure and has created a revenue-sharing mechanism for reserve entrance fees that will be used to fund local livelihood

15 *Réseau des Femmes Africaines pour le Développement Durable.*

16 Seed in the case of maize (corn) and vegetative cuttings in the case of cassava, the two crops receiving the most support.

17 *Institut Congolais de Conservation de la Nature.*

activities. The communities themselves will have a voice in determining the uses of these funds.

A summary of the lessons learned as identified by this MLW Landscape case study is as follows. First, the support to livelihood activities must include a public participation strategy in the context of the overall LUP strategy design and development. Secondly, the support for livelihoods must have an explicit link made to conservation such as in the case of agricultural micro-zoning to avoid further forest clearing. Finally, local capacity building is critical as in the case of small grant support to local community-based organizations even if this leads to some failures as a part of the normal learning process of the local organizations.

2.4 Maiko Tayna Kahuzi-Biega Landscape case study

Conservation International (CI) is the leader for this landscape (abbreviated as the MTKB Landscape). Livelihood activities on the ground are carried out principally by the Dian Fossey Gorilla Fund International (DFGFI), a local community organization known as the Union of Associations for Gorilla Conservation and Development in Eastern DRC (UGADEC), and the Jane Goodall Institute (JGI). The strategy of the MTKB Consortium has centred around the establishment of an institution of higher learning, the Tayna Center for Conservation Biology (TCCB). This institution began operations in 2003 and since 2005 has been located at Kasugha, near the Tayna Nature Reserve.

This strategy described in the MTKB case study has focused on the *quid pro quo* agreement approach to linking livelihoods and conservation. The case study clearly states:

> *One of the important pillars of this community conservation programme was that, in exchange for local communities' commitments to conservation, DFGFI would provide local development and health projects as alternative livelihoods to offset local people's opportunity costs as they ceded land-use rights to create nature reserves (Mehlman, 2010).*

This quote, in fact, sums up nicely the concept of a *quid pro quo* linkage between livelihoods and conservation. A university by itself is not inherently linked to conservation as in the case of threat-based or interdependency linkages and therefore necessitates this type of agreement.

The selection of a university as a priority development intervention was made by a large majority of the community leaders who identified access to a centre of higher learning as their highest priority for local economic development. Several other livelihood-development activities were also prioritized by the communities and have led to the following interventions. A micro hydro-electric station was build with support from JGI and is now providing power to the TCCB and the nearby village of Kasugha. Health interventions were also prioritized and have included important levels of support to the rehabilitation of clinics, family planning, the provision of medicine, and access to clean water. Other social infrastructure has included the construction of a road to the university, the refurbishment of schools, the construction of an orphanage and the establishment of a community radio station. Some more direct livelihood activities have included funding to agriculture, fish ponds, small animal husbandry and a brick-making project for widows.

This *quid pro quo* agreement has been firmly anchored in the participatory LUP process centred around the Tayna Reserve Management Plan. The participatory zoning plan for the reserve includes a core protected area, a buffer zone and a development zone. The TCCB complex and the adjacent village of Kasugha are located in the development zone. In addition, the MTKB consortium has put substantial effort into micro-zoning around the university and village, as the "magnet" effect of the university and various development activities has attracted substantial spin-off economic activities and entailed a certain developmental sprawl that has needed to be contained.

Some of the key lessons learned identified in this MTKB case study are as follows. First, a participatory approach is critical to achieving community buy-in. In this case study, the local community contributed substantial labour and even funding to support certain development activities because they themselves were able to establish their own development priorities. Important infrastructural investments such as the university, the hydroelectric plan and the road connection to markets have created significant opportunities for other livelihood and development activities. Early land-use planning through micro-zoning has been critical to control any potential negative impacts of uncontrolled sprawl resulting from these developments.

3. Conclusions and recommendations

A number of common threads have emerged from the lessons learned of these three case studies. First of all, the typology of these linkages proposed in this article proved capable of characterizing the integration of livelihoods into a conservation programme. However, it should be noted that this does not imply the different types of linkages are mutually exclusive. On the contrary, in the case studies they often proved mutually reinforcing as in the case of threat-based agricultural production being linked to a *quid pro quo* land-use

micro-zoning. Even when they were not explicitly linked, the landscape projects are typically undertaking more than one type of livelihood-conservation linkage. This typology does, however, facilitate the integration of livelihoods into conservation programmes by allowing a clear identification of the different types of positive linkages.

In this typology, both the threat-based and interdependency categories had direct and inherent links to environmental conservation. In this specific sense, they are preferable to the *quid pro quo*-based approach. However, a *quid pro quo* approach allows greater flexibility to respond to local communities' priorities, such as the case of the MTKB case study where education and health were identified as higher priorities. In practice, all these categories of alternative livelihood activities should be considered and the approach or combination of approaches that makes the most sense, given the local context and including local community priorities, should be adopted.

All three case studies made reference to the concept of opportunity costs of conservation. Perhaps the MLW case study summed this up the most eloquently when it stated that the core of their strategy with the Lomako Reserve was to create more benefits for local communities as a protected area with tourism revenue generated by international visitors than as a source for commercial bushmeat hunting. This objective should be true of any alternative livelihood strategy. It is not enough that an alternative livelihood activity be beneficial, it must be more beneficial than the current environmentally degrading activity it is intended to replace. For example, while slash-and-burn agriculture may be very environmentally destructive and offer low yields per hectare, it is not necessarily an irrational strategy by rural households. In land-abundant environments such as the Congo Basin, this type of agriculture gives high returns to relatively scarce labour and capital. In order for agricultural alternatives such as groundnuts in the Salonga Landscape planted in previously cleared fallow areas to give a higher return, they need market access so farmers increase their incomes. The interpretation of farmer resistance to adopting alternative livelihoods often reflects either an underestimation of the real opportunity costs of their current environmentally destructive livelihood practices or an overestimation of the benefits of the sustainable alternative.

On this last point, all three case studies found that integration into markets was critical for promoting improved livelihoods. Most improved livelihoods aim to increase production beyond basic subsistence needs, whether in the case of agricultural crops, livestock or NTFPs. If the producers of these goods do not have access to markets then indeed these alternative livelihoods will likely be less attractive than their current destructive activities. Conservation areas tend to be in relatively remote areas with poor access to markets. Attention to market integration is therefore all the more necessary. Nevertheless, many alternative livelihood activities associated with conservation projects have focused on the production side to the neglect of commercialization issues. This oversight typically leads to failure and, all too often, a misguided blaming of rural household resistance to change.

The linkage to markets, however, is not without risks. Indeed improved market access can easily lead to increased commercial hunting of fauna or forest clearing for agriculture. This is a key reason why in all of the case studies the livelihood activities were firmly embedded in an overall LUP process. Admittedly this does reflect the approach required by the USAID/CARPE management team. Nevertheless, all the case studies found that land-use planning such as the establishment of core protected areas or agricultural micro-zones was a necessary component of ensuring coherence between livelihood and conservation objectives.

A final common thread of all the case studies was the need for participatory approaches and local capacity building. Choosing alternative livelihoods solely on the basis of their potential conservation benefits is highly likely to fail if they don't take into account local communities' priorities. Furthermore, capacity building is almost always necessary in order for local communities to agree upon complex decisions about the use of their natural resource base. Natural resource degradation caused by population pressures is often a relatively new phenomenon necessitating not only the adoption of new livelihood alternatives but also new governance mechanisms for establishing rules and regulations about natural resource use. Traditional approaches to these changing circumstances are frequently not adequate and therefore capacity building is essential.

As a final conclusion, it is hoped that with the detailed analysis of livelihood-conservation linkages backed up by the concrete examples from the case studies, this article makes the case for those still in doubt of the need for a people-centred approach to conservation that includes livelihoods as an integral part of a conservation programme.

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Case Study 1

A Case Study in Creating a Community-Managed Conservation University

Patrick Mehlman

Introduction: Overview of the intervention zone

This chapter describes how alternative livelihoods interventions can include a role for higher education in conservation and biological sciences for local stakeholders. As a case study, it describes the development, successes and challenges involved in creating a community-managed university located near a community nature reserve in rural, eastern DRC: The Tayna Center for Conservation Biology.

Location

The Tayna Center for Conservation Biology (TCCB) is located in the Maiko Tayna Kahuzi-Biega Landscape in eastern Democratic Republic of Congo, Province of North Kivu. It is located just outside the buffer zone of the Tayna Nature Reserve near the village of Kasugha (Figure 1).

Biodiversity value

This region lies between the lowlands of the Congo Basin and the highlands of the Albertine Rift (altitude: 495–3,279 m), making it a phytogeographical convergence zone between two centres of regional endemism: the Congo lowland forests, a "High Biodiversity Wilderness Area", and the Kivu-Ruwenzori region of the Albertine Rift, part of the eastern Afromontane "Hotspot".[1] The area is noted for its globally significant biodiversity, containing more than 45 IUCN Red List-threatened species of fauna and flora, and high numbers of endemic and restricted-range species. There are important populations of large tropical forest vertebrates including Eastern chimpanzee, Forest elephant, Okapi, Forest buffalo, the Congo peacock, and Grauer's (eastern lowland) gorilla (endemic to eastern DRC).[2] The region is also globally significant for containing some of the largest remaining blocks of intact forest in the Congo Basin. These forests at the headwaters of the Congo River not only regulate local climate and soil protection, but are critical to maintaining global ecological services – storing carbon that counteracts global climate change and playing a role in regulating one of the world's largest river basins.

Livelihoods and subsistence in the region

The Maiko Tayna Kahuzi-Biega (MTKB) Landscape is an area of significant poverty, where almost all of its inhabitants rely on subsistence agriculture, hunting and the gathering of forest products. The principal economic activities in the Landscape are subsistence farming, hunting, raising cattle, goats and/or sheep, mining and some fishing. Most farming is carried out using slash-and-burn methods, with principal crops being manioc, cassava, rice and beans. There are a few plantations near villages that grow oil palm, banana and coffee, but most commercial plantations are now degraded and are no longer functional. Oil palm is extracted by simple hand methods throughout the landscape. It is an important product traded in local villages and is often moved by bicycle to larger village markets in the east. In North Kivu near Tayna, there are cinchona (Rubiaceae family) plantations, a medicinal plant used for malaria treatment, tended by local farmers, who sell their product to a commercial company. Subsistence hunting takes place throughout the Landscape. The trade in bushmeat is not as developed as in western Central Africa, but consumption of bushmeat is high near illegal mining camps and in some smaller towns and villages. Most local bushmeat trade is monkey, duiker, antelope and rodents. River fishing is common throughout the Landscape and some fish farms (now in disrepair) are present in the Walikale area in the centre of the Landscape.

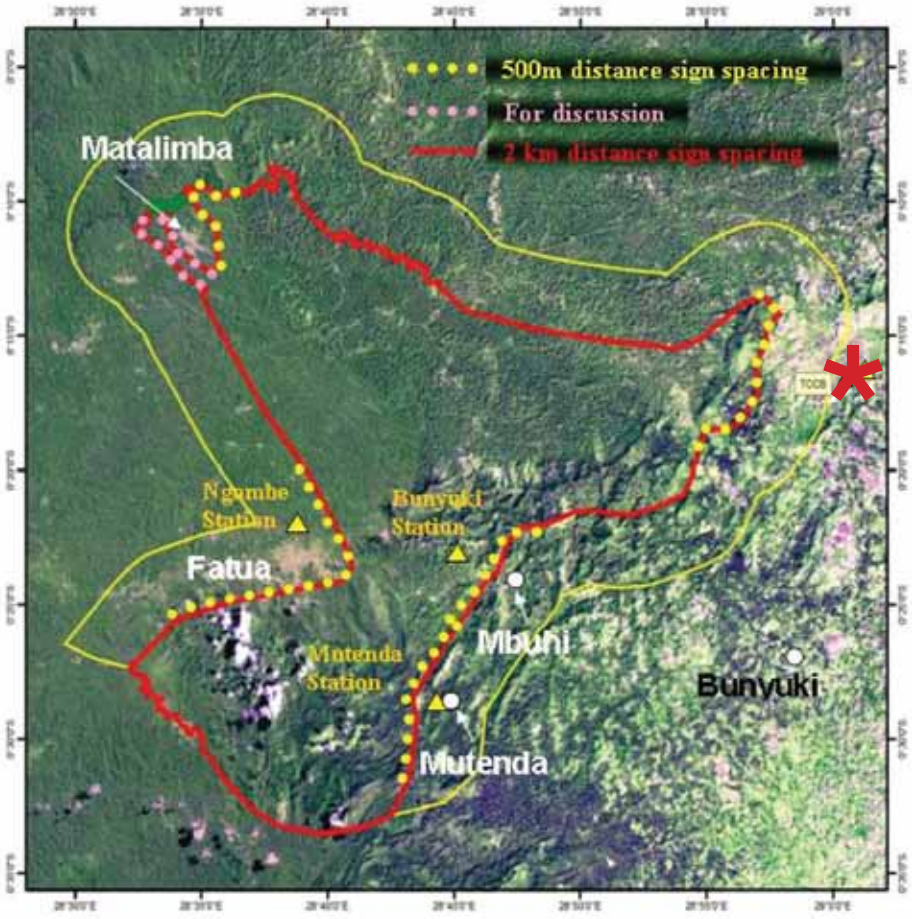
Emerging from civil war

The civil war ended, in theory, with the signing of the Sun City Accords on April 2, 2003, finalizing the Lusaka Agreement, restoring peace and national sovereignty to DRC and establishing a transitional government. This "officially" ended the period of civil war dating back nearly eight years, in which 2–4 million people died, mostly from disease and famine, the most costly conflict in human lives since World War II. The vast majority of the violence and concomitant

1 Mittermeier, R.A., Mittermeier, C.G., Brooks, T., Pilgrim, J., Konstant, W., da Fonseca, G.A.B. and Kormos, C. 2003. "Wilderness and biodiversity conservation". *PNAS* 100: 10309–10313; Mittermeier, R.A., Robles Gil, P., Hoffman, M., Pilgrim, J, Brooks, T., Mittermeier, C.G., Lamoreux, J. and da Fonseca, G.A.B. 2004. *Hotspots Revisited.* Cemex Books on Nature; Myers, N., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B. and Kent, J. 2000. "Biodiversity hotspots for conservation priorities" *Nature* 403: 853–858. Palaeo-ecological studies also show this region to have been a faunal refuge of montane forest during the cold and dry periods of the Pleistocene era.

2 These megafauna assemblages, characteristic of Central African rainforests, represent one of the best opportunities worldwide to protect examples of intact tropical forest megafauna communities; they have mostly disappeared from South-east Asia and West Africa.

Figure 1. Location of Tayna Nature Reserve and the Tayna Center for Conservation Biology



The Tanya Center for Conservation Biology (red asterisk), a state-accredited university, is located just outside the buffer zone (yellow) of the Tanya Nature Reserve (red boundaries) in Lubero Territory, Province of North Kivu.

deaths were confined to eastern DRC, with North and South Kivu provinces occupying the centre of the maelstrom. Unfortunately, armed conflicts did not cease in 2003, but have continued sporadically throughout the Landscape until 2009, as various Mai-Mai units refuse to unify with the national DRC army, and Rwandan Interehamwe groups control some areas of the Landscape by armed force. These militias create insecurity through sheer terrorist violence, often against women (see below), and many use child soldiers. They have decimated domestic animal stocks of farmers throughout the area, stealing, killing and eating most local stocks. They enforce “taxes” on simple people attempting to move their goods to market, or in some cases, they take entire villages hostage or oversee quasi-slavery conditions in the mines they control. They control most of the illegal mining sites, and they participate heavily in the bushmeat trade and illegal trafficking of animals.

Women, widows and vulnerable children

Women have significantly less access than men to education, assets and services, restricting them from actively participating in civil society. Deeply engrained cultural traditions and beliefs further perpetuate gender inequity and often exclude women from village decision-making processes. Many women enter arranged marriages in their teenage years and are expected to have large families. They have little knowledge about reproductive health or alternative methods for family planning. As wives and mothers, women are responsible for almost all of the household activities necessary for family life: child care, preparation of meals, tilling agricultural fields, water carrying, wood gathering, etc., yet they have very little financial security or land to call their own. In a region emerging from years of civil war and strife, life is especially hard for widows. Although orphans may sometimes be looked after by relatives, the widow is forced to fend for herself and is often left homeless. Conflict in the region has also resulted in widespread use of rape as a weapon of war. Over the past decade, tens of thousands of women

and girls have suffered systematic rape and sexual assault at the hands of various armed groups (including the DRC military). These crimes against humanity continue, with large numbers of women suffering from violent multiple rapes, mutilations and the subsequent development of fistulas, a debilitating medical condition often leading to ostracism from society. The widespread fear of HIV/AIDS contributes to the stigmatization of rape survivors and their children. Because of the civil wars, there are vast numbers of orphans and vulnerable children. These children are taken in by relatives and other families while others are placed in makeshift orphanages, thus placing an enormous burden on communities barely able to survive with the limited resources available to them.

Alternative livelihoods methodology and results achieved

Introduction

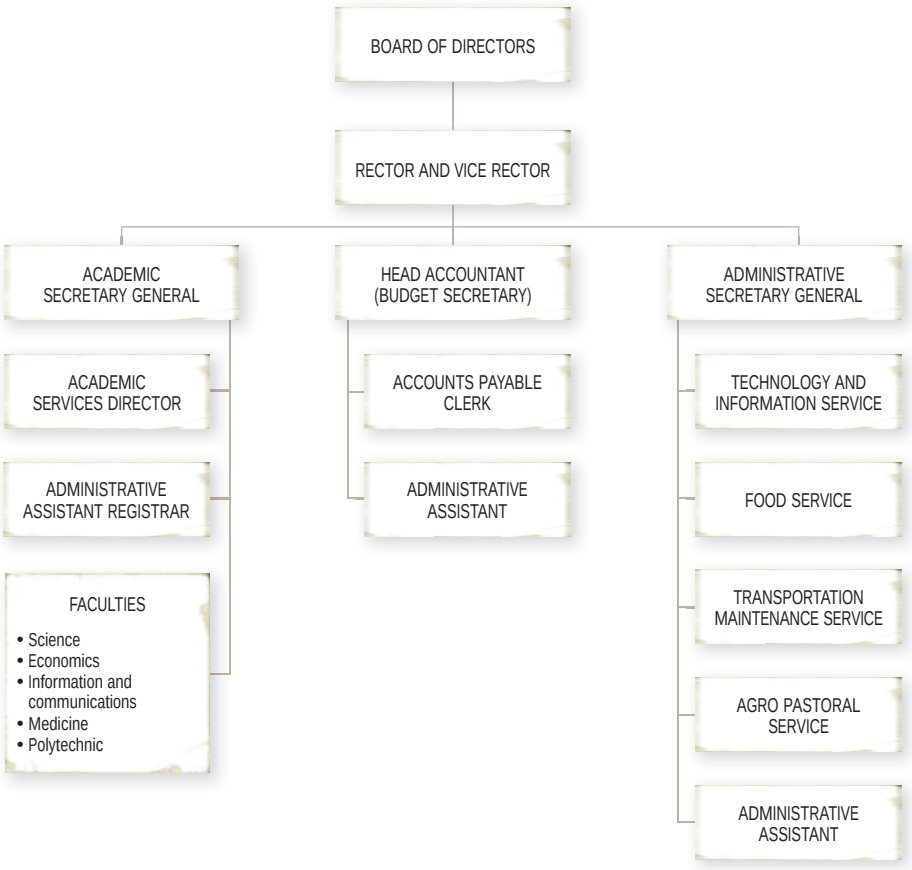
Conservation International (CI) partner, the Dian Fossey Gorilla Fund International (DFGFI), began working with local communities in North Kivu in early 2001.[3] At that time, they developed a community conservation programme initially focused on the developing Tayna Nature Reserve (see chapter 2), and then later on a zone of communities that would form an ecological corridor between the Maiko and Kahuzi-Biega National Parks, represented by the Union of Associations for Gorilla Conservation and Development in Eastern DRC (UGADEC).[4] One of the important pillars of this community conservation programme was that, in exchange for local communities' commitments to conservation, DFGFI would provide local development and health projects as alternative livelihoods to offset local people's opportunity costs as they ceded land-use rights to create nature reserves. During several stakeholder meetings in 2002–2003 with the wider community representation afforded by the UGADEC association, DFGFI solicited feedback from local groups as to what kind of major development intervention they would favour most for their communities. An overwhelming majority of the community leaders stated that their sons and daughters did not have access to higher education, and that this was their highest priority for local economic development. The idea of a community university emerged, a university that would be located near the flagship project, the Tayna Reserve, but would serve the needs of communities throughout the UGADEC zone by providing job training in natural resource management, conservation, biology and other subjects.

With the community university concept in mind, UGADEC created the Tayna Center for Conservation Biology (TCCB) in mid-2003, and began its first academic year (October 2003–September 2004) in rented buildings in Goma, while construction was underway at the site. By February 2005, the TCCB had moved to its new site at Kasugha, near the Tayna Nature Reserve.

3 Conservation International began their partnership with DFGFI in October, 2003 with the inception of the USAID CARPE IIa programme.

4 The Union of Associations for Gorilla Conservation and Development in Eastern DRC was founded in 2002, and is a federation of eight local NGOs based on customary powers (traditional governance). Each individual NGO member represents the interests of its *chefferie* (tribal territory) that includes both a development zone (CBNRM zone) and a fully protected zone. The federation was created in an effort to standardize their conservation and development efforts and contains a scientific component as well as customary governance component. It also serves as an administrative unit, coordinating the technical and financial activities of all its eight members, and additionally administering a community-managed conservation biology university that is part of the programme.

Figure 2. Administrative Structure for the Tayna Center for Conservation Biology



Current configuration of the university

The TCCB is a private degree-granting higher-education institution based in Kasugha, North Kivu Province in the Democratic Republic of Congo (DRC). It was established as a non-profit organization under DRC law, and received accreditation under a Presidential Decree issued in March 2006. It is also known as the Kasugha University for Conservation and Rural Development.

TCCB operates in a remote region of the DRC under extremely difficult conditions. Besides providing students with higher education, TCCB must house, feed and provide basic services to a small community of over 350 people, including students, faculty and staff. A purpose-built campus, built by the local community, an integrated agricultural production plan, a conservation and environmental education ethic, and a work-study programme provide the setting for a community experience that extends well beyond the academic programmes.

The TCCB offers 19 academic programmes in five faculties: Economics, Information and Communications, Sciences, Medicine and a Polytechnic Institute. It has a staff of 45, including 20 academic faculty and 25 administrative and operations staff and is managed administratively through a Board of Directors (Figure 2). The campus occupies a 122-hectare concession of rolling terrain and is composed of an academic wing, two dorms for students, administrative offices, staff housing, and visitors' quarter.

For the academic year 2008, the TCCB had an enrolment of 375 students (including 29 women), with 91 students from UGADEC projects on full scholarships (food, accommodation, tuition fees, medical care, and supplies); 229 students for whom tuition fees were waived, and 55 students who were self-supporting.

The University offers three-year Bachelor's Degrees and five-year Professional Preparatory Degrees. By January 2009, the TCCB had produced 211 graduates since its inception (130 from the academic year 2008). Of the 81 graduates from 2006–2007, 43 are now employed in professional careers in conservation management, media and teaching (seven women). Plans are underway to employ at least 50 more 2008 graduates.

Other development and alternative livelihoods interventions

Under a DFGFI "Ecosystem Health and Community Development Project", in 2002, DFGFI began support for the flagship project, the Tayna Reserve, by providing basic support for an orphanage (food, clothes, health care, education, and building repair) and small micro-projects for a Widow's Group (initially food care, but leading onto improved seed stock for small plots provided by the community, a pig and guinea pig livestock project, a soap/oil production project and a brick-making project). Aid was also provided to rehabilitate and operate several primary schools and health clinics, as well as install several clean-water access projects.

In 2003, Congolese members of the Tayna Project also contributed donations from staff to create a hospital, an orphanage, and a community radio station located nearby the TCCB, a testimony to the commitment of certain staff who donated significant portions

Aerial view of the Tayna Center for Conservation Biology and classrooms

Community radio station

Recording studio.

of their salaries. The entire complex was hand-built by the villagers of Kasugha – the widow's association pressed and fired the bricks; local craftsmen built all the furniture, doors and windows.

The CI/DFGFI development initiatives were also supplemented and amplified by a partnership created with the Jane Goodall Institute (JGI) in early 2005 in which leveraged funds from USAID (via EngenderHealth Inc.) were utilized by JGI to provide health and family planning interventions for the community conservation projects of Tayna and UGADEC. As JGI found further funding, it was also able to pilot several development projects near the TCCB: a demonstration fish-farming project, improved seed stock for agriculture and, most importantly, a 37 kilowatt hydro-electric station that is now providing power to the TCCB and the nearby village of Kasugha.

In this isolated region battered by civil war for more than seven years, local people had absolutely no access to health care. To address these issues, DFGFI developed the Ecosystem Health Program and, by 2008, the programme had rehabilitated six clinics around two of the UGADEC community reserves, trained nurses, and provided medicines and supplies (with assistance from JGI). For the years 2005–2008, the DFGFI Ecosystem Health Program was also awarded a US$1,000,000 grant of medicines from Pfizer Pharmaceuticals, Inc. for treatment of intestinal parasites and providing basic medical care (antibiotics, etc.). The programme provides rural clinic support contributing basic medicines, equipment and supplies (stethoscopes, rehydration units, locally made beds, etc.), and supporting the training and salaries of eight nurses and two doctors. It is estimated that more than 20,000 people

Hydro-electric station (37 kw) serving TCCB, the radio station and village of Kasugha. A dam with sluice feeds a gravity drop pipe into the turbine station, generating the electrical current. From there, through several transformers, the current reaches the TCCB more than 4 km distance, and also is sent to the village of Kasugha, where it drives public lighting and several micro-projects.

in this landscape are now receiving some form of clinic care compared to the complete absence of health care before the programme began.

These clinics also serve as focal points for a JGI-led Family Planning project, implemented since 2005 in the health zones of Lubero, Pinga and Walikale. In this project, JGI provides a number of interventions, including training to health-care workers, a sensitization programme, technical support, aid in health data collection, provision of contraceptives to maintain stocks at health centres, and rehabilitation of health centres. When the programme began, there were no family planning activities in these three health zones. To date, family planning and reproductive health activities are completely implemented in 70 health facilities. The average rate of contraceptive prevalence is 6 percent, which is a substantial increase in comparison with the baseline, which is estimated to have been 0.8 percent. For the period 2006–2007, 402 Congolese health professionals were trained, more than 20,000 local people participated directly in the programme, and more than 60,000 people were exposed to reproductive health/family planning messages in the sensitization programme for the region.

The DFGFI Ecosystem Health Program and also seeks to reduce the threat of disease cross-transmission between humans and at-risk fauna (great apes) by analyzing the levels of intestinal parasitism in fauna and humans near protected areas, and providing free treatment to infected people. It contains an educational component targeting hygiene, avoiding parasitism, and enabling the local populace to understand cross-transmission threats, while emphasizing conservation goals. To date, the project has collected and completed faecal analyses for more than 10,000 people from the UGADEC zone; more than 25,000 people were treated and trained in the hygiene education programme.

Malnutrition is rampant in DRC, much of it arising from lack of protein due to the pillaging of domestic animal stock during the civil war. Local stakeholders face a further challenge as they have agreed not to hunt in large tracts of forest as a part of their local conservation projects. A series of projects were thus developed to help reduce malnutrition, providing pig and guinea pig livestock, and improved seed stock for crops such as soy, sorghum, beans and peanuts. The programme is now operational in five villages near Tayna Nature Reserve where the highest percentage of inhabitants is women (many men were killed during the war). Each project is run by an association of local women who choose the projects and manage them. In all of the small animal husbandry projects, a percentage of the offspring are given to community members who have applied to be recipients and the rest are sold. All project participants receive husbandry and animal wellbeing training, and veterinary visits. The produce from the agricultural projects is sold (with the exception of a percentage of the harvest which they donate to a local orphanage), and the profits are split between the women after conserving an amount to cover new grain purchases and heavy manual labour.

Lessons learned

The impact of the university is remarkable and far-reaching. In addition to construction jobs, the local population now has access to doctors, nurses and the health centre's services. Agricultural extension programmes support local farmers, and children have access to primary and high school education. The radio station broadcasts messages to the local communities concerning conservation, politics, music, culture, and women's and family issues. There is now electricity for the university as well as public lighting for the nearby village. However, the University's true value for conservation rests with the students: they are the new generation of hereditary stewards of the land that lies within the Maiko Tayna Kahuzi-Biega corridor. About 70 of the 300 students pursuing degrees at the University are the sons and daughters of the stewards whose land easements form the UGADEC reserves, and they will inherit their parents' responsibility to assure land-use rights in their communities. Without the leadership and vision of their elders, these students – some of the region's best and brightest – would have had limited futures.

While there are other models for higher education capacity building, for example sending students abroad for training, the TCCB is a far more cost-effective approach per student trained: with current operating costs, we estimate the cost of training one student for a three-year degree in conservation biology to be approximately US$3,000. And of course, it is impossible to put a price on the invaluable contribution the university is making to local pride, and its important links to demonstrating that development can go hand in hand with biodiversity conservation.

University lessons

Local communities will participate and contribute to projects they perceive as wholly theirs

During the development of the TCCB, as early as 2003, Congolese members of the Tayna Project NGO contributed donations from staff to build the local hospital, an orphanage, and the infrastructure for a community radio station at the TCCB, a testimony to the commitment of certain staff who donated significant portions of their salaries (more than US$15,000). Local community members volunteered

their time and labour during the brick-making phase of construction of the TCCB. Members of the nearby village volunteered their time and labour during the construction of the dam for the hydro-electric station, and significantly, they formed a civil corps to repair and maintain the 9 km of road from the main road to the TCCB.

Higher education projects can serve as a catalyst to involve women and marginalized peoples in conservation

There has been a strong level of interest from women who wish to obtain university degrees at the TCCB. Although enrolment of men and women has never reached parity, young women are showing strong interest in higher education and conservation training (on average, women account for about 20 percent of the students over the last five years). During this time, there have also been six students who are from Pygmy groups (three are still enrolled and studying).

Develop a business plan early and seek multiple funding sources

A large project such as a community-managed university for conservation biology is costly in terms of infrastructural start-up, recurrent operating costs, maintenance, and associated micro-projects such as a hydro-electric station, hospital, and agricultural programmes. On the other hand, it can draw the attention of philanthropists and multi- and bilateral agencies, especially as it demonstrates links to biodiversity conservation and natural resource management. We learned to remain extremely flexible and diversified with funding sources, as some donors cut back funding, while others became interested and involved. The most important tool for this project was a business plan, in which its objectives and activities were described, along with yearly budgets, an acting board of directors, and a plan for financial sustainability. Without this plan, our ability to attract new donors and remain flexible with multiple sources of funding would have been far less effective.

Even in areas with high rates of poverty and security challenges, academic fees can be generated early along the road to sustainability

Although the TCCB has by no means reached a level of sustainable self-financing (plans for a Trust Fund are being developed), in 2007–2008, the university generated more than US$50,000 in income from students paying academic fees (currently US$500 per academic year for fees, room and board). For projects such as this, the ability to show community donations, local involvement, and a potential revenue stream is essential in demonstrating to donors that the project can reach sustainability.

Seek cost effectiveness

With funding always a challenge, we needed to remain flexible in order to meet national curriculum standards and to ensure sufficient academic teaching staff. For example, as an accredited university in DRC, the TCCB must maintain certain curricula above and beyond their specialty in conservation and biology: economics, information and communications, sciences, medicine and polytechnics. To achieve this, the TCCB has a full-time staff of 18 professors, but invites as many as 40 visiting professors each year to meet standards. This provides a professor:student ratio of between 1:7 and 1:15 during the academic year, and maintains the academic expertise necessary to remain accredited. This is less costly than maintaining all professorial staff as full-time employees, and new professors arriving every few months provide academic stimulation. There are other cost-cutting techniques: a student work-study programme is being developed, in which some students pay their fees by donating time as kitchen and cleaning staff. The technical construction and maintenance staff were all local experts, not expatriates. Although the TCCB has its own library, an agreement is underway with the nearby University of Graben (Butembo) so that TCCB students will also have access to Graben library. An agricultural programme for the students provides garden vegetables for the commissary (scholarship students, employees and professors are provided with meals in a cafeteria along with their accommodation).

Build a campus around modules and plan for expansion

The TCCB is a work in progress and there are many continuing infrastructural improvements to be made. Despite this, the main classroom buildings and dormitory were ready for students just eight months after construction began. Once classes had begun, more modules were added as funding became available: a hospital with an operating theatre (also serving the community), offices, kitchen, guest house, computer centre, etc. As recently as 2009, another large classroom was added, supported by a donor who wished to contribute specifically to that initiative.

Development lessons

Development activities catalyze more local economic development

Repairing the road to the TCCB opened local market access and stimulated the local economy. As construction and then implementation took place, local people repaired and continue to maintain a 9 km local road. Trucks bringing in construction materials began to take local produce out to market, and bring in products and sundries that were then sold in local kiosks to the students and staff members of the TCCB. In 2008, the ICCN (The Congolese Institute of Nature Conservation) asked DFGFI and UGADEC to support a rehabilitation centre for gorillas orphaned because of animal trafficking and the bushmeat trade. After external evaluations, the best site was determined to be Tayna

Nature Reserve and TCCB. TCCB in partnership with DFGFI, ICCN and the Pan African Sanctuary Alliance (PASA) received a U.S. Fish and Wildlife Service grant to build a gorilla rehabilitation centre. TCCB donated the land for the building of this centre. Local people have contributed to the construction and planning of the site, and TCCB students will be able to learn applied primatology, conservation education, and communication approaches to help combat the trade in young gorillas.

With increased development around a small village and university centre, consider advising micro-zoning or building regulations

With a boost to the local economy, increases in paid staff, and even students with pocket money, a flurry of activity began to occur: small shops and kiosks sprang up overnight at road junctions, small produce stands appeared at every conceivable place along the centre's small road, and a few houses began to appear at sites not really intended for this use. Although it could be tempting to consider this a natural organic growth of a small village around a university centre, it may have led to a kind of minor, uncontrolled sprawl, clogging roads and paths, creating markets at hospital entrances, etc. Fortunately, the local customary powers and the TCCB administration realized this challenge early, and created some basic zoning rules for a more orderly development of their site. Some of the early kiosks and shops were asked to relocate. This will remain a challenge into the future as more development is attracted into the area.

The question of "magnets"

The TCCB university and nearby village have rapidly evolved into what our DFGFI partner is calling a "Conservation Action Village", underscoring how a cluster of development incentives are offsetting the opportunity costs of local people creating a community-managed reserve in which 900 km^2 of forest have been turned into a protected area with full biodiversity protection (i.e., only ecotourism and scientific research are permitted). Here, development is fully integrated with conservation. Local radio broadcasts, primary school and orphanage songs, hospital signs, vehicle logos, even dances at the local discotheque, all celebrate the flagship species, Grauer's gorilla, which is a symbol of biodiversity appreciation and protection, and the local people's magnet for livelihoods, health, and educational development. With this level of success, a typical question is whether this site will draw in more people than it can absorb and, in so doing, will the new arrivals break local law and head into the Tayna Nature Reserve, 7 km west, and undo the progress so far achieved?

To address this important question it is necessary to understand how the Tayna Reserve is managed. First, the TCCB site has been a sacred site for the Batangi people for more than 150 years according to oral tradition, and the customary powers (Mwami) have a traditional mandate to control immigration into the area. They therefore limit any influx of new families from farther east, but significantly, they have encouraged a few small pioneer families, once located inside the Tayna Reserve, to relocate outside the reserve core zone to nearby Kasugha. Second, the site is steeped in conservation awareness programmes from the children to the adults of the community, and with the rules well understood, and the boundaries for the Reserve well marked, most local people respect and understand the value of the gorilla reserve to their local economy. Third, one of the guide (ranger) stations for the reserve is located just adjacent to the TCCB, and provides patrols and a protection function. Fourth, the original participatory zoning for the reserve provided for a core zone, a buffer zone, and finally a development zone. The entire TCCB complex and the adjacent village of Kasugha were zoned for development from the onset of the programme, and the development zone from the site extends many kilometres east, north and south. To the west, the only direction in which they cannot expand, there is a mountain chain, providing a useful geographical barrier.

Careful land-use planning can prevent the phenomenon of magnetization

For the TCCB, and the "Conservation Action Village" developing in its vicinity, the potential problem of an influx of new immigrants was avoided through advance zoning and land-use planning, the participation of the customary powers, and careful site selection. The latter was enhanced by using a site that was already considered sacred by local people.

Summary

A community university initiative can be extremely valuable for capacity building. It is cost-effective and can be a source of local pride, bringing together local aspirations for educational development with conservation objectives. As we have discovered, in providing local people with an initiative they conceived and requested, it can also become a significant catalyst for local economic development. In this case, the TCCB has become a flagship programme, motivating local people to participate by donating labour and funding, magnetizing other projects such as the hydro-electric station, a hospital, and a gorilla rehabilitation centre. Local people, supported by their customary governance structure, view this project as completely theirs, and an entire new generation is now developing a comprehensive understanding of the value of biodiversity conservation.

Case Study 2

The Role of "Alternative Livelihoods" in Achieving a People-Centred Approach to Conservation

Jef Dupain, Florence Bwebwe, Joanna Elliott, Kaddu Sebunya, David Williams and Janet Nackoney

Introduction

The African Wildlife Foundation has been working for more than five years with government, NGO and community partners to implement a programme of conservation and development activities in the Maringa/Lopori-Wamba (MLW) Landscape located in northern Democratic Republic of Congo (DRC) (see Figure 1).

The goal is to leverage the collective resources and expertise of partners from international and national institutions to support the DRC Government in its efforts to complete and implement a landscape-wide sustainable resource management programme, including a participatory land-use planning and zoning process. It aims to decrease the destruction of habitat and loss of biodiversity as well as to reduce levels of poverty and increase the wellbeing of local communities through improved governance of natural resources, strengthening local institutional and civil societies, and support for alternative livelihoods.

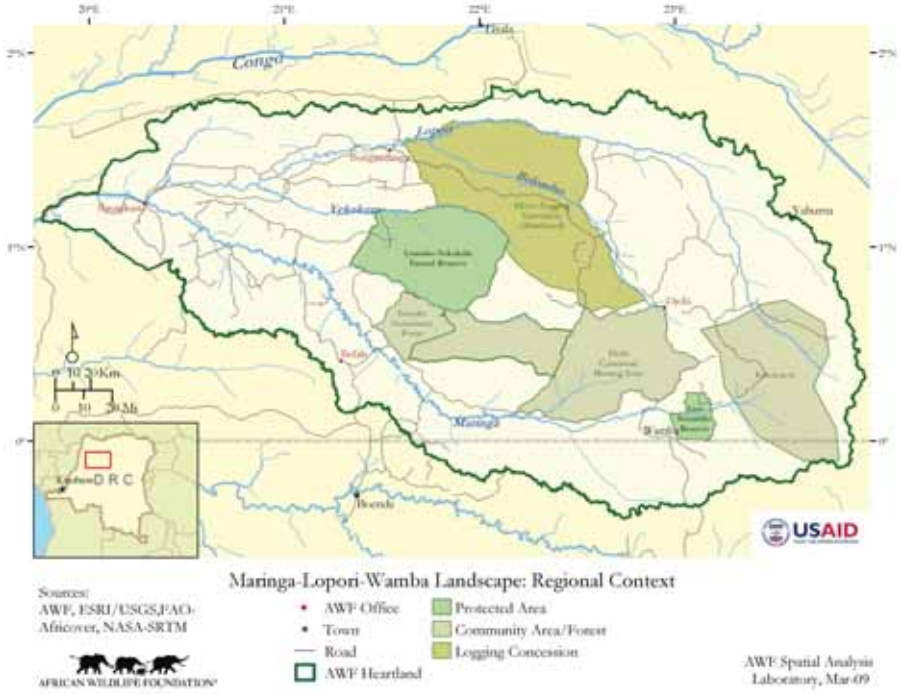
A primary on-going challenge is the need to encourage and enable appropriate and sustainable development opportunities for communities living in the landscape; to make certain that they have the opportunities to lift themselves out of poverty without jeopardizing conservation goals. We have developed a programme to do this while maintaining close monitoring of the resulting benefits and costs to biodiversity. This is evident in the characteristics and roles of MLW Consortium partners.

The MLW core Consortium comprises the following institutions: the African Wildlife Foundation (AWF) leading on landscape planning, biodiversity conservation and conservation enterprises; the World Agroforestry Centre (ICRAF) promoting innovations in land-use practices to create alternative and additional sources of livelihoods, including the domestication of high-value and threatened tree species and non-timber forest products (NTFP) enterprise development; the WorldFish Center (WF) providing expertise in sustainable fisheries management; the Netherlands development organization *Stichting Nederlandse Vrijwilligers* (SNV) taking the lead on multi-stakeholder consultation and civil society strengthening; and the regional NGO *Réseau des Femmes Africaines pour le Développement Durable* (REFADD) focusing on gender issues throughout the landscape planning process. The University of Maryland (UMD) and *Université Catholique de Louvain* (UCL) contribute to spatial analysis and modelling for land-use planning. In addition, the Consortium has a pool of external technical support, for example the United States Forest Service (USFS) contributes to land-use planning.

The MLW Landscape programme has been designed using the AWF Heartland Conservation Process (HCP). HCP starts with stakeholder scoping and baseline data collection that will allow participatory identification and analysis of critical threats to both conservation and the sustainability of local livelihoods, and opportunities to mitigate these threats. HCP enables the translation of the needs of the local human population and local biodiversity into an agreed-upon Land-Use Plan (LUP), the implementation of which will render the landscape ecologically, socially and economically viable. These last two aspects, "socially and economically viable", led AWF and the MLW Consortium to modify USAID-CARPE's strategic objective "reduce habitat destruction and loss of biodiversity through a better local, national and regional governance of natural resources" by adding "aiming to reduce poverty". "Livelihood" strengthening is considered as important a goal as conservation in the MLW programme. Considerable attention is paid to methodologies for identifying viable alternative livelihood activities. For example, through the HCP process, we identified inadequate agricultural policy and lack of market access as direct causes of increased slash-and-burn agriculture and increased dependence on commercial hunting. Industrial forestry, traditional logging and subsistence hunting were also identified as additional threats to both conservation and local livelihoods (AWF, 2005). It was during this step in HCP that the need to focus on agricultural livelihoods for conservation became evident.

In the following sections we explore how support for alternative livelihoods

Figure 1. The Maringa/Lopori-Wamba Landscape



work in MLW has been agreed upon and implemented and discuss some concrete examples.

Overview of the intervention zone

The Landscape Land-Use Planning (LLUP) Strategy focuses on the entire MLW Landscape. As such, the MLW livelihoods programme considers the entire Landscape as its intervention zone.

The MLW Landscape spans about 74,000 km^2. It has an elevation gradient of less than 300 m. The Landscape covers the four administrative territories of Basankusu, Bongandanga, Djolu and Befale which fall within DRC's Equateur Province. It is a relatively intact landscape defined by the Maringa and Lopori river systems. Forests cover over 90 percent of the Landscape. About one quarter of these forests are swamp and floodplain forests (or forested wetlands), reflecting the landscape's low relief and high rainfall (>1900 mm annually). Rural complexes, i.e., human-dominated areas – mostly farms and plantations – comprise less than 7 percent of the landscape (Dupain *et al.*, 2008).

Recent spatial modelling on human distribution suggests that human density is 8 persons/km^2 (Kibambe, 2007) with densities of 7, 7, 10 and 9 persons/km^2 in the territories of Befale, Djolu, Basankusu and Bongandanga respectively. The total human population in the MLW Landscape is now estimated at 587,000 (Dupain *et al.*, 2008).

Ethnic groups living in the landscape are mainly Mongo people and their relatives of the Mongando ethnic group. The Ngombe ethnic group is mainly present in the north, on the axis of Bongandanga-Basankusu. Small groups of pygmies are scattered in the northern part of the landscape and a concentration of Kitiwalists (Jehovah's Witnesses) reside mainly between the headwater areas of the Lomako and Yokokala rivers. The Kitiwalists retreated into the forest years ago and essentially do not accept any jurisdiction from the DRC government (Sifa Nduire, 2008).

Most of these people depend on wild resources to meet their basic needs, including food, fuel, medicines and building materials. This area of DRC was severely impacted during the six years of civil war and instability from 1997–2002 and remains one of the poorest and least developed regions in the country. Dependent on wild resources, these populations have indicated a strong desire to be included as partners in the development of improved natural resource management and alternative livelihoods in their landscape.

The principal towns in the landscape are Basankusu, Djolu, Bongandanga and Befale. Their total population is estimated at 41,000–135,000. Many cities surrounding the landscape such as Lisala, Bumba and Boende influence economic activities within the MLW Landscape. Road infrastructure between these towns and cities is very poor and the only feasible means of motorized land transport is motorbike. Throughout the landscape, villages are located along roads, with agriculture concentrated in the peripheries of these centres of human habitation. We refer to these human dominated areas as "rural complexes". An estimated 56,000 ha of forest (about 0.9 percent of the landscape's total forest area) was converted between 1990–2000, due primarily to the expansion of slash–and-burn agricultural activities. Over half of the observed conversion occurred within 2 km of a road. Today, the agricultural activities practised in the Landscape are primarily for subsistence, with less opportunity for cash crops given lack of access to markets. Cassava, maize and peanuts are the main agricultural products. Because of the war and poor access to markets, the formerly active industrial plantations of

palm oil, rubber and coffee have mostly been abandoned.

Bushmeat market data indicate that local people depend highly on bushmeat hunting, consumption and trade. A one-year study of bushmeat availability at the market in Basankusu showed that more than 30 percent of the 12,000 carcasses recorded for sale originated from the Lomako area (Dupain and Van Elsacker, 1998). This confirms that the Lomako Yokokala Faunal Reserve was an important source of bushmeat for both commercial and nutritional purposes.

In economic terms, bushmeat has a significantly better value/weight ratio compared to agricultural crops and it is easily preserved at low cost. Bushmeat is therefore advantageous for transport and commercialization given the poor state of infrastructure and difficult access to markets. It offers the best return for labour input.

Methods and results

AWF ensures that consideration of livelihood alternatives are integrated into the HCP. The establishment of an initial baseline socio-economic profile of the landscape ensures that livelihood concerns are understood and acknowledged. At the site-intervention level, livelihood concerns are built into project planning, design, implementation and monitoring.

The HCP ensures appropriate participation of and consultation with communities and their institutions, including local NGOs, throughout both the design and implementation stages of projects that offer alternative livelihoods. A clear understanding of the social and economic status of local human populations and the dynamics of human use of natural resources are essential at each stage. This understanding enables AWF and its local partners to address directly key livelihood concerns through project activities. For example:

- sustainable agricultural practices and increased producer value added, including improved access to markets;
- community management or co-management of key local resources including forest resources and fisheries;
- development and/or restoration of former (pre-civil war) labour-intensive small farmer cash crop activities (rubber, oil palm) in partnership with the private sector;
- appropriate alternative enterprise development such as ecotourism.

The very basis of our approach is participation in, and ownership of, the LLUP process by the local communities. Prior to any real activity on the ground, the MLW Consortium went through a series of meetings with local communities to discuss LLUP. These meetings confirmed that the main challenge facing the MLW LLUP programme is serving both the needs of local people and conserving biodiversity. These goals are often conflicting in areas such as the MLW Landscape where people rely heavily on local ecosystems for their livelihoods and wellbeing and where little weight is given to questions of "sustainable" use. During most of these initial meetings, the representatives of local communities asked us about the projects and livelihood activities we were going to support. Our response was that this was not up to us to decide and that no prior decision had been taken. We informed the communities that we were in a consultative phase of a participatory interactive approach. We seek interactive participation, which means that people are invited to participate in joint analysis, which, in turn, leads to action plans and the formation of new local institutions or the strengthening of existing ones. We explained that, while some *a priori* ideas might exist, final decisions depend on a participatory assessment of needs and opportunities and collaborative decision making with the beneficiaries, who are the local communities and government. We explained that our mandate was to make our expertise available to help better manage the natural resources in order to meet ecological, social and economic needs.

We considered various methodologies for collecting the required information that would help us to evaluate livelihood concerns linked to conservation objectives.

We used socio-economic and biological surveys as the main method for data collection. The results of the surveys were discussed during the "Threats and Opportunities Analysis" workshop (AWF, 2005). In this way, local communities were actively and fully involved in decision making on priority activities.

Examples of the initiatives undertaken so far in support of alternative livelihoods are described in the following sections.

The boat project

Analysis of socio-economic data collected by the MLW Consortium revealed that the observed trend of households migrating out of their natal villages into more remote forest blocks was driven by a lack of access to markets for agricultural crops. Two decades ago, local communities typically made a living from selling both cash and subsistence crops to urban markets. Due to the collapse of infrastructure and the disappearance of boats linking remote agricultural areas with important urban markets such as Basankusu, Mbandaka and Kinshasa, crops such as coffee, maize, rice and cassava could only reach these markets on small dugouts with high transport risks. As a consequence, people turned increasingly to bushmeat hunting and trade which offers a much better

return for labour input. The forest areas surrounding most villages are, as a result, being progressively depleted of bushmeat. For more than two decades now, families have been leaving their villages to settle in remote forests with much higher densities of bushmeat, but where they can still cultivate subsistence crops.

As a result of the "Threats and Opportunities Analysis" workshop, AWF agreed to invest in a specific market-opening initiative. While AWF had initially planned for potential investments in coffee and cocoa plantations, the participatory analysis indicated that support for the shipment of agricultural crops to urban markets could be a first step in trying to reverse the trend of people leaving their natal villages and settling in remote forests for bushmeat hunting and subsistence slash-and-burn agriculture (Belani and Dupain, 2005).

AWF provided pre-financing, therefore absorbing the financial risks of the owner of a large boat which transported agricultural crops along the Maringa River (September 2005–January 2006). More than 130 tonnes of merchandise was shipped upstream with about 180 clients involved. On the return trip, 530 tonnes of agricultural crops – 430 tonnes of maize, 39 tonnes of coffee, 34 tonnes of cassava, but also caterpillars, oil, cocoa, mushrooms and other NTFPs – were shipped to the capital from as far as Befori, which is the furthest upstream port of the Maringa River in the MLW Landscape, 1,500 km from Kinshasa. This trip effectively facilitated market access for agricultural crops grown in the poor remote villages of the MLW Landscape (Belani, 2006). As a consequence of this intervention, MLW Consortium partners observed that numerous families returned to their villages to reactivate agricultural activities given the renewed hope of commercial opportunities. The arrival of the first boat since the war, re-opening access to the markets, was strongly applauded locally, provincially and nationally.

Nevertheless, the project was only partially successful. Logistical constraints and incongruent governmental priorities (e.g., seizure of a barge for transport of soldiers during the integration of different army factions) were major handicaps, as was the lack of capacity to ship all the available crops that communities had made ready. With the promise of a boat coming to transport crops, peasants converted areas producing crops for local markets into maize production for transport to the capital. This caused surplus production and, as a result, a large quantity of crops that was not sold.

However, given that the boat project is the result of responding to local demand, it is possible to identify some major achievements. First, local communities began to see that LLUP might be a solid strategy to harmonize conservation and poverty reduction. Second, thanks to appropriation of the project by the local communities, these communities did not blame the MLW Consortium for the difficulties but instead engaged in constructive discussions on how to strengthen the design of the next phase. Third, due to the overproduction of maize, the farmers themselves identified the need to spread risk. For example, in Djolu, the communities transformed a number of maize fields into non-maize crops that have a local market. Diversification of crop production leads to a spreading of risk by providing greater flexibility in responding to fluctuations in access to urban markets and by increasing local food security. A final achievement is the increased local understanding of the landscape concept as inclusive for all stakeholders. This project was not at all limited to people living, for example, in the periphery of a protected area or to people living in a hotspot of biodiversity. The boat project was open to all those who were able to cultivate crops along the Maringa River.

Supporting agricultural livelihoods through small grants

From widespread consultation it became clear that lack of equipment and lack of access to high-quality germplasm were major causes of decreased productivity of subsistence and cash crops in the MLW Landscape. We invited local community NGOs to develop proposals that would support the strengthening of agricultural activities. Five local NGOs submitted a joint proposal, developed with support from AWF, to the IUCN Small Grants Program (funded by CARPE) for a total of US$30,000. Each NGO functioned as a platform to reach a set of local associations. AWF employed MLW Consortium Focal Points to accompany the NGOs and associations on the ground during the execution of the programme including support for accountability and reporting. Through these five local NGOs, the Small Grants Program reached 31 associations, with a total of 1,765 people (1,241 men and 524 women) working on 740 ha of agricultural land and producing almost 3,000 tonnes per annum of produce, mostly maize and cassava.

In a second phase, the local NGOs insisted on working independently of supervision by the MLW Consortium. A number of local NGOs requested a complete change in the policy of approving and attributing budgets. A recent evaluation of the programme indicated differences in accountability and performance between the phases and between the beneficiaries. Again, while this open and flexible approach is vulnerable to failures, it is built upon participation and thus obliges local communities to be actively involved in decision making. At the time of writing this case study, local communities and NGOs have invited AWF and the MLW Consortium partners to increase supervision and guidance again. The fact that these NGOs now recognize their organizational, management and operational weaknesses, and are

requesting further capacity building to ensure better performance, can be considered a major accomplishment.

Land-use planning and development of spatially explicit land-use planning models

One major component of our work in MLW entails development of spatially explicit models using a Geographic Information System (GIS) to help identify and delineate macro-zones for landscape land-use planning. Support for livelihood activities in the MLW Landscape is directly linked to conservation objectives. In the case of support for agriculture and access to the market, the aim of LLUP activities is to reduce uncontrolled slash-and-burn agriculture, and increase respect for conservation legislation, particularly in terms of stopping the hunting of protected species. To address slash–and-burn agriculture, we are working with communities to generate micro-zoning plans that determine where to develop agricultural activities. Community-scale micro-zone plans are guided by landscape-scale macro-zoning plans undertaken in the MLW LLUP spatial modelling effort.

CARPE refers to three types of macro-zones: Community-Based Natural Resource Management (CBNRM) areas, Protected Areas (PA) and Extractive Resource Zones (ERZ). In Chapter 1, we advocate differentiating between permanent forest CBNRM areas and non-permanent forest CBNRM areas. The latter refers to land that can be converted to rural complexes (human-dominated areas – mostly farms and plantations). For our modelling efforts, we suggested that about 12 percent of the landscape be set aside as rural complexes.

We need to consider that farmers' rights to agricultural land are equal to the needs and rights associated with communal management of forest resources. This approach avoids the so-called "arborealization" or "not seeing the farmers for the trees" (Walken, 2008).

In our effort to avoid "utopian scenarios", we used a decision-support software package called Marxan to focus on livelihoods as a major component of our conservation programme. Marxan is typically used to explore reserve design scenarios considering a suite of spatially explicit information on species' habitats and related threats. In collaboration with UMD, UCL, South Dakota State University and the US Forest Service we used Marxan to identify priority "human habitat" or non-permanent forest CBNRM areas, taking into account conservation constraints (e.g., Bonobo habitat, large primary forest blocks). Figure 2 shows existing rural complexes in the MLW Landscape and identifies potential priority expansion areas for future population needs.

Our goal is to encourage movement from incompatible rural complexes – small, remote or located inside conservation priority areas – into more conservation-friendly and socio-economically sound prioritized areas. A principal challenge will be the elimination of rural complex development in remote forests. Each dot of rural complex in remote forests reflects not only the conversion of land best suited for wildlife habitat into agricultural fields, but also an increase in hunting pressure for a radius of 10–15 km, a trend we consider highly threatening for biodiversity.

To further consolidate rural complex distribution into more suitable configurations, we eliminated areas of existing rural complex smaller than a certain size and those distant from roads or located inside proposed conservation areas for input into our model. We then built a spatially explicit model using the Marxan software, using these and other developed parameters based on projected population growth and expected hectares needed for agriculture per person. We also incorporated conservation-specific parameters into the model, such as the locations of protected areas, locations of intact forest blocks and areas important for wildlife connectivity. Figure 3 shows one output of the Marxan-driven modelling effort which delineates the areas for proposed distribution of rural complexes. The area of proposed rural complexes is

Figure 2. Existing rural complexes and potential expansion areas in the MLW Landscape

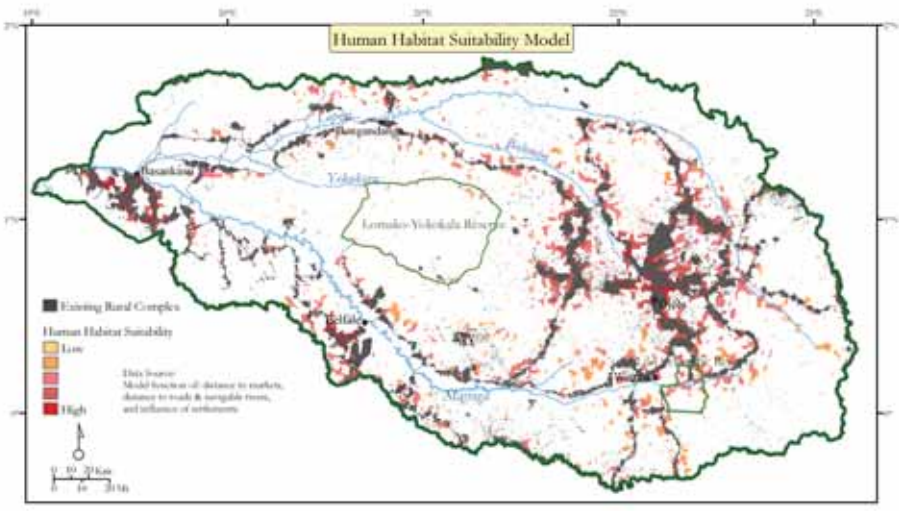


Figure 3. One output of the Marxan modelling which delineates proposed rural complexe areas

10,372 km^2, and fits our assumptions about expected agricultural needs according to future population growth. This mapping process helps focus the support for livelihood activities spatially, in full consideration of conservation objectives.

Simultaneously through this process, we are gathering input for revision and modifications which might be required for the proposed macro-zones. Adaptive management is key. Good landscape management requires acceptance that the ecological, economic and social dynamics are fluctuating in both space and time (Gordon and Maginnis, 2008).

Participative design and management of new faunal reserve

The creation of the Lomako Yokokala Faunal Reserve (RFLY) and the design of its management approach should become a good model for a protected area with a people-centred approach to conservation in DRC. The potential creation of the reserve was identified during the "Threats and Opportunities Analysis" workshop (AWF, 2005). AWF facilitated the creation of the RFLY by ICCN. RFLY was gazetted as a Faunal Reserve in June 2006 after almost two years of participatory data collection and negotiations.

During the gazetting process, the proposed reserve was always considered for planning purposes as part of a larger area including the periphery inhabited and used by the communities who are the traditional "owners" of this forest. ICCN agreed that the local population would not only be involved in the execution of the management plan, but also in its development. This required extensive and interactive participation. For example, during the last CoCoSi meeting (Meeting of the Committee for Coordination of the Site, held in September 2008), ICCN, AWF and other MLW partners and more than 40 representatives of local communities and local and provincial authorities discussed first elements of this management plan. This approach is new to ICCN and is strengthening ICCN's perception of the importance of the participation of local communities in PA decision making.

In RFLY, the core strategy is to ensure that the reserve will create more benefits for local communities as a protected area with tourism revenue generated by international visitors than as a source for commercial bushmeat hunting. Today, our conservation and development programme in RFLY and its surrounding areas combines conservation and tourism revenue-generating activities in the reserve and livelihood development activities providing alternatives to the bushmeat trade in the periphery. A local management committee will decide how to use revenue from the reserve entry fees to support alternative livelihood activities in the periphery. During the recent CoCoSi, the first symbolic amount of US$780 was given to representatives of this committee. The MLW Consortium, and in particular REFADD, ICRAF and WF, continues to work with the local communities to identify alternatives to bushmeat hunting and the best mechanisms for implementing these activities.

As a result of this approach, we have received requests from other communities asking us for a similar approach in their region. The basic invitation is typically: *"we have rich biodiversity in our forest, and we would like you to come and explain how we can get support for livelihood and development activities in return for the protection of our forest"*. Today, the HCP process is on-going with the people living south-east of the Luo Scientific Reserve, in support to the Centre for Research and Ecology and Forestry and in collaboration with the Wamba Committee for Bonobo Research (Kyoto University). Work with other communities is now being planned.

Lessons learned

Importance of the Public Participation Strategy right from the beginning

We believe that it is not the support for alternative livelihood activities *per se* that has been of primary importance, but rather the Public Participation Strategy (PPS) in the design and development of land-use planning. It is important to have the best PPS from the start of the programme. The MLW Consortium aims for interactive participation in order to ensure:

- honest public participation, seriously considering the issues raised by the representatives of the local communities;
- correct identification of livelihoods and diversification needs, as for example the identification of market access as a priority over the reinvigoration of cash crops;
- ownership of the livelihood interventions by the communities, with a commitment to learn and strengthen these interventions;
- the overall sustainability of the project, by connecting needs to livelihood interventions to the sustainable management of natural resources.

Most important is the integration of livelihood interventions into the conservation programme, resolving how to give responsibility to local communities and how to strengthen their capacity to deal with the complex settings in which ecological and economic needs might be in conflict.

Importance of making the links between livelihoods and conservation explicit

Local communities naturally tend to focus on livelihood concerns without an explicit link to conservation objectives. In the MLW Landscape, we continuously stress the fact that every activity supported by the Heartland programme to increase livelihoods must be tied to conservation objectives. In the initial phase of the MLW programme, as a result of the outcome of the "Threats and Opportunities Analysis" workshop, we agreed to put a strong focus on supporting livelihoods. However, our support was given contingent upon the ability to link development to conservation. Today, those same communities are well advanced in discussions on how to link both objectives more closely. In particular, communities that received support for agriculture are welcoming the idea of micro-zoning and identifying the areas for agricultural development as well as areas of forest that should not undergo conversion.

Allow for failure

Aiming for a "people-centred approach" means openness to human failure. We have created opportunities for local NGOs and local communities to try out their own ideas with increasing independence, for example through accessing the Small Grants Program. AWF has played a flexible role in this process to allow local NGOs to assess their own capacity and spread their wings, but also to come back to MLW Consortium members for support when it is needed. Learning by doing involves risking failure, but is a far better process than outsiders substituting for local institutions. Encouraging local NGOs to grow their own capacity goes hand in hand with an adaptive management approach, which allows for error, evaluations and corrective measures.

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Case Study 3

Lessons Learned from the Lokolama Area of the Salonga-Lukenie-Sankuru Landscape

Emola Makambo

Introduction

The World Wildlife Fund (WWF), the Wildlife Conservation Society (WCS), Private Agencies Collaborating Together (PACT) and the Zoological Society of Milwaukee (ZSM) created a consortium in 2006 to collaborate within the Salonga-Lukenie-Sankuru Landscape, on the basis of an agreement signed between USAID-CARPE and WWF, the lead organization. Other partners joined later to reinforce the team, including the International Conservation and Education Foundation (INCEF) and a local organization, the *Institut Africain pour le Développement Economique et Social* (INADES).

PACT is focusing on capacity building in civil society organizations (CSOs), and on setting up grass-roots governance structures and other networks in order to forge links between the government, the private sector and CSOs in a bid to promote social, economic and environmental justice through the creation of Community-Based Natural Resource Management (CBNRM) zones.

The first pilot zone in the Salonga-Lukenie-Sankuru Landscape to be selected by PACT was the Lokolama sector. The choice of this sector was influenced by the findings of the socio-economic surveys and biological inventories carried out in this area by various partners. The Lokolama sector is part of the vast Oshwe Territory in the Bandundu Province. This sector can be accessed over land from Oshwe (about 176 km away), by water from the port on the Lokoro River that runs through to Inongo (in Lokolama) and by air, landing at Mimia. The Lokoro Rivers I and II are the biggest in the region. Other smaller rivers that irrigate the region include the Basangi, Bosimani, Ibeke, Itume, Lolama, Luenge, Lulo and Yetele.

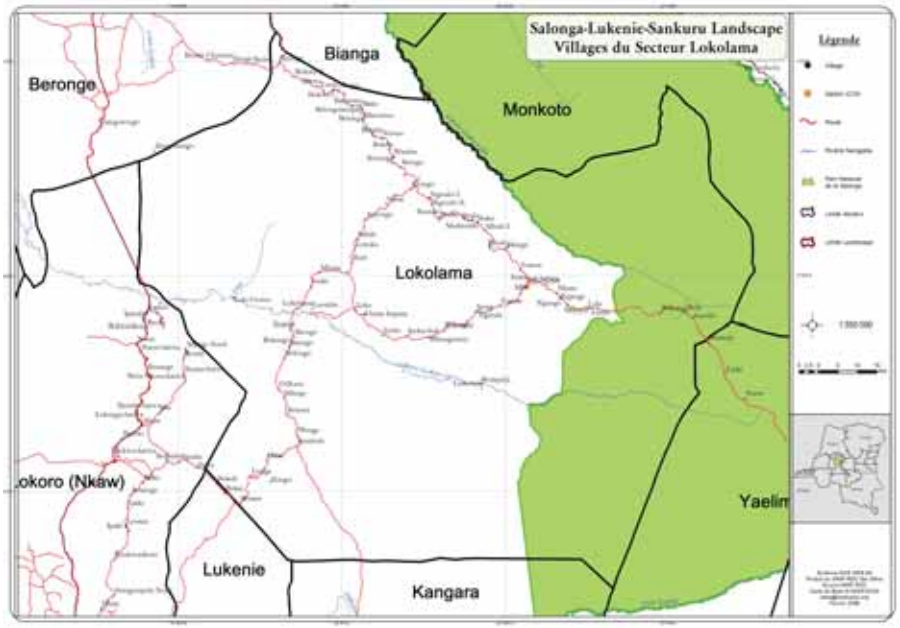
The Nkundus make up 79 percent of the population in the Lokolama sector. The other tribes are Batwa (17 percent), Yasa (2 percent) and others (Nganda, Bolongo, Mbambo and Nkulu – 2 percent in total).[1] Migration is negligible, but from time to time groups identified rightly or wrongly as hunters may settle in villages for a long period of time.

The rare permanent structures that exist are buildings abandoned by colonialists, or those belonging to the Protestant Mission or the Catholic Church. Most other houses are built with mud bricks and have thatched roofs.

In order to satisfy their essential needs, the local people have developed survival mechanisms on a day-to-day basis and, under these conditions, the conservation of natural resources becomes difficult. They have no other choice but to systematically, and often destructively, exploit biodiversity, leading to the inevitable disappearance of some species and the further impoverishment of the indigenous peoples, who are already living in sub-human conditions.

1 Colom, A. 2006. The Socio-economic Aspects of Natural Resource Use and Management by Local Communities in the Salonga-Lukenie-Sankuru Landscape: Guidelines for Conservation and Livelihood Improvement. Unpublished report prepared for WWF-Democratic Republic of Congo.

Figure 1. Map of the Lokolama sector, in the Salonga-Lukenie-Sankuru Landscape



Farming is the major subsistence activity amongst the local population but farming techniques are outdated.

They practise slash-and-burn agriculture which gives poor yields per unit of land and leads to a rapid loss of soil fertility, because fire destroys the flora and fauna essential for the fertilization, aeration and conservation of soil over a long period. They practise this type of farming because it is easy – everything is consumed in the twinkling of an eye and, in no time at all, there are large bare arable areas, ready to be used. The loss of fertility forces them to abandon the land every 18 months, leaving fallow land that is not fit to be used again for 10 years or more. Thus deforestation advances and the amount of fallow land continues to increase every year.

Hunting has always been practised mostly for subsistence. As a result of the economic slump and the war, public infrastructure, especially roads, have deteriorated. The lack of roads has isolated the sector and made transportation very difficult, if not impossible. The occasional whalers that dock at Lokolama Port once or twice a year charge local producers exorbitant prices to transport their produce to the big markets (Inongo, Kinshasa,...). For example, a farmer has to pay about US$ 30 to get a bag of beans from Lokolama to Kinshasa even before facing innumerable obstacles and harassments on the way. This situation has caused traders to give up and has discouraged local producers. Farmers no longer produce anything because there are no buyers, and traders no longer call because production has stopped: it is a vicious circle.

This explains why hunting has become so important and is now the primary income-generating activity even though it has a negative impact on biological diversity. Prospective trading networks for bushmeat have been established in Oshwe, Kikwit, Tshikapa and even Kinshasa. The meat is transported on bicycles, known as *matinda* locally. This small trade yields enough income for those practising it, but because of the long distances being covered, many cases of illness and sometimes even death are reported. One final point with regard to hunting – around Bisengebatwa village there are a significant number of poachers armed with automatic rifles, adding to the level and impact of hunting in the sector.

Fishing occurs on a small scale. Farmers practise line, net and bow-net fishing. Women fish using a technique locally called *écopage* or “emptying” that consists of diverting the river from its normal course. Once the fish have been deprived of water, all the women have to do is scoop them up. This technique is detrimental to the restocking of fish in the rivers because it does not spare young fish. It could also be one of the causes of a decline in water resources.

Alternative livelihoods methodology and results achieved

Methodology

Taking the living conditions of the grass-roots communities (*communautés de base* or COBAs) into consideration is one of the determining factors in the success or failure of the entire process of natural resource management in the Lokolama sector. It is necessary to reconcile conservation and development objectives because the local population is entirely dependent on the resources surrounding them.

The development of alternative projects is a response to the needs of rural households and a way of preventing bad management of natural resources. It also encourages the COBAs to become more involved in, and motivated by, the overall process, thereby ensuring the viability of their taking on the sustainable and rational management of natural resources.

The methodology used in identifying alternative livelihoods is the accelerated

method of participatory research, the AMPR. The use of AMPR tools makes it possible for rural communities to define their problems themselves, to classify them according to strategic areas (social, economic, ecological, etc.), to seek solutions together, and to prioritize them in order to arrive at a CAP or Community Action Plan.

At this point, alternative projects are identified and may be implemented after preparing a project document and/or a sectoral analysis detailing data needs.

In 2007, 30 villages in the sector began the process of drawing up a land-use plan or simple management plan (SMP).

If the CAP is a plan that is intended to satisfy the needs of grass-roots communities in terms of development, the SMP is the final document that complements this plan with aspects of conservation, which will include a map of the area showing the zones designated for the various economic and conservation activities identified by the community. It is a kind of spatialization of problems and solutions, which enables communities to make the link between conservation and their living conditions, and highlights the need for rational and sustainable management of the natural resources that they rely upon for their livelihoods.

In practice, this is done using a methodology that does not necessarily follow a sequential and chronological order, but that takes into consideration the realities on the ground. The following sections provide a summary of the essential stages:

Livelihood analysis and gender analysis

This entails identifying the economic activities carried out by local communities and then determining the proportion of people who practise each activity according to gender and to group, in order to define principal and secondary activities in the village. Data are collected during workshops or during working sessions with focal groups. Analysis of this data provides an overview of the local economy and shows up the level of reliance of this economy on the outside world while highlighting the possibilities of vertical and horizontal integration with nearby economies, i.e., the economies of the areas in their immediate vicinity, in order to determine actions to be undertaken to improve their living conditions. Analysis of all the data gathered will allow the general strategy to be refined to deal with specific needs, such as those of women and vulnerable groups.

Surveys of prospective trading networks

A survey of prospective trading networks in the region can help identify potential sustainable economic activities. The first step is a brief description of the consumers, producers/processers, traders, transporters and markets in the area. This approach provides an opportunity to intervene at various links in the chain of a sector to allow more people to benefit from added value. The aim is to try and solve the problems of governance or power relations within the sector, and achieve complementarity between the various levels and categories of participants. In general, buyers and transporters have a comparative advantage over local producers. Structuring the latter into associations or networks ensures sound management of community affairs and, by using collaborative strategies, fundamental imbalances can be avoided. For example, one strategy is setting up contract-based markets. This allows the various parties to be protected from seasonal variations in prices and acts as a safeguard for local producers against arbitrary and unfair trading, as each party stands to gain from the transaction.

Drawing up community action plans (CAPs)

The most suitable tool for drawing up a CAP is the problem tree. Drawing a problem tree makes it possible to detect problems, as well as cause-and-effect relations between problems. In the course of this exercise, COBAs draw a virtual tree to visualize the groups of problems and their various levels of interaction.

Using cards to help them in their brainstorming sessions, the communities identify all the possible problems, and then sort those that are similar into the same column. At the end of the exercise, there are several columns called strategic areas: health, economy, agriculture, etc. These areas are represented on the tree by the roots at the bottom and branches at the top, depending on whether they are causes or effects. There has to be consensus amongst the participants in verifying the tree from bottom to top, and in ensuring that each cause actually corresponds to each effect.

The same process is repeated for the solution tree, by turning problems into positives at all levels. The main problem is transformed into an overall objective, the causes into specific objectives and activities, and the effects into expected results.

As to determining the priority actions to be undertaken, this is done using classification into pairs.

Finally, the solution tree is transformed into a plan made up of a cross-section of all the development priorities for the village. This is the community action plan (CAP). All potential actors at the village level can use it for programming projects and funding.

After drawing up the plan, it is essential to hold a series of wrap-up meetings for the exchange and sharing of information

between the village communities, officials and decision-making bodies. The plan is then amended and adopted.

Structuring COBAs

Developing alternative activities cannot be done by individual members of the communities. Appropriate community structures need to be set up that are likely to gather support upstream and channel it to a larger audience downstream. The setting up of local natural resource management communities or platforms will facilitate the creation of grass-roots associations. Associations have the benefit of bringing communities together into interest groups, reducing the unit cost of production, and forming strong unions capable of defending their rights or negotiating fair prices. Of course, defending rights is made easier if the association has legal status, acquired by being officially recognized. A public association with legal status has to have adequate human, technical and financial resource management policies; an internal and external communication strategy; and procedures for conflict resolution and advocacy; in a nutshell, a governance structure that allows for the sound and transparent management of the association for the sole benefit of its members. Organizational development in the Lokolama sector has been entrusted to a local NGO, INADES.

Creating platforms

In order to avoid duplication and to ensure coordination of efforts, platforms are created not only to distribute duties but also for probable funding of CBNRM activities. The platform created in Lokolama is a discussion forum that brings together the various stakeholders who have agreed to look into the various issues surrounding the management of natural resources in an effort to come up with adequate solutions. Such platforms also make it possible to support one or more useful costs of providing resources necessary for their functioning and, as the case may be, to raise funds, and to carry out advocacy with other actors.

The creation of the platform was sealed by an official document signed by all stakeholders, in which the roles, responsibilities, duties and obligations of each actor are outlined. This document is called the **responsibility charter.**

Those most involved in the CBNRM process, namely the COBAs, play an important part in the platform, both in the CBNRM and the planning processes. Their participation was made possible through the establishment of the Natural Resource Management Committees. These are autonomous self-managed legitimate democratic structures for the sustainable management of natural resources at the village level. They are normally made up of five members, democratically elected by the entire village which comes together in plenary session before the traditional ruler of the locality. They also function as spokespersons on behalf of the planning team to the COBAs and *vice versa*. Such a committee has been set up in each of the 30 villages.

Implementation of the alternative projects

The next step is to design, formulate, implement and monitor alternative projects outlined in the Community Action Plan. Participants in the platform commit themselves independently or in a group to carrying out the various activities.

Results achieved

Livelihood analysis and gender analysis

These analyses highlighted the major economic activities carried out by the COBAs in the Lokolama sector: predominantly agriculture, bushmeat trade, fishing while water levels are low and, to a lesser extent, trade in rare manufactured products. Almost no agricultural produce is sold outside the sector; the indigenous people are more interested in looking for bushmeat that may be sold to traders from the Kasai. There are travelling salesmen who come and go between Oshwe and Lokolama and supply the people with clothing, kerosene and some minor manufactured products.

Surveys of prospective trading networks of non-timber forest products

A survey of prospective trading networks was carried out within the sector. This enabled an exchange of information between stakeholders and the development of an integrated vision of the parameters determining current conditions. Above all, it enabled the identification of possible remedies to problems with a view to undertaking palliative measures. All the links in the coffee, maize, groundnut, copal, caterpillar, mushroom and palm oil networks were examined in detail. Further studies are currently being carried out on groundnuts and copal, with a view to their future economic potential.

Copal is one of the products considered to have potential by the survey of trading networks carried out in 2006 by PACT and WWF, within the framework of CARPE. Trade in copal flourished in the past, just like coffee, and it was handled by the private company COLEMAN. During this period, the region was even christened “Copal Congo”. The findings of the survey showed that copal could have outlets in Madagascar or in England. The existence of an external market for Monkoto and Lokolama copal is a huge bonus and an opportunity to be seized for the part it may play in the development of the communities in the Salonga-Lukenie-Sankuru Landscape. In effect, the abundance of this product and its rise

in value[2] during this period of non-exploitation augurs well for reasonable revenues.

Conscious of this potential, COBAs are ready to begin harvesting copal. Madagascan companies have expressed their willingness to buy, but have insisted on getting the quantity and quality they want. In order to please everyone, studies are currently underway on the reliability of the market for grass-roots communities and/or local NGOs and the sustainability and quality of the supply for importers. It certainly ought to be possible to establish this trade – it mainly depends on certain key factors: the organization of the COBAs, the quantity and quality of the product, the price, supply, transportation and contracting.

This activity that can be carried out by women will hopefully spur grass-roots communities to protect the forest and to abandon hunting, given that hunting is only valued because it is relatively easy and because it generates income. Hunting, as mentioned earlier, has increased alarmingly since the fall in agricultural production. The killing of game will continue as long as the population does not have alternatives that can compete with or are more viable than hunting. However, trade in copal is far more beneficial in many respects.

Another way of increasing household incomes, but also, and above all, reducing pressure on natural resources, is capacity building amongst farmers – training them in modern farming techniques and better marketing methods. Groundnuts are one of the cash crops in the sector and their cultivation is better adapted to fallow lands than most food crops, as demonstrated in pilot experiments carried out by PACT agronomists in an abandoned field at Mimia. Therefore, farmers will try to replicate the successes of the pilot experiment by cultivating groundnuts on existing fallow lands, and thus avoid clearing and felling more trees. It should be stressed that this approach will also mean less work for them overall.

Drawing up Community Action Plans

Drawing up problem trees and solution trees enabled communities to come up with their own community action plan (CAP). Thirty Lokolama villages have already developed CAPs. Poverty, and its alleviation, are a central element of these plans.

The CAP is the basis of the COBAs' programme to improve living conditions in the Lokolama sector. It highlighted eight areas which, in order of priority, are: agriculture, health, the economy, animal husbandry, social amenities, the environment, education and fishing. Let us review some of the proposed ways of reconciling conservation and livelihoods, the key idea behind developing CAPs.

Agriculture. The chief concern of grass-roots communities is to increase agricultural production, in the hope of returning to the good old days when this sector was the main source of income. Currently, increasing production means a continual quest for fertile land, leading to further expansion of agricultural zones through the felling of trees. In order to avoid the endless clearance of land by destroying the forest, farming techniques need to be improved; for example, by improving and enhancing fallow lands, but also by introducing improved seedlings. The introduction of soil-improving plants such as *Leucaena leucocephala* and the intensification of plant and animal production may considerably reduce the fallow period of existing agricultural land from ten years to two and thus reduce the destruction of the forest.

Health. This entails developing activities aimed at enhancing the value of medicinal plants by selling them (marketing) and cultivating them.

The economy. This covers all the activities related to supporting income-generating activities, such as clearing the dead wood from the Lokoro River, dredging the river, or repairing the road. A farm-to-market road in the sector is undoubtedly the answer to at least some of the transportation difficulties. The COBAs are convinced of this and they are right. Furthermore, all they are asking for is agricultural tools, and sugar cane to help regain the energy lost during the hard repair work.

Animal husbandry. This will involve the development of intensive breeding projects for the production of animal protein that can serve as a substitute for the products gained from hunting.

Social amenities. The COBAs expressed the wish to be organized into associations. "United we stand", as the saying goes. The benefits of forming such organizations have already been stressed in earlier sections.

The environment. The COBAs are most concerned with legal aspects. They would like to obtain documents granting them the right to manage forests. They also expressed the wish to carry out small-scale logging. To this end, they have already begun to designate logging zones on their land. They will need to be supported in this small-scale logging activity in order to ensure that the situation remains under control.

Education. This is the key to knowledge and knowledge is a source of power. Helping communities to educate themselves will make them become more knowledgeable, more responsible

2 Copal is a product that increases in value over time. Copal that contains insects is worth five or ten times more than ordinary copal.

and less inclined to believe false statements from self-interested groups that would like to keep them ignorant in order to better exploit them. The "WORTH" programme that PACT intends to initiate combines three integrated approaches: literacy, community banking and small business development. As people are mastering reading and writing, they begin saving together in small groups. Once literate, they use their new-found skills to learn how to make loans, start micro-businesses and transform their savings groups into community banks. It will also have an environmental component, raising awareness of several relevant issues and encouraging the development of problem-solving skills.

Fishing. The construction of fishponds will contribute to reducing the destructive fishing methods described earlier and avoid the displacement of the population for 2–3 months (July–September) to fishing camps six days' trek away from the village.

All in all, drawing up the CAPs was a means of bringing together the communities, without any tribal, regional or even social distinctions, for them to identify their needs. Meanwhile, it also turned out to be a tool, a means, a catalyst for their commitment to conservation and to the CBNRM process in general. This exercise has enabled them to reflect on their problems and to go ahead and forge a vision for the future. It has helped them, for the first time, to think globally and to determine how they can change their lifestyle. With time on their side, they will reap the benefits of their efforts.

Structuring the grass-roots communities

Implementing the CAP, whilst ensuring better involvement of COBAs, can thus only be done through "nearby" organizations, namely local associations or NGOs. In order to gather information on the existence of associations and institutions that operate within a given radius of activity, there are practical sketch representations identifying the existence and interactions between various organizations. This is the Ven and Chapati diagram.

Unfortunately, the conclusions of the preliminary evaluation showed a conspicuous lack of local associations. In the Lokolama sector, the almost complete absence of associations is a serious setback to the implementation of alternative projects. However, in the future, the sector will create associations that will form a network so that actions carried out will benefit a large number of people if not all the villages. In fact, a contract has just been signed with a local NGO, INADES, for the promotion of associations in the sector.

Creating a responsibility charter

Constituent workshops were held recently and a draft of the responsibility charter adopted. The administrator of the Oshwe Territory will sign it in the near future. This will make it possible to bring together, integrate and catalyze the synergy of everyone's efforts, across the sectors and at all levels.

Implementing alternative projects

Three projects have been developed, one of which is already being implemented. This is a project to grow groundnuts which is a recent innovation in the sector.

The goal of this project is to improve farming techniques and popularize them through innovative farmers' committees set up for the purpose, and it brings together all the villages. In each village community, farms of a hectare each have been created. Groups of farmers have been trained and inputs distributed. The harvest will be divided into two parts. One part will be sold to recompense the committee members for their efforts and the remainder will be given to others to launch a broad-based awareness-raising campaign.

A business plan for shipping out the farm produce is being revised and finalized. Studies carried out prior to project implementation show an overall rise in transport costs and that the COBAs have overestimated what they can actually offer, not to mention the marketing costs and the lack of an appropriate management structure. The cost of chartering a ship is approximately US$ 16,000 at a time when actual production is well below 100 tons. It is in fact only 46 tons, of which 25.5 tons is maize, 3.9 tons groundnuts, 7.6 tons beans, 8.3 tons rice and 0.86 tons marrow, the total value of which is estimated at US$ 17,000–19,000, depending on seasonal fluctuations. For example, the "Galaxie", a 100-ton private whaler docked at Lokolama port, was there for more than two months without ever becoming fully loaded. This is another reason for COBAs to form themselves into associations or cooperatives, enabling them to reduce production cost, increase yields, create warehouses and better negotiate contracts.

The other on-going project is the exploitation of copal. The populations and local associations of Monkoto are more than motivated to engage in the collection and sale of copal. The local people have collected samples in the corridor between Salonga and Monkoto through WWF which has also initiated a CBNRM programme here. PACT Congo has transported these samples to Madagascar, a country known for its export of quality copal. Production and the market seem to be guaranteed. The technical and especially financial feasibility of the project will be assessed, culminating in getting the necessary procurement contracts duly signed (a draft contract is in hand).

Lessons learned

Without cushioning measures, grass-roots communities that are motivated and in favour of integrated community management of natural resources risk becoming disaffected

If grass-roots communities are not convinced that it is in their best interests to manage "their" natural resources, there will be no community or participatory management of natural resources. Good words need to be followed by concrete actions.

Involving and motivating COBAs requires being aware of their socio-economic and cultural realities. Taking account of people's livelihoods appears to be an important factor in motivating local people, even the most resistant, and in gradually raising their awareness of conservation. Did a wise old man from Salonga not say after a workshop that if one wants to take a nut away from a child, s/he should be given something similar in exchange? In other words, the way to motivate COBAs to take part in the CBNRM process, is to focus on the socio-economic security that may be obtained from supporting their livelihoods. A lack of concrete support for micro-projects focusing on livelihoods would hinder their commitment to the process. The enthusiasm of COBAs at work observed during the village workshops is tangible proof of the chances and prospects for success if the conservation of natural resources is mainstreamed into the socio-economic development of these communities. Without the accompanying financial resources, the motivation observed in the elaboration of the management plans, with communities sometimes giving up ten days or more of their time to take part in workshops, may turn into frustration or even revolt in extreme cases. Thus there is a need to find a financing framework, an annual donor's round table where various development plans can obtain financial or material support.

Grass-roots communities are more interested in their daily survival than in conservation

The Community Action Plan is a multi-sectoral plan. During the drawing up of the CAP, it was realized that conservation was not the primary concern of the villagers. This can obviously be explained by their dependence on natural resources and their difficult living conditions. However, rather than taking this as a negative, the fact that it was identified as an issue at all is encouraging. Although conservation does not rank highly in their list of priorities, it was raised by the local people themselves without any external pressure.

Nonetheless, this means that more effort has to be made with regards to raising awareness so that COBAs better understand the benefits of linking their development to conservation. The reconstruction of the Lokolama to Bisengebatwa road should not for example become an opportunity to increase the bushmeat trade. Control mechanisms have to be developed and monitored by COBAs.

It was with this concern in mind that the programme devoted a significant amount of time to education and raising environmental awareness before launching activities to improve living conditions, in order to avoid any confusion and to have some assurance that the local population have understood the basis for rational management of natural resources without losing sight of their priorities. In practical terms, it will entail identifying livelihood activities that are compatible with conservation and setting up structures to monitor environmental impact, so as not to fail in the objective of contributing to poverty alleviation while conserving biological diversity.

Improved means of transportation, a remedy to the development of trade for grass-roots communities

Transport remains the major bottleneck in the Lokolama sector. The gradual deterioration of transport infrastructure has isolated the area, and caused the local communities to lose heart. Farming has been abandoned for hunting. Projects are blocked because of the exorbitant cost of transportation, etc.

There needs to be a meticulous analysis of this aspect. The analysis has to be done on three levels: the short, the medium and the long term. This will enable the situation to evolve towards COBAs gradually taking control of the means of transportation. Transportation has a considerable multiplier effect on their daily life, in that the partial or total resolution of transportation problems will make it possible to improve the living conditions of communities that are suffering from, amongst other things, shortages of basic commodities such as salt and sugar, the prices of which are scarcely affordable even when they are available.

In Lokolama, the communities have shown their willingness to carry out road repairs – at least the one leading to the Lokolama port. Such initiatives can, for a time, alleviate the difficulties they face especially with the hope of increasing agricultural production thanks to the intervention of international NGOs. However, it must be borne in mind that the opening up of roads and trails has to be accompanied by control measures, through the natural resource management committees, in order to prevent the development of the bushmeat trade, and thus obtaining the opposite effect from that desired.

Meanwhile, the prospect of increasing agricultural production in this landlocked zone has to be guaranteed by securing the ways and means of

shipping out agricultural produce. If conditions are not met or if access to transportation is interrupted, communities will run the risk of serious over-production because of the lack of a nearby market and other possibilities of supply. That is why any plan for marketing agricultural produce has to go beyond the current restricted vision of sporadic or opportunistic shipments, and include the drawing up of a transport strategy that will guarantee viable trade in the land.

Structuring and institutionalizing grass-roots communities, imperative for the success of any alternative project

Capacity building, achieved through the structuring of communities, is the foundation and the prerequisite for the development of any activity with grass-roots communities. Acting with individuals alone would be a dissipation of effort, and restrict the number of beneficiaries of any particular project or activity. Constituting COBAs into associations would give them a legal status different from that of individual members. This legal status would give them the power to sign contracts with individuals or companies within the framework of the prospective trading networks they have identified, and to be able to act in legal matters.

While such capacity building is still on-going, intermediary solutions had to be found during the execution of a groundnut agricultural project and during a feasibility study of the copal sector. For the groundnut project, this meant identifying and bringing together innovative farmers. For the copal project, an association in Monkoto (CPFNLEA: *Commercialisation des Produits Forestiers Non-Ligneux, Elevage et Agriculture*) issued a signed authorization to PACT Congo to set up a trading contract between an import company in Madagascar and this association. This local association acts as an intermediary between the grass-roots communities and the copal buyers. '

SECTION TWO:
ENVIRONMENTAL POLICY AND GOVERNANCE

Chapter 6

The Promotion of National Policy and Governance Agendas for Conservation and Development: Lessons Learned

Kenneth Angu Angu

1. Introduction

1.1 Overview

It is often said that policy and legislative issues are the bedrock of any socio-cultural and political structure – be it a small village community at the heart of the Congo Basin forest or a large state in central USA. This is obvious because they help control and maintain any structure, facilitate cohesion among actors, reduce conflicts and, above all, ensure the effective management of natural resources. While it is also true that most policies and legislations are in the form of written documents – as in modern States, others are not – as in village communities. However, whether they are written or unwritten, one thing is clear – they often manifest themselves in the form of unwritten norms, actions, behaviours, roles and statuses that help determine whether a person is acting conventionally or unconventionally. If not, cultural or political custodians tap from these policies and laws to come up with some corrective measures (sanctions, etc.) to ensure that deviants are brought back on track.

The diversity and complex nature of socio-political structures make it very challenging to put in place, and implement, appropriate policies and laws that effectively take into account both “modern” and local knowledge in natural resource management (NRM). To guarantee that the effective implementation of these laws and policies will have a significant impact on the ground, indicators need to be put in place that can prove that the rational use of these natural resources is fostering sustainable regional, national and local development. Some say that this is possible only if modern laws and policies are not only consistent with customary laws but also keep on adapting to innovative conservation dynamics.

Although most countries in Central Africa have taken giant strides in reforming most of their NRM codes, especially the forestry codes, there is still plenty of progress to be made. There has been a call for the various stakeholders to work alongside government officials to ensure that some of these laws are either reformed or adapted, or that implementation decrees are passed if this has not been done yet, as is the case with some countries.

This is why the CARPE Phase IIB programme, notably its governance components commonly known in our jargon as IR2 (Intermediate Result 2), has been focusing on good governance issues in natural resource management because it is an invaluable tool to avert forest degradation and the loss of biodiversity in Cameroon,

Republic of Congo (RoC), Gabon, the Democratic Republic of Congo (DRC), Burundi, Rwanda, Sao Tomé and Principe, the Central African Republic and Equatorial Guinea. A major objective of the CARPE Focal Points and Country Team members is to facilitate good governance in the management and use of natural resources by focusing on strategies that will subsequently facilitate policy/legislative change and/or reforms. Another crucial issue for CARPE is to push for a "people-centred approach" to conservation by facilitating the implementation of key reforms so that they can have sustainable impact on the lives of populations in terms of reconciling the conservation of natural resources and sustainable livelihoods.

To share their experiences with others, CARPE Focal Points have come up with four case studies on lessons learned from Cameroon, Gabon, RoC and DRC. The goal of these studies is to show that a good national policy and governance agenda is the bedrock of sustainable resource management and local development. They show how they have used concrete field data to help influence policies, laws and various regulatory frameworks (through advocacy, communication, etc.) or conversely have helped to create enabling policy and legal frameworks to facilitate work at the landscape level. The aim of this paper is to provide a synthesis of these four studies, showing some similarities and differences, followed by some key recommendations.

1.2 The importance of promoting a national policy and governance agenda for conservation

Although Central Africa harbours the richest biological diversity in Africa and is the second largest continuous expanse of tropical forest in the world after Amazonia, most environmental specialists and policy/decision makers are very uncomfortable with the persistent rate of forest degradation and loss of biodiversity in the region. Current NRM policies and legislative frameworks have not been able to effectively balance local and national development needs and the conservation of biodiversity. Some observers strongly believe that increased human population and lack of development opportunities are the major drivers of this unfortunate phenomenon. Other dominant dynamics include: unsustainable agriculture, irrational forest and mineral exploitation, armed conflicts, road construction without adequate environmental impact assessment, unsustainable hunting, poaching, fire, large population movements in times of war (refugees) etc., invasive alien species and climate change. The armed conflict in DRC and RoC, the increasing problem of arid lands in the northern part of Cameroon as well as the vast, complex and enormous territory of DRC, have all made it very difficult to implement most of these policies and laws. Also, the creation of enormous tracts of protected areas in Gabon (13 national parks), without putting in place consistent institutions and policy mechanisms to manage them, has only fuelled additional pressure on these resources, creating discord between local populations, government officials and international organizations.

However, on analysis, some observers are of the opinion that the root cause of forest loss in Central Africa is the difficulty some decision makers have in coming up with, and implementing, effective, consistent, harmonized and feasible conservation and development policies and laws which aim to satisfy current human practical needs without compromising the use of these resources by present and future generations.

Although sound policy and legislative reforms aimed at reversing forest degradation and the loss of biodiversity are currently in force in most countries in the Congo Basin, especially in Cameroon, Gabon, RoC and the DRC, a quick look at the various national policy and legislative agendas shows that their elaboration, implementation and monitoring differ from one country to another. For example, most observers are of the opinion that although Cameroon is regarded as "far advanced" in putting in place a robust environmental policy and legislative agenda (1994 Forestry Code; 1995 Implementation Decree; 1995 Forestry Policy, etc.), much still has to be done to facilitate their implementation, notably on community involvement in natural resource management and illegal logging. These tools not only failed to put in place appropriate implementation mechanisms, but also showed inconsistency between some articles and laws. Also, there are outright incompatibilities in some environmental policies and legislations when it comes to who is actually in control of certain resources. For example, some stakeholders and government officials in most countries are still confused as to their roles and responsibilities in managing various sectoral issues such as forestry, agricultural, land and mineral resources, etc. Some of these gaps were not noticed when the laws and policies were drafted. To help remedy this, the Cameroonian Government, for example, has already put in place the necessary structures to reform its forestry law. Although their forestry codes have been updated in recent years, countries like Gabon and the Republic of Congo have still to step up their national strategies to effectively involve community-based structures in government efforts in natural resource management. Also, because of its vast and complex nature (over an area of 2,345,000 km^2), the DRC is currently struggling

in its fight against poaching and illegal logging, mainly because of the lack of manpower, resources, funds and adequate modern technology to control their resources in spite of the adoption of their new forestry code in 2002.

However, although there are obvious problems, there is ample evidence that most countries in the region are taking giant strides to strengthen their good governance strategies to ensure effective natural resource management. For example in DRC, the Government, through its Growth and Poverty Reduction Strategy Document, has identified the forest as a key sector for development. This explains why the 2002 Forestry Code is the base for all forestry operations in the country. In the Republic of Gabon, the 2001 Forestry Code (Law N° 16/2001 of December 31) as well as the 2007 Law on National Parks (Law N° 003/2007 of September 11) brought in a lot of innovations in terms of forest and wildlife management as well as community-based natural resource management (CBNRM). In Cameroon, seen as the pioneer of forestry reform in Central Africa, the impetus came before and immediately after the 1992 Rio Conference with the creation of the Ministry of the Environment and Forestry (MINEF) for the effective management of flora and fauna. To this effect, the groundwork was set for the elaboration of the first draft document on forest policy in 1993 while one year later, the 1994 Forestry Law (Law N° 94/01 of January 20) was promulgated. This provided adequate material for the publication of the Cameroonian Forestry Policy in 1995. The Republic of Congo has not been lagging behind because the Government has been at the forefront in defining sustainable management policies and laws. The Government was praised when it produced its new 2000 Forestry Code (Law N° 16/2000) and the 2008 Law on the Conservation and Management of Wildlife (Law N° 37-2008 of November 28, 2008). The stage was therefore set for sustainable forestry management in all four countries.

At the regional level, there has been some consensus in Gabon, Cameroon, DRC and the RoC to join their other six neighbours in elaborating a consolidated Central African Forest Commission (French acronym COMIFAC) Convergence Plan – an outcome of the 1999 Yaoundé Heads of State Summit and the 2005 Second Heads of State Summit that produced the COMIFAC Treaty. Most stakeholders were aware that laying down a harmonized regional policy framework was the only way to achieve effective natural resource management both at a national and sub-regional level.

1.3 CARPE's approach to promoting a national policy and governance agenda for conservation

CARPE's approach has been very proactive ever since its inception in 1995. In order to facilitate the implementation of its Strategic Objective which is to reduce the rate of forest degradation and loss of biodiversity through increased local, national and regional NRM capacity in nine Central African countries, CARPE and its partners have concentrated their efforts on capitalizing on the results of the first phase which focused on the increase of conservation knowledge, institutional development and capacity building of the various actors. This second phase has highlighted three main objectives – elaboration and implementation of sustainable NRM practices; the improvement of environmental governance; and the strengthening of natural resource monitoring capacity.

Following the recommendations of a mid-term evaluation report in February 2006, IUCN has become a core partner and, since October 2006, has been responsible for the "natural resources governance strengthened" component (IR2). Since then our major approach has focused on strengthening partnerships with existing governance structures, and encouraging host countries and COMIFAC/Congo Basin Forest Partnership partners to participate in the decision-making process of the programme, use the small grants to build the capacities of civil society organizations (CSOs) to advocate for policy and legislative actions, and increase communication between various stakeholders. With this new role, a CARPE-IUCN Regional Program Manager is coordinating the efforts of CARPE Focal Points to convene and coordinate Country Team meetings aimed at implementing and monitoring activities in order to promote short and long-term policy and legislative reforms. Country Team members include designated government officials, parliamentarians, national and international conservation organizations, bilateral and multilateral organizations, research institutes, etc. In addition to the organization of Country Teams, Focal Points organize a policy, regulatory and legislative agenda aimed more especially to build the capacity of local CSOs in their advocacy and social mobilization roles. Through Country Teams, the CARPE Focal Points also work with CARPE-funded Landscape and cross-cutting partners as well as other conservation actors in the countries. While some members seek to use their field research results to lobby for policy/legislative change in order to facilitate the sustainable management of natural resources, others engage in advocacy activities to facilitate the implementation of field-based conservation programmes.

This approach has proved very successful over the years as Country Team members have contributed significantly to the elaboration of new laws and policies and the updating of archaic laws.

2. Review of the policy and governance case studies

2.1 Lessons learned from the Democratic Republic of Congo

With a surface area of close to 2,345,000 km², the forests of the Democratic Republic of Congo cover close to 60 percent of its territory and constitute about 50 percent of the entire Congo Basin forest area. However, although these forests are among the most biodiversity-rich in the world in terms of flora and fauna, its population is still poor with the majority living on less than a dollar a day. The reason for this unfortunate paradox was clarified by the authors of the Poverty Reduction Strategy Document who identified bad governance as one of the major causes of this poverty and suggested some critical issues that needed to be addressed to promote good governance. Most people identified armed conflict as a contributory factor to poor governance in the management of natural resources because it destabilized the capacity of public institutions and the local populations to manage these resources. Since the wars, the Government has been concentrating most of its efforts on seeing how their rich resources could be sustainably used to promote development.

However, most observers believe that the on-going democratization process should be pursued to promote good governance. The new constitution of the Republic, the new mineral and investment codes, the 2002 forestry code, the decentralization laws, etc., are all evidence of this process and the good intentions of the DRC Government. With the help of partners like CARPE, measures have also been taken to ensure the implementation of these NRM reforms. These include the cancellation of close to 25 million hectares of illegal forest concessions; the periodic publication of lists of forest contracts and their fiscal status to ensure transparency and sustainable use of natural resources; the recruitment of international independent observers to oversee the implementation of the forest exploitation reform; etc. Also, the recruitment of an observer to support forestry control and the preparation of the implementation decree of the Forestry Code was an important step taken by the Food and Agricultural Organization of the United Nations (FAO) and other partners who supported the process. The Government has also initiated reform of Law N° 069 on the protection of nature as well as participatory elaboration of a national forestry and conservation policy.

However, despite all these efforts, most national and international conservation and development actors are strongly of the opinion that poor governance is still a very important issue in DRC. The issue of transparency, weak capacity at all levels of government administration to monitor illegal actions, lack of human resources and viable environmental information to foster good decision making, illegal logging in forest concessions, bad tax recovery systems, lack of some implementation decrees, numerous conflicts between forest exploiters and local communities because of the inadequate gazetting system, etc. – all still prevail.

Most of these policy and legislative shortfalls were identified by DRC Country Team members who participated in the February 2007 CARPE Inception Workshop that launched Phase IIB and who have since then endeavoured to discuss some of these priorities with decision makers and other actors. Some members like the CARPE Landscape partners and others suggested that some important policy actions could only be properly undertaken if the Country Team was enlarged to include MPs, the private sector, and strong indigenous and women's networks. Once this was done, Country Team members were quite happy with the dynamism and results of the entire team. It has been quite easy to discuss issues and give technical, financial and strategic inputs to facilitate the elaboration or implementation of some draft laws.

To give some examples: representatives of the Country Team worked very hard with other actors as members of a validation committee put in place by a Ministerial Degree to elaborate a draft implementation degree of the 2002 Forestry Code. Their views as expressed in the Committee were simply a reflection of the views of Country Team members. The text was eventually signed and published under the coordination of FAO. Also, Country Team members facilitated the finalization and validation of the manual on the procedures for the attribution and management of Community Forests.

Since the implementation of the 2002 forestry code was an uphill task, Country Team members supported (technically and financially) the elaboration and publication of a commented version of the forestry code by Government experts. When published, this commented version (which will be prefaced by H.E the Minister in charge of forestry) will be widely disseminated to all pertinent forestry stakeholders. It will be translated into two national languages by the Country Team to facilitate its ownership by the local populations.

Also, Country Team members carried out a lot of lobbying activities to make sure that civil societies (such as a member of the coalition of NGOs) are represented in pertinent NRM structures like the National Forests and Conservation Programme, the Forest Consultative Council, the Steering Committee in charge of revising the law on nature conservation, etc.

As regards capacity building, Country Team members have been very instrumental in building the capacities of DRC MPs, notably those of the environmental commission. This was done through the organization of training sessions on the Forestry Code (its vision and environmental challenges), illegal logging, the importance of ratifying and implementing international conventions, etc. Along the same lines, CSOs have been in the forefront when it comes to the conception, elaboration, implementation and monitoring of policy, legislative and development projects. Country Team members help them lobby so that the results of their projects are better appreciated.

Over the years, Country Team members have been working with other institutions such as the US Forestry Service in a bid to make sure that the DRC government starts to consider elaborating a forestry zoning plan for the whole country. It is believed that this is vital in the fight against illegal logging because the information in a zoning plan would facilitate control of these concessions.

A summary of the lessons learned in DRC is as follows. **Firstly**, in order to effectively play their role, Country Team members should work in close collaboration with each other so that they can act as a joint force to lobby for policy and legislative reforms. **Secondly**, it will be very difficult to attain their objectives if the various actors do not develop and implement a robust communication strategy that facilitates the exchange of experiences and lessons learned as well as capacity building to promote policy and law changes and reform. **Thirdly**, in order to make the deliberations of Country Team members as effective and relevant as possible, the Focal Point and other members should organize preparatory meetings. This will help create synergy, save duplication and avert possible conflicts. **Fourthly**, it has been noted that the involvement of CSOs in policy and legislative debates is very important because it ensures that their interests are taken into consideration when elaborating and implementing these laws.

2.2 Lessons learned from the Republic of Cameroon

Some observers are of the opinion that the Cameroon 1994 Forestry Law is the legacy of her three colonial masters – Germany, France and Britain. In fact, it was adopted two years after the Rio Summit and the creation of the then Ministry of the Environment and Forestry in 1992 which was the main government body in charge of the management of environmental issues. The 1994 Forestry Law, or Law N° 94/01 of January 20 as it is often called, and the 1995 Forestry Policy document promoted some sustainable management practices such as the fight against illegal logging; the gazettement of protected areas; reforestation; the recognition of the rights of indigenous and local populations; the need to reconcile conservation and sustainable development objectives; the recruitment of independent observers to monitor sustainable harvesting in forest concessions; and the setting up of efficient government institutions to ensure the effective implementation of these laws and policies. The Cameroonian Forest and Environment Sector Programme was adopted in 2004 and is considered a consolidated and comprehensive policy document that facilitates cohesion in the drive towards sustainable forest and environmental management.

Also, in 1999 when the Cameroonian President convened his peers in Yaoundé to attend what is now known as the First Central African Heads of State Summit for the Sustainable Management of Central African Moist Forest, most conservation and development stakeholders knew that things would never be the same again in Central Africa because of this commitment at the highest level. This facilitated the creation of COMIFAC, formerly known as the Conference of Ministers in charge of the conservation and sustainable use of the Central African Forest Ecosystems (up to January 2005) and later the Commission for the Forests of Central Africa, immediately after the Second Central African Heads of State Summit in February 2005 that was organized in Brazzaville by the RoC Head of State.

Unfortunately, in spite of this background, some observers are strongly of the opinion that although Cameroon is at the forefront in NRM reforms, there is still a lot to be done in terms of putting in place appropriate governance structures to facilitate their implementation. Numerous studies and observations have shown that corruption in the forestry sector is still rife, especially in forest concessions. Local communities are still complaining over their 10 percent share of forest royalties while women are yet to effectively take on their role in sustainable forest management, etc. The technology, manpower and funds to effectively manage the resources are still not sufficient.

The Cameroonian Country Team knew that they had a big task ahead if they wished to reverse these trends. Through various strategies such as lobbying, capacity building, outreach, etc., Country Team members have done a lot in terms of improving the legal and policy framework (1994 Forestry Law and its implementation Decree of 1995, ratifying the Ramsar Convention, etc.). They lobbied for the update of the document *Manual of the Procedure for the Attribution and Norms for the Management of Community Forests.* An advanced draft is currently on the table of the Minister of Forestry and Wildlife for signature. The draft decree regulating the management of wildlife, especially the norms and procedures for the attribution and management

of Community Hunting Zones, is also available. It was a unique opportunity to discuss the Ministerial Order No. 122 on the setting up of equitable access and benefit-sharing regimes for forest resources. Currently, Country Team members and other partners have been involved in discussions with the Cameroonian authorities to revise the 1994 Forestry Law. At the demand of the Ministry, members have contributed in the elaboration process of the ToR for a Consultant that will take the lead in the process.

As regards Ramsar, the Team provided the necessary technical support to the Cameroonian Government which subsequently led to the ratification of the Ramsar Convention in 2006.

Although information generation and sharing have been handicapped for some time now in Cameroon because of the lack of adequate capacity and information technology, Country Team members have, for example through Global Forest Watch, helped the Ministry in charge of Forestry (French acronym MINFOF) to collect, process and publish data each year on forest cover in forest concessions. Here, data on illegal logging and mining in forest concessions were collected and handed to MINFOF for appropriate decision making. Along the same lines, the Cameroon Country Team has set up the Environmental Journalist Network to facilitate the generation, production and dissemination of environmental information.

In the field of participation and capacity building, Country Team members took the necessary steps to facilitate the effective involvement of CSOs in relevant national and sub-regional meetings such as CEFDHAC (*Conférence sur les Ecosystèmes de Forêts Denses et Humides d'Afrique Centrale*). The Cameroon component of the CEFDHAC network (parliamentarians, young people, women, indigenous and local populations, etc.) participated in the entire CEFDHAC reform process and is still very committed to assisting in implementing its recommendations and fostering its links with COMIFAC. Also, the Team facilitated the activities of Access Initiative Network, a CSO that promotes public access to information, participation and justice in decision making that affects environmental management.

The Country Team also supported local communities in establishing sustainable wildlife management activities. For example the Committee to Valorise Wildlife Resources (COVAREF) in eastern Cameroon is doing a great job in managing their community hunting zones to obtain the necessary funds to build schools, hospitals and other local development structures.

A summary of lessons learned in Cameroon is as follows. **Firstly**, to successfully push for good governance it is important to start by enhancing the legal, policy and regulatory frameworks. **Secondly**, lobbying for good governance in NRM is a painstaking exercise because it takes a lot of time and energy – one needs to work very hard to change predominantly negative habits which are deep in the fabric of some stakeholders. **Thirdly**, in order to achieve meaningful involvement of CSOs in policy/legal oriented issues, it is very important to simplify these numerous laws and policies and translate them into the national languages. **Fourthly**, it is not easy to work with some stakeholders in the Country Team who are not directly funded by CARPE because they do not feel obliged to implement some of the activities outlined in their Country Matrix. **Fifthly**, enhancing the capacity of CSOs is a prerequisite to ensuring their effective participation and involvement in natural resource management since they will acquire the necessary skills to compete with conflicting interests among other actors. **Sixthly**, although the small grants scheme is an effective way to support CSOs, it can be a source of conflict if not managed properly. **Seventhly**, although the legislative arm of government is supposed to balance some actions of government, they often compete with some local organizations to manage these resources.

2.3 Lessons learned from the Republic of Congo

With its surface area of 325,000km², the Republic of Congo harbours one of the important segments of tropical forest of the Congo Basin. Because almost 60 percent of its territory is forested, the country is host to some of the richest biodiversity in the world. Over the years, these resources have been subjected to numerous human activities such as forest exploitation, mining, agriculture, etc. Unfortunately, these activities have often been carried out without adequate concerns for their sustainability. Studies have shown that if adequate precaution is not taken, these rich resources will be severely depleted over the years which will be very detrimental not only to the growth of the Congolese population, but also to the Congo Basin and the world at large. With the climate change debate now being taken seriously by most countries in the world, the Congo Basin forest is seen as a public international good that could help avert the negative consequences of climate change in the world.

To address this situation, the Congolese Government was quite aware that with these emerging dynamics, the old forestry law needed to be updated. It was because of this that after some participatory consultation among most relevant actors including local and indigenous populations, Law N° 16/2000 came into force in 2000. Alongside Law N° 48/81 of April 21, 1981 on the Conservation and Management of Wildlife (revised by Law N° 37-2008 of November 28, 2008

on Wildlife and Protected Areas) and Law N° 003 of April 23, 1991 on the Protection of the Environment, most stakeholders were certain that the management of these resources would certainly be ensured. At the regional level, the Congolese Government has often been at the forefront in facilitating the setting up of a regional structure that would ensure regional collaboration in the management of the Congo Basin forest. In 1996, the Congolese Government hosted the first Conference on Central African Moist Forest Ecosystems (CEFDHAC) which laid the foundations for coordinated management of forests not only among States but among all relevant actors such as parliamentarians, the private sector, research institutions, women, indigenous and local populations, etc. In order to consolidate some of the achievements brought by about CEFDHAC, the Congolese Government also organized the Second Central African Heads of State Summit in Brazzaville that culminated with the signing of the COMIFAC Treaty which is currently responsible for streamlining the management of the Congo Basin Forest.

In an ideal situation, one would expect that all of these regulatory frameworks would stop the unsustainable use of natural resources. Unfortunately, this has not been the case because illegal logging and corruption still prevail, unsustainable hunting and farming are still causes for concern, mining has not complied with existing norms, the manpower and funds to implement these policies and laws are still lacking, the management of protected areas has been very difficult, local communities have still not yet benefited from their rights, and decision makers have not been able to obtain adequate information to take sound decisions.

Given these circumstances, CARPE Country Team members went to work. For example, they took part in the preparation of Law N° 37-2008 of November 28, 2008 on Wildlife and Protected Area Management. The draft law on Fisheries and Continental Aquaculture was adopted by Parliament on December 10, 2008 and now members are lobbying for its promulgation by the President of the Republic. They have also lobbied alongside CSOs for the suspension of Ministerial Order N° 7053/MEF/CAB which authorized the killing of elephants at the periphery of the Odzala-Kokoua (around Miélékouka) and Nouabalé-Ndoki (around Bomassa and Kabo) National Parks.

Lessons learned from the Republic of Congo can be summarized as follows. **Firstly**, the Country Team is an invaluable catalyst for NRM policy and legislative reform or change because of its diverse and expert membership. **Secondly**, it will be very difficult, if not impossible, to lobby for policy and legislative change and implementation if there is no collaboration between all necessary partners such as local administration, parliament, civil society, research centres, etc. **Thirdly**, dialogue and consultation among various actors remain a key factor to reducing conflicts related to the management of natural resources. **Fourthly**, since man is at the centre of all conservation efforts, the success of all our endeavours will depend on how well man is treated in terms of socio-economic-health development. **Fifthly**, awareness raising and sharing of information are vital for the sustainable use of natural resources because they help change attitudes and belief systems. **Sixthly**, it will be very difficult to implement all of these policies and laws if we do not have a sustainable funding mechanism and the necessary manpower.

2.4 Lessons learned from the Republic of Gabon

The current NRM regulatory frameworks in Gabon seek to facilitate the sustainable use of natural resources, and national growth. The elaboration process was fairly participatory since the Government took into account the opinions, views and preoccupations of all relevant actors. For example, the 2001 Gabonese Forestry Code (Law N° 16/2001 of December 31, 2001) and the 2007 Law on National Parks (Law N° 003/2007 of September 11 2007) facilitated the effective involvement of all actors in the management of forest resources and national parks. The laws sought to fill certain gaps found in Law N° 1/82 of July 22, 1982 on the management of water and forest, and brought in some innovations such as combating illegal logging and poaching, community management of natural resources, the link between conservation and local development, sustainable management of forest concessions, transparency and information sharing, etc. The law also laid down some hunting rules. To hunt, one must have one of the following permits: for small or large-scale hunting, for scientific hunting or for capturing wild animals alive. All these permits can be issued to both nationals and non-residents. However, this does not abrogate customary user rights for subsistence purposes.

However, all has not gone well with the 2001 Forestry Code and that is why it was supplemented in 2004 by Decree N° 689/PR/MEFEPEPN of August 24, 2004 which clarified the technical management norms and the sustainable management of productive forests. But this did not seem to satisfy some managers who still find the law silent on important socio-economic issues. Also, the implementation of the code has encountered numerous problems: illegal logging and poaching because of inadequate control by the administration, corruption because of poverty and lack of ethics, inefficient conservation techniques, etc. Most observers are of the opinion that poaching is still on the increase because

of the lack of an implementation decree outlining measures for effective law enforcement.

The Country Team in the Republic of Gabon has been very active – they played a key role in the elaboration and promulgation of Law N° 03/2007 of August 11, 2007 on National Parks. It is very important to note that this law has been long awaited, especially after the Presidential Decree of August 30, 2002 creating 13 National Parks. Conservation partners have always been calling for the creation of a National Park Agency to better manage these parks.

A summary of the lessons learned in policy and governance in Gabon can be summarized as follows. **Firstly**, management decisions that do not take into consideration the interests of the local population are destined to fail. **Secondly**, decisions that do not incorporate economic realities will be very difficult to implement. **Thirdly**, information campaigns should always go hand in hand with the adoption of any NRM law. **Fourthly**, because funds given to national NGOs are not sustained, conservation and development efforts are quite vulnerable after these funds are stopped. **Fifthly**, ministerial instability and frequent transfers of senior civil servants have a negative impact on natural resource management. **Sixthly**, partners should be patient because the adoption and promulgation of laws takes a lot of time. **Seventhly**, because conservation requirements do not often tie in with political and economic objectives, there are bound to be conflicts between NGOs and politicians.

3. Conclusion and recommendations

From the above we can see that although each country has its own specificities and philosophy in terms of the identification, elaboration and implementation of appropriate policy and regulatory frameworks, there is some common ground. Below are some lessons learned which are common to all four countries:

1. Lobbying for the adoption and promulgation of new laws and policies by Country Team members is not the only answer to sustainable natural resource management. It is very important to ensure that these new or reformed laws and policies are implemented on the ground and their impact felt by local populations and other actors in terms of socio-economic and conservation benefits. Past experience shows that often when some conservation NGOs, governments and community-based organizations have succeeded in having a new NRM law adopted or promulgated, most of them feel that they have "delivered the goods" – which is not necessarily the case, because a law or policy that is not fully implemented is just as bad as no law or policy at all. A strong recommendation would therefore be that in collaboration with governments, Country Team members should always formulate an appropriate strategy to make sure that these new policies and laws have an impact on the ground.

2. To successfully achieve good governance in sustainable NRM, Country Team members should build on each other's comparative technical and advocacy experiences and advantages. If some members undermine the actions of other stakeholders (like competing NGOs) because they are competing for funding from donors or for favour from Governments, most of their resources are diverted towards irrelevant competition and latent conflicts among themselves. Country Team members have learnt from past experience and are now working very hard to create synergy in their activities. It is therefore very important to continue along this line if we want to be both time and cost-effective.

3. Although they lack the necessary capacity and funds to be effectively involved in natural resource management, CSOs are still very important actors because they facilitate buy-in from local populations and act as a counter weapon to some government actions which try to undermine their involvement. The IUCN-CARPE Small Grants Program has shown that with just a little seed money, CSOs can be helped to undertake very productive activities, with local, national and regional impacts.

4. In order to facilitate synergy and reduce conflicts, timely communication and information sharing among the various actors is very important to ensure efficient programme delivery. It is therefore very important for members to formulate a simple but appropriate communication strategy to be implemented amongst themselves.

5. The process of elaborating, adopting and promulgating NRM policies and laws can be very time-consuming. At times there are conflicting interests and viewpoints, and a lack of the necessary funds and other resources to effectively engage and involve all the relevant actors. It is vital that partners exercise patience because any hasty measures will surely be detrimental to the objectives of such an important process.

6. Capacity building of CSOs is a prerequisite to ensuring policy change or reforms; however, most CSOs do not often have the means or capacity to play their role fully. The Small Grants Program is gradually filling this gap.

7. Although the small grants scheme is an effective way to support CSOs in lobbying for policy and legislative change, it can also be a source of conflict if not well managed. This is because some CSOs are often competing for cash and will not hesitate to denigrate any competing organizations. It is therefore very important for donors to help create a friendly environment amongst CSOs.

8. Some stakeholders, including local communities, have been less supportive to the legal governance framework because it is difficult to have a good and comprehensive understanding of laws and policies which are written in English or in French. It is therefore very important to translate some of these documents into national languages and promote peer capacity building. '

Case Study 1

Lessons Learned on the Promotion of a National Policy and Governance Agenda for Cameroon

Antoine Eyébé and Guy Patrice Dkamela

Overview of the policy and governance context in Cameroon

The forest and wildlife policy in force in Cameroon is a combination of the consequences of its colonial history with Germany, Great Britain and France. After the reunification of the former Federated States of East and West Cameroon in 1972, the construction of a United Republic led to the nationalization of the judicial framework (forestry and land tenure) in order to begin to create harmony and coherence between the two systems, especially in terms of reconciling the fragile rights of local communities.

After the Rio Summit in 1992, the State's leading objective was that the government should meet its national and international obligations, i.e., to curb practices detrimental to the sustainable management of forest resources and to ensure economic development of the country through forest exploitation. During this first period, forestry and wildlife policy could be summarized as follows: more emphasis was placed on regulating extractive activities like logging, with a few compulsory provisions on reforestation and a target of 20 percent of the country's surface area to be gazetted as protected areas. Local communities' user rights, which had been identified as being fragile and vulnerable to withdrawal (Obam, 1992), also began to be taken into account.

The Ministry of Environment and Forestry (MINEF) was created in 1992 and was the only government body in charge of the management of forestry and wildlife issues. The first forestry policy document was drafted in 1993, leading to the development and adoption of Law N° 94/01 of 20 January 1994, which lays down forestry, wildlife and fisheries regulations in Cameroon. This law is considered one of the most progressive in Central Africa for the following reasons: firstly, the way forest concessions were allocated, taxed and managed changed significantly, giving way to the introduction of market pricing for timber through competitive auctioning of concessions. There are provisions for two independent observers to monitor transparency and compliance both during the allocation of forest concessions (first level) and during the exploitation of the timber in the field (second level). Secondly, the classification of the national forest heritage into Permanent Forest Estate (PFE) and Non-permanent Forest Estate (NPFE) is another important innovation. The PFE is the private domain of the State, and designated to remain forested in the long term. This includes production forests dedicated to timber exploitation, protection forests for the conservation of natural resources, research forest and recreation forest.

In 1995, the National Forestry Action Programme (PAFN) was presented as part of the broad National Programme for Environmental Management – PNGE (MINEF, 1995). The 1995 forestry policy, which is still in force, has the following five objectives:

- To ensure the protection of the forest heritage and to participate in the safeguarding of the environment and the preservation of biodiversity in a permanent way;
- To improve the populations' involvement in conservation and the management of the forest resources in such a way as to raise their standard of living;
- To enhance the forest resources in order to increase the share of forest production in the GDP while maintaining its productive potential;
- To facilitate the renewal of the resource by regeneration and reforestation in order to perpetuate the potential;
- To rekindle or reactivate the forest sector by putting an efficient institutional system in place with the participation of all stakeholders.

Another important crossroads in the history of Cameroonian and Central African forest management is March 1999 when presidents and leaders from Central Africa met in Yaoundé and made a commitment to enhancing forest management. Cameroon immediately adopted an action plan in November 1999 that was revised in June 2000. It focused on the following themes: controlling illegal forest exploitation including poaching; and the increasing involvement of local populations in forest conservation. In 2002, at the World Summit on Sustainable Development (WSSD, Johannesburg), they signed up to the Congo Basin Forest Initiative which included commitments to better timber harvesting and processing technologies; ecotourism; increasing capacity for

natural resource management in both the public and private sectors; and improving legal and law enforcement infrastructures. Targets are provided by an updated regional master plan being developed by the Central African Forest Commission in which Cameroon has played a key role.

Cameroon also adopted the Forest and Environment Sector Programme (FESP) in 2004 which has been supported by donors since 2005. The FESP is a ten-year programme (2005–2015). It is a comprehensive and coherent policy document that facilitates sustainable forest management in Cameroon. Based on both forest and environmental legislation, the FESP prioritizes five components:
1) environmental management, including environmental monitoring and awareness;
2) production (concession contracting and supervision, promotion of industrial processing, etc.);
3) wildlife and protected areas (focusing more especially on the development of a network of protected areas properly financed and managed with local participation;
4) community forest management, with three sub-components: community forest management, community forest regeneration and fuelwood wood supply in the northern regions; and
5) institutional strengthening, training and research, focusing on the Ministry of Forestry and Wildlife (MINFOF) and the Ministry of Environment and Nature Protection (MINEP).

Environmental policy and governance successes over the past ten years

Alhough the current forestry and wildlife policy and laws in Cameroon are an exceptional achievement in the Central African sub-region, the major challenge is to develop governance structures that will enable their effective implementation by all stakeholders. However, although this may still appear an uphill task, efforts have been made both by the Cameroonian Government and its multilateral, bilateral and international partners. Several assessments of their implementation have already been carried out (Bikié *et al*., 2000; I&D, 2000; Global Witness, 2002; MINFOF, 2005; FGF, 2006; Karsenty *et al*., 2006). From these reports, some of the country's efforts, and positive results that have strengthened environmental governance, can be highlighted:

- The allocation of forest concessions to concessionaires through public bids with the presence of an independent observer to facilitate transparency and competitiveness in the process;
- The recruitment of an independent observer in charge of monitoring forestry activities in the field which has helped in the reduction of illegal logging, poaching and the fight against corruption;
- The implementation of transparent practices such as the tri-monthly publication of forestry infractions and sanctions and the publication of the amount of annual forestry royalties dedicated to local councils (40 percent) and local communities (10 percent).
- The increased contribution of the forestry sector to the GDP. To make it workable, accessible and transparent, a special institution – the Forestry Revenue Security Programme (PSRF) – was put in place to trace and collect revenue from the sector.
- The Last Great Ape Organization (LAGA)/MINFOF agreement to fight commercial poaching and all related trade in endangered animal species by ensuring the prosecution of large-scale illegal wildlife exploiters, and running public awareness campaigns to increase the enforcement of wildlife law and the risks and penalties for wildlife crimes. Thanks to the activities implemented under this agreement, over 50 court cases have been initiated and wildlife crime is gradually being perceived as being as bad as other types of crime in Cameroonian society.
- The WRI-Global Forest Watch/ MINFOF agreement to monitor forest cover by teledetection has enabled the mapping of different land-use options and delimiting forest concessions while at the same time controlling the implementation of management plans.
- The Ministry also put in place a computerized system of forest management information (SIGIF) followed later by the Global Law Information Network (GLIN). The "Network" is a public database of laws, regulations, decisions, judicial and other complementary legal sources, compiled by governmental agencies and international organizations. This system will surely reinforce access to information by all stakeholders.
- Involvement in the Forest Law Enforcement, Governance and Trade (FLEGT) process. In a bid to facilitate good governance in forest management, the Cameroonian Government hosted the First African Ministerial Conference on African Forest Law Enforcement and Governance (AFLEG) in Yaoundé in October 2003. The outcome of this very important meeting was to provide Cameroon with the necessary conditions to start its negotiations with the European Union (EU) for a Voluntary Partnership Agreement (VPA) that will make it possible to reduce or even eradicate the illegal logging and trade in timber exported to the EU.
- Cameroon also contributed to the setting up of a network of experts on forest policies in the Congo Basin (*Réseau des experts*

en politiques forestières dans le bassin du Congo – REPOFBAC). Its main objectives were to promote information exchange between governments, while at the same time identifying priority areas for action, including forestry planning, the valuation of non-timber forest products, community participation, and decentralization.

- The Cameroon Ministry of Forests and the Environment annually publishes the names of forestry corporations that are guilty of illegal practices in forest concessions.
- The Government's desire to ensure transparency and participation in the management of protected areas through co-management has received a strong boost from framework and individual agreements signed with the World Wide Fund for Nature (WWF), aimed at improving the management of Cameroon's wildlife and protected areas.

Some shortcomings in forest governance

Despite the above-mentioned advances, there are important weaknesses and outstanding challenges with regard to forest and wildlife law enforcement and governance:

- The persistence of corruption in the forestry sector has been a matter of debate and frequent criticism for several years. A World Bank report, for instance, indicated that during the October 1997 allocation of concessions, the specified allocation criteria were not fully respected. Because of behind-the-scenes shady dealings, competition among the bidders was not fair and as a result, a huge amount of forestry revenue for the State, the local councils and local communities was lost. The costs of corruption are estimated at 0.5–5 percent of the "coût de revient" of a logging company in Cameroon (Karsenty *et al*., 2006).
- The weak decentralization policy for timber extraction, intended to enable local communities to increase their benefit from forest exploitation. This approach was put in place to help communities to exploit and sell their forest resources by themselves rather than going through local mayors who are frequently guilty of mismanagement. Though this was a good approach in theory, in practice, the process seems to be controlled by local elites and authorities. Also, many studies have shown that the share of forest taxes transferred by the State to local councils (40 percent for the councils and 10 percent for communities) continues to be rarely invested in local development. This contributes to the failure of the State to meet the second objective of its 1995 forest policy, thereby putting into question the social legitimacy of its forest regulation and policies. The lack of transparency and accountability in the use of forest royalties by local councils remains a serious thorn in the side of equitable revenue sharing.
- The weak institutional performance of the administration. The fact that many illegal forestry activities are neither reported nor sanctioned could be explained by the lack of capacity (human, organizational, material) within the MINFOF. This also raises the issue of ownership of forestry reform by the administration. The multiplicity of administrative bodies in charge of forestry and environment is one of the causes of weak performance. The conflict between MINFOF and MINEP is an interesting illustration. MINFOF and MINEP have failed to put in place a functional framework for involving other stakeholders in the implementation of the FESP. The same lack of coordination leads to inconsistencies between the data on logging activities (SIGIF database from MINFOF) and the data on forestry revenues collected by the PSRF in the Ministry of Finance.
- Insufficient funding to facilitate the enforcement of forestry laws and policies. One of the reasons for the poor performance mentioned above is the lack of sufficient and long-term funding for the forestry sector. Though a Special Fund for Forestry Development (FSDF) was put in place following the enactment of the 1994 Law, the disbursement of money from the State Treasury to this fund doesn't always comply with the law, partly because of the weak political position, and hence bargaining power, of the Forestry and Wildlife Minister. In 2005, 3.5 billion CFA were to be disbursed to the FSDF, but only 1.5 billion eventually got there.

The CARPE strategy for promoting a policy and governance agenda in Cameroon: activities undertaken and results achieved

After the WSSD, CARPE's activities were concentrated on six countries and the programme's strategy was updated. Three intermediate results were anticipated, including forest governance and policies strengthened. To address this, CARPE relied on its partners to put in place a coalition of technical and strategic members to work towards improving environmental governance in the region, and strengthening their capacity to monitor natural resources. Under this approach, it was also anticipated that NGO/civil society initiatives would specifically address illegal logging, bushmeat poaching, and other natural resource governance abuses by bringing public attention to

a given problem and generating public support at the national level for remedial actions by government through policy/legislative reform or change. To facilitate the host country's participation, the Country Team group has worked in close collaboration with members of parliament, representatives from the Ministry of Forestry and Wildlife and the Ministry of Environment and Nature Protection, etc., under the supervision of CARPE Focal Points (FPs). The Country Team is a think-tank on pertinent issues related to policy and governance in natural resource management (NRM), and its major objective is to involve all relevant partners in the planning, implementation and monitoring of NRM projects and programmes in the country to facilitate a change or reform in policies and laws. It has a wide range of activities including data collection and analysis, advocacy, communication, etc.

To make their work as effective as possible, the group meets three times a year. The first meeting helps to identify and agree on: priority areas on governance and policy issues; a range of broad-based activities; and the role and responsibility of each organization. At the second meeting, each Country Team member presents his/her report based on activities on which he was the lead. One of the objectives of this second meeting is to help partners to carry out any necessary adjustments before the end of the year. The last meeting helps to assess achievements as per the plans made during the first meeting, and also start planning for the activities of the next CARPE fiscal year.

Below are some of the results that CARPE and its partners have achieved within the framework of the Country Team.

Improving the legal framework

The Country Team has contributed significantly in terms of promoting the Cameroon Government's accession to international conventions and in setting up norms and procedures for access to wildlife resources. For example, the Government's ratification of the Ramsar Convention in 2006 came immediately after the Country Team adopted an advocacy approach, contacting various stakeholders to explain the importance of the Convention. The Country Team also provided the necessary technical support through the elaboration of the Ramsar Information Sheets that allowed the designation of a Ramsar site around the Nyong area as a wetland of international importance upon accession. In addition, the Country Team organized a series of brainstorming meetings on the subject to present the usefulness of the Convention to Cameroon, Central Africa and the world. The Country Team also worked to elaborate norms and procedures that would ensure the devolution of forestry and wildlife management powers to local communities (Community Hunting Zones) by advocating this to the Ministry in charge of Forests and Wildlife. The group contributed in defining and facilitating a participatory process from which the draft norms and procedures for the attribution and management of Community Hunting Zones was developed. The Team also worked closely with the Ministry of Forestry and Wildlife to rally civil society organizations (CSOs) to participate in the review process of the Norms and Procedures for Community Forestry, and the Arrêteé 122 for the setting up of an equitable access and benefit-sharing regime for forest resources. These texts have since been presented to the MINFOF for endorsement. To improve forest management in Cameroon, a working group was put in place to finalize the criteria and indicators in the Cameroonian context, merging the ITTO (International Tropical Timber Organization) and ATO (African Timber Organization) criteria. The CARPE Country Team played a key role here by working with other stakeholders to identify the most pertinent indicators.

The concept of "community forest" has been problematic since the process started ten years ago because some elites have been requesting forests purely for their own benefit. To avoid this unsatisfactory situation, the outdated manual for the designation, attribution and management of community forests is currently being revised. The Country Team members contributed directly to this process with their inputs during strategic, technical and awareness-raising meetings. For instance, members insisted on some critical aspects such as the responsibility for the Ministry of Environment and Nature Protection (MINEP) to assist communities in the realization of Environmental Impact Assessment studies. Through the CARPE and the Country Team support, CSOs were able to insist on some points which will certainly enhance the process. For instance, reducing the administrative burden through a decentralized system that will empower local MINFOF staff in remote areas was raised.

Information sharing

Governance and policy improvement in the sub-region have always faced the problem of sufficient accurate data due partly to the high costs of collection, analysis and dissemination.

Through Global Forest Watch (GFW), the Country Team has helped the Ministry of Forestry and Wildlife to collect and process data which has resulted in the publication of annual (Interactive Atlas) maps on the logging situation in Cameroon and this has helped the Government to take the necessary actions to improve governance in the forestry sector. The Interactive Forestry Atlas produced by GFW in close collaboration with the Ministry personnel was very helpful in tracking illegal logging. Other data collected on fraud and illegal exploitation of natural

resources were also shared with the Ministry of Forestry and Wildlife and with the Head of the Cameroonian government (the Prime Minister). We had at least two meetings each year with the Minister of Forestry and Wildlife not only to share information in our possession but also seek advice and support from him on the way forward.

The Country Team has also been instrumental in organizing the annual field trip with donors to assess the main programme in the forestry sector (PSFE). Findings from this trip are shared with the public and policy makers.

To enhance communication and information sharing, the CARPE FP also organized a gathering of journalists involved in environmental issues in Cameroon. This was the first ever workshop seeking to enhance the capacity of media practitioners in effective environmental reporting with the aim of promoting participatory management of resources in Cameroon. The workshop covered several topics including approaches for measuring standards through statistical analysis of media output; fighting corruption; and informing the public of sustainable forest and wildlife management approaches.

Participation

To ensure effective good governance, the participation of all stakeholders, including civil society, is absolutely key. The Country Team promoted the participation of parliamentarians in the process. This participation has enabled decision makers to take into account rural communities' voices in forest management initiatives. One example is the Conference on Central African Moist Forest Ecosystems (CEFDHAC), a forum open to all relevant forestry stakeholders in the region. Ideas and reflections from the Conference contributed to decision making by political authorities involved in environmental and forestry issues in Central Africa. For instance, the Conference signed an MOU with the Central African Forest Commission (COMIFAC). The group's contribution to the CEFDHAC reform process was invaluable, notably because it will facilitate the sustainable management of the Central African forest ecosystems.

The Team was also involved in other coalitions or networks such as The Access Initiative (TAI) process, a global civil society coalition promoting public access to information, participation and justice in decision making that affects the environment. Under this project, a database of information was designed and several training workshops were conducted. Several networks such as the Network of African Women for Sustainable Development (*Réseau des Femmes Africaines pour le développement durable* – REFADD) working to improve resources management and transparency also received input from the Country Team.

Accountability

Accountability has improved in the forestry sector with the support of the CARPE Country Team. The Group has assisted local communities to set up management committees in charge of development plans from revenues received from the community-based wildlife management committees (*Comités de Valorisation des Ressources Fauniques* – COVAREFs) in south-east Cameroon. These committees are independent of local government administrative structures and accountable to communities because they have to justify investments (health centres, schools) against incomes received. Due to a lack of transparency in the existing management of forestry taxes, other committees are also following this example. Although mayors will still have to play a key role in the management of these royalties, they will be accountable to the committees in terms of the utilization of funds. The committee will also decide on the type of investment to make. The Country Team further contributed to the setting up of these committees with a rigorous and transparent supervision of the elections of their members.

Access to justice

Access to justice has been troublesome because most members of the judiciary have not fully mastered the provisions of the 1994 forestry code and its subsequent 1995 implementing Decree and hence they are scarcely competent to dispense justice. Also, it was believed that some members of the judiciary were corrupt, and therefore wildlife traffickers and illegal loggers could easily "negotiate" in court to obtain favourable judgements.

To address these problems, the Country Team organized two major training sessions with magistrates to explain the forestry code where about 20 individuals were trained.

Some partners such as LAGA investigated corruption within the judiciary in relation to wildlife trafficking. For the first time, this resulted in the conviction in May 2008 of a Senior Magistrate who was helping traffickers. The magistrate had been receiving money and ivory in exchange for his illegal services to them.

Also, with CARPE financial and technical support for special projects such as Cameroon Environmental Watch, and with the interactive forest atlas regularly produced by GFW, we helped the Ministry to track the illegal bushmeat trade and illegal logging. This resulted in several court cases, and eventually some convictions (see Annex 1).

Access to justice is also hampered by the general public's lack of knowledge of the law. CARPE and the Country Team liaised with Citizen Initiative Governance (CGI), a non-profit-making association that publicizes citizens'

rights. CGI is currently setting up small offices in three regions including the east and the south where more attention needs to be paid to levels of forest exploitation. The purpose of these offices is to assist local communities in court cases. Most communities, NGOs and CGI staff themselves have appreciated the Country Team's help in setting up these offices. Lawyers from this association will help the communities in cases which include, but are not limited to, land disputes, forest infractions, alienation of human rights etc.

Lessons learned

- Good governance in NRM is not well established and this has had a negative impact on natural resource exploitation in general and the forest sector in particular. This is because it takes a lot of time and energy to deal with the problem, especially as it is a phenomenon that is deep-rooted in the psyches of some stakeholders;
- To achieve good governance, it is important to start by enhancing the existing legal framework because some laws governing natural resource management have only recently been put in place and at times do not fully take into consideration the context where they will be implemented;
- Some stakeholders, including local communities, have been less supportive of the legal governance framework because it is difficult to have a very good and comprehensive understanding of laws which are written in English or in French;
- Working with different stakeholders within the framework of the Country Team without funding is a continuous challenge in a region where most stakeholders are used to working for cash. CARPE needs to explore the possibility of funding the existing targeted governance activities of some CSOs, aimed at achieving policy and legislative change and reform;
- Building CSO capacity is a prerequisite for effective governance; most CSOs do not have the means or capacity to play their role fully. The IUCN Small Grants Program for CSOs is gradually filling this gap;
- Although the Small Grants Program is an effective way to support CSOs, it can also be a source of conflict if not well managed. This is because CSOs often compete for cash, often blackmailing each other. Also, some of them seem not to understand that transparency in small grants management needs some stringent measures on the part of managers which at times might be looked upon as "unconventional";
- The decentralized approach put in place to make local populations more responsible for forest resources can be efficient if local élites do not prevent the people's participation in both forest management and forest revenue investment;
- Community representatives like members of parliament must use their influence to question the executive arm of government on natural resource management during sessions of the National Assembly as this would certainly improve governance practices;
- Local radio stations have been set up throughout the forest area, but did not really play the expected role in governance due to a shortage of efficient technical staff and the necessary funds. In order to allow them to play their role fully, these shortages should be addressed;
- Both the COVAREF and the community forest programme could improve forest governance if local populations were fully involved in these processes. It is necessary to facilitate the legalization of the COVAREF and to finalize the community forest manual by including those civil society observations which support communities' rights in this process.

Recommendations

The 1994 Forestry Law aims to enhance forest management in Cameroon but still has not been fully implemented to date, therefore non-practical segments of the law need to be reviewed. The fact that the right of indigenous or local populations to use land and forest resources is restricted could impact negatively on their willingness to control and contribute to sustainable forest management.

If reviewed, the Forestry Law should strongly consider other sectors such as mining which could impact forest cover and biodiversity.

It is important to implement systematic audits in the use of forestry taxes by decentralized structures (mayors).

It is also necessary to conduct Environmental Impact Assessments with recognized international standards for all projects that may have forest cover/ biodiversity impacts.

Conservation initiatives in Cameroon are supported mostly by contributions from the international community, and as such are constrained in their effectiveness by their short-term nature. To achieve stronger policy reforms in particular and establish conservation programmes in general, Cameroon needs to increase the efficiency of the self-financing mechanisms that the Forestry Revenue Securing Programme (PSRF) has already put in place.

Annex 1

16 sociétés forestières suspendues

Décision No. 0145/D/MINFOF/CAB
Du 20 mars 2008

Le ministre des Forêts et de la Faune décide :

Art. 1. Les sociétés qui ne se sont pas présentées pour justifier de la provenance de leurs bois à l'issue des saisies effectuées au Port de Douala en octobre 2007 sont, à titre conservatoire, suspendues de leurs activités à compter de la date de signature de la présente décision. Il s'agit de :

- BK BUSINESS
- CAMFOREST
- EGB
- LL
- SOCIETE NOUVELLE FORESTIERE (SNF)
- TLC
- TT
- ETS JA BOIS (EJB)
- FZ
- ROCKFIELD TRADING CAMEROUN (RTLC)
- STE FORESTIERE ET DES SERVICES DU CAMEROUN (SFSC)
- TCS
- ETS TF BOIS (TF BOIS)
- TRANSATLANTIQUE CAMEROUN (TRANSCAM)
- TRANSPORT REPRESENTATION COMMERCIALE (TRECOM)
- ETS WOOD SUPPLY AND SERVICES (WSS)

Art. 2. La suspension ne pourra être levée qu'après production des justificatifs valables de la provenance des produits saisis.

Art. 3. Le directeur des Forêts, le directeur de la promotion et la transformation des produits forestiers, le chef de brigade nationale de contrôle, le chef de la cellule juridique, les délégués provinciaux et le coordonnateur du programme de sécurisation des recettes forestières sont, chacun en ce qui le concerne, chargés de l'application de la présente décision.

Art. 4. La présente décision sera enregistrée et communiquée partout où besoin sera.

(é) Elvis NGOLLE NGOLLE

Cameroun Tribune : Mardi, 25 mars 2008

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Case Study 2

Evolution of Gabonese Regulations on Natural Resource Management

Constant Allogo

Introduction and background to forestry policies and legislation in Gabon

"The Long March" towards the rational management of natural resources of Central African countries remains intimately linked to the evolution of the legislative and regulatory framework in these countries. During the colonial period, the discovery of *Okoumé*, Gabon's most valuable wood, and the ease of cutting veneer from it, made it possible to exploit it to satisfy the needs of all the countries of the north. The development of veneer cutting led to the standardization of the process by defining the exploitable diameter of the tree's trunk, i.e., the precise diameter at which an *okoumé* tree can be exploited. The technology used at the time made the impact on nature insignificant. In a bid to perpetuate the logging potential of the forests of Gabon, *Okoumé* plantations were created. The concern for conservation was also extended to wildlife with the creation of rational exploitation and conservation areas for wild fauna.

In view of the enormous potential that the forest offers, African countries are increasingly adopting policies that address the economic and social development concerns of the population.

Thus, concerns about the sustainable management of natural resources are still strong today. There is an urgent need for a form of management that guarantees the sustainability of the resource and contributes to sustainable development, and improving the living conditions of the population.

Since the Yaoundé Declaration in 1999, countries of the Congo Basin have committed themselves to rational and sustainable management of their natural resources. This commitment aims at harmonizing all forestry laws with a view to joint management of the second largest forest complex in the world. In order to achieve this, they have to adopt several new laws that enhance the use and management of natural resources.

Gabon has reformed its legal framework by adopting two major laws based on the concept of sustainable management of natural resources. These are Law No. 16/2001 of 31 December 2001 on the forestry code of the Republic of Gabon and Law No. 003/2007 of 11 September 2007 on National Parks.

Since its launch in 1995, the Central African Regional Program for the Environment (CARPE), whose objective is "to identify and create conditions and practices necessary to reduce deforestation and biological diversity loss" has been committed to helping States formulate efficient national strategies that contribute to the conservation of resources and to building the organizational capacities of civil society actors in order to make them active partners for conservation. Members of the CARPE Country Team, and their partners, are sharing their expertise with the various administrations as they define national strategies for the rational and sustainable management of the natural resources that are the Congo Basin's transboundary wealth, and draft and develop relevant legal texts.

The new trends and limitations of the Forestry Code

The 2001 Forestry Code, that abrogates the provisions of Law No. 1/82 of 22 July 1982, has brought about innovation in several areas of which the most significant are: forest management, wild fauna management and the issue of community forests.

Unlike the old forestry law that was silent on the principles of sustainability in the use of forest resources, the 2001 Forestry Code emphasizes forest management with the aim of rational and sustainable exploitation.

In fact, in Article 18 of the Forestry Code, before any logging, the logging company is required first of all to develop the concession using a plan that has to be validated by the administration. This includes management of wild fauna.

In addition, the management plans of forest concessions, called Forest Management Units (FMUs), include, beyond the technical aspects, two new concerns: a socio-economic analysis and the designation of a conservation zone within the concession.

The socio-economic analysis will make it possible to take into consideration the interests of the local communities living close to the concession

(hunting grounds, farmlands …), and the conservation zone allows for participation in the management of fauna found in the concession.

Under the Code, three types of permits are henceforth recognized: forest concession under management (CFAD), for an area of 50,000–200,000 ha – mostly issued to large companies. The associated forest permit (PFA), reserved for nationals, for an area of 15,000–50,000 ha. Finally, the mutual agreement permit (PGG), also issued only to nationals for local processing, allows for logging up to 50 trees.

Whichever the size of the area, the logging company must carry out an inventory of all forest resources and evaluate them in order to determine zones meant for felling, with a logging plan, and those to be retained for conservation. These documents must be presented to the appropriate authorities to be checked. Further verification may be carried out by forestry officials on the ground.

The Forestry Code, supplemented by Decree No. 689/PR/MEFEPEPN of 24 August 2004 to define the technical standards for the sustainable development and management of registered productive State forests, remains ambivalent on the socio-economic analysis specified in Article 21 – the text does not provide any explanation of this term.

The implementation decree, mentioned above, stipulates the role of each actor in the process of logging FMUs and extends to technical provisions.

As regards non-timber forest products, “obtaining a permit does not confer the right to exploit forest products including timber” (Article 148). Their exploitation remains under the area of customary usufruct rights and is defined by Decree No. 692/PR/MEFEPEPN of 24 August 2004, laying down the conditions for exercising customary usufruct rights in the areas of forest, fauna, hunting and fishing. The economic aspects of these products are not covered by the law. Exploitation of rattan is beyond the scope of usufruct rights.

Hunting out of protected areas is controlled by the issuing of permits or licences. The Forestry Code provides for six types of permits: small-scale hunting permit, large-scale hunting permit, scientific permit, permit to capture live wild animals, licence for commercial capture of live wild animals, and photo safari licence. These various permits and licences subdivided into categories are granted both to nationals and foreigners (Article 173). However, they do not override the customary usufruct rights of village communities to hunt for their subsistence.

In spite of these provisions, illegal hunting occurs in Gabon (Article 14 and 163) and is on the increase. Increasingly sophisticated networks of poachers are developing both inside and outside the conservation zone.

For provisions on the exploitation of wild fauna to be complete, they have to be accompanied by implementation decrees that will help organize and control the bushmeat sector, and make official the practice of hunting and marketing of hunting products. The increased presence of forestry officials, more staff training, and game wardens patrolling the conservation zone may help deal with illegal hunting.

In order for the major principles contained in the forestry code to become operational, they therefore require the enactment of specific decrees to implement them.

Initiatives supported by partners, aimed at effective management of wild fauna, will only be sustainable if the appropriate decisions are taken at the appropriate time, if comprehensive training of conservation officials takes place and if local communities are made more aware of all aspects of the law.

Community forests are another important innovation of the Forestry Code

Unlike previous forestry regulations, the Forestry Code recognizes the rights of the local population to exploit their forests. Seven articles describe how to create and manage a community forest. Such a forest, usually situated in a rural area, is the property of a village, a group of villages or a canton. The procedure for its attribution has been simplified for the decision is taken at the level of the provincial inspectorate of forestry.

According to the Code, the Head of the provincial inspectorate of forestry is the competent authority to whom members of a village community should address themselves when they wish to designate a community forest for exploitation. He/she will give an opinion on the matter while forwarding the file to the Minister in charge of forestry for a decision. The provincial services are also charged with assisting communities in developing the management plan for the community forest.

The provisions of the forestry code, relating to community forests, are supplemented by a regulatory instrument that is intended to guarantee transparency in the attribution and management of community forests for exploitation purposes.

In the long term, it would be beneficial for local communities to organize themselves into associations or cooperatives for more cohesive action. In order for them to be real community forest managers, they need to have mastered the texts that govern the exploitation of community forests.

It is not uncommon for tensions to mount in villages where community forests are exploited on a rental basis.

They generally arise as a result of the management of revenues paid to local communities.

Those who "know the system" (i.e., those who are or have been involved in local government) may commit their whole community and be the first to benefit from the effects of these commitments.

At the level of provincial inspectorates, apart from the provincial inspector, most of the officials have been recruited locally and do not necessarily have the requisite expertise to carry out the tasks entrusted to them.

In spite of the law's imprecision on socio-economic analysis, Article 251 of the Code provides for the establishment of a financial contribution fed mostly by forest concessions whose objective is to fund development actions initiated by local communities. This provision will effectively allow the population to deal with their general needs (electrification of rural areas, building primary health care centres and schools …).

The law on national parks

National parks, formerly governed by an ordinance, are today regulated by Law No. 03/2007 of 27 August 2007. This law specifies the provisions contained in the Forestry Code and the Environment Code.

Historically, Gabon already had national parks before it became independent. In 1946, the Okanda National Park was created and in 1956 the Loango National Park was created. After independence, the Wonga Wongue National Park was created in 1967. These parks only exist in the letter of the law, because no structure has ever been designated to manage them.

In the end, they were transformed into wildlife reserves. The legislation provided for two types of reserves: those devoted to rational exploitation of fauna and those devoted to integral conservation. Unfortunately, the economic potential of these protected areas, other than their fauna, could make them liable to be exploited. Moreover, in these reserves, only the fauna was ever protected and not its habitat.

Before the 2001 Forestry Code, the provisions contained in the 1982 Forestry Law had already set the basis for the management of protected areas with the introduction of an important innovation: "the wildlife reserve is a perimeter wherein flora and fauna have absolute protection" (Article 38). This law also authorizes scientific activities, tourism activities and recognition of customary rights (Article 5).

When the creation of the network of 13 national parks was announced, the Government enacted Ordinance No. 2/2002 of 22 August 2002 to modify some of the provisions of the 2001 Forestry Code. This ordinance creates the National Council of National Parks, placed under the direct authority of the President of the Republic (Article 2). This council, an inter-ministerial body, is charged with managing national parks and the activities carried out therein (scientific and tourism activities). It is headed by a Permanent Secretary and the parks are under the responsibility of conservators (Article 3).

Pursuant to this ordinance, decrees to create each of the 13 national parks were passed. These decrees give the geographical situation of the parks, specifying their surface areas and boundaries.

Law No. 03/2007 of 11 September 2007 on national parks starts by defining what a national park is and outlines the activities that may be carried out in them. In Article 3, paragraph 8, the National Park is defined as a "protected area created in a portion of the territory where terrestrial and marine ecosystems, geomorphological sites, historical sites and other forms of landscape have special protection with the aim of preserving biological diversity and the processes of regulating natural ecology by authorizing regulated ecotourism activities, scientific research and educational activities, while contributing to the economic and social development of local communities".

This new law does not impinge on the rights of the local population for whom the park is an opportunity to improve their living conditions, through income-generating activities.

In order to achieve sustainable development, the national park associates conservation of biological diversity with economic and social development of local communities. Its management plan, drawn up after consultation with all stakeholders, takes into consideration data related to the history, physical features of the area, biological diversity, etc. (Article 21).

Articles 4 and 7 state that local communities should play an important role in the management of the park and Article 18 recommends that community representatives are appointed onto the local consultative committees for the management of the parks.

Within the park, exploitation of natural resources is not allowed. This is only possible in the peripheral zones, subject to prior conduct of an environmental impact assessment (Article 17) that must be presented to the park management body, for review and approval.

Thus, the biodiversity of the park benefits from integral protection and the integrity of the park is guaranteed by law. This law makes it difficult

to degazette all or any part of the park. If all or part of the park is to be degazetted, then a new zone must be gazetted that has the equivalent ecological features and biodiversity (Article 8 and 12). This same degazettement provides for financial compensation to the national parks. This provision for degazettement is unlikely ever to be applied because of the very specific nature of the biological wealth of the zones designated as national parks. It would be almost unimaginable to contemplate the degazettement of all or part of the Monts de Cristal National Park, since the same ecological features such as the clouds and an abundance of orchids, which are so peculiar to this zone, could not be found elsewhere. Each national park has its special and unique features.

Articles 8 and 12 of the law on national parks attempt to resolve the conflict between the concern for conservation of the biodiversity of national parks and the economic needs of contributing to the country's development, through the exploitation of natural and mineral resources. However, this attempt is doomed to failure because of the multiplicity of decision-making centres and the absence of a national consultation framework for actors. Each ministry takes decisions without taking into consideration the regulations governing other administrations.

The "realistic" opening of Article 12 that provides for the degazettement of national parks in the case of discovery of petroleum or minerals is sufficient proof that the exploitation of minerals supersedes biological conservation. Brainstorming on an integrated and sustainable management model for conservation zones that mainstream the exploitation of mineral needs to be carried out. The experience of the Gamba protected area complex can be applied in protected areas currently under exploitation with, as prerequisite, the carrying out of a social and environmental impact assessment.

Administrative organization of national parks

In addition to the major principles related to natural resource management, this law stipulates the three types of organizational bodies charged with the management of National Parks, namely: political, technical and scientific.

Article 24 institutes the High Council of Protected Areas, whose role is to assist the President of the Republic. This body is placed under the authority of the Prime Minister and brings together all technical ministries and local elected officials. It defines the national policy on national parks and conditions for its implementation.

A specific text has to be passed to describe the powers, organization and functioning of this council. It is also the appropriate body to resolve the conflicts between conservation and exploitation of natural resources. Its members, all administrators, have to discuss and assess projects that may impact social development and exploitation of resources.

The National Agency, an administrative, technical and financial body, with corporate status and financial and administrative autonomy (Article 27), is the body in charge of national parks and charged with the execution of national policy on the protection of natural resources and valorization of the natural and cultural heritage of national parks.

The agency is made up of the management committee, a deliberative body, the Executive Secretariat, the management body and an accounting agency (Article 31).

The chairman of the management committee is chosen from amongst senior civil servants, and is appointed by decree taken during the Council of Ministers.

Due to its role in the management of national parks, the designation of the Executive Secretary of the agency follows a special procedure. He/she is appointed during the council from amongst candidates previously selected by the management committee, after a public call for candidatures (Article 33). This provision ensures that the output of the Executive Secretariat, chosen based on competence and moral qualities, is likely to be good.

The accounting agent, appointed on the proposal of the Minister of Finance, guarantees the financial autonomy of the agency.

An implementation decree, Decree No. 19/PR/MEFEPPN of 9 January 2008, stipulates the real powers of these bodies.

Finally, the scientific committees of national parks, made up of well known scientific personalities, provide opinions on issues related to biodiversity conservation in national parks. Their members are chosen by the management committee, on the proposal of the Executive Secretariat, with a mandate of three years (renewable).

Contributions of CARPE and its partners

The multi-faceted participation of CARPE in the process of improving environmental governance in Gabon is enabled through a constructive partnership with the administrations in charge of natural resource management. This partnership extends to international NGOs and is engaged in initiatives such as the management of wild fauna, combating poaching in forest concessions, and banning the transportation of bushmeat by train.

Also, for more than 15 years, CARPE has been funding the activities of environmental NGOs, to the tune of US$ 30,000 per NGO per year. This support aims at involving civil society in the process of managing natural resources and making its participation relevant. The IUCN Small Grants Program has made it possible to fund a wide range of sectors: environmental education, research, training, production of documents, etc.

Lessons learned

Decisions that do not take into consideration the interests of local communities are bound to fail

The rational and sustainable management of natural resources is a complex process that requires the acceptance of a great number of actors in order to attain set objectives. The administration has to open up to local communities and to NGOs that work in the area of conservation in order to define together the main guiding principles organizing the exploitation of resources and integrating the interests of all stakeholders. Involving civil society organizations and local communities in decision making makes the implementation of those decisions much easier.

Decisions that do not take into consideration economic realities are difficult to uphold

The concern for development and improving the living conditions of the population compels African countries to exploit, at all costs, their mineral wealth. The opening in the definition of conservation zones is multidirectional. In as much as it takes into consideration the interests of civil society, it also has to take into consideration the concerns of other ministries. Collaboration between administrations will lead to a consensual definition of conservation zones, in full respect of the geographical situation of mines. Gabon has to combine mineral exploitation and conservation in several of its national parks.

Information campaigns have to accompany the adoption of laws

For better appropriation of the terms contained in a law on management/use of natural resources by local communities and other stakeholders, information and awareness campaigns must be organized for the populations. This will facilitate a better understanding of legal provisions and real implementation of those provisions on the ground. A law that is not well understood will not have any impact on the ground and repressive sanctions will not help – people will continue to do as they have always done.

Apart from information campaigns, within the framework of laws, the implementation decrees also have to be enacted. Experience has often shown that following the promulgation of a law, the enabling instruments are not systematically enacted. This makes implementation difficult.

Unsustainability of their funding makes NGOs vulnerable

The involvement of civil society in the process of rational and sustainable management of natural resources remains precarious, because of a shortage of funds and the way the projects of national NGOs are funded. There are not yet any mechanisms for the sustainable funding of NGO activities. CARPE remains a shining example in Gabon. It is the only programme that has provided support to civil society since its creation, in a permanent manner. These funds, though limited, enable NGOs to execute field projects and to build their organizational capacities. If another mechanism could also be put in place, with substantial funds, the involvement of civil society would be greater. The relevance of the interventions of NGOs and the performance of their projects are inextricably linked to the sustainability and level of funding obtained.

Partnerships with the administration

The quality of collaboration with public authorities depends on the behaviour of the individuals concerned. Changes effected in some administrations, as a result of professional mobility, can have a great influence on the quality of relations between these administrations and partners. The previous encumbent may have been open and receptive, but there is no guarantee that the person replacing him/her will be of the same character and, under the new regime, partners may find themselves excluded from consultation frameworks within which discussions on improving policies and on the formulation of strategies for concerted management of natural resources are held.

Also, public officials are becoming less able to participate in the meetings of partners, due to their ever-increasing administrative burden. They may also show little interest in some of the activities of their partners.

A long process to enact laws and implementation decrees

For a law to be promulgated and published, it must follow a painfully lengthy process with potential obstacles at every stage. This “long march” starts with its drafting by the initiating administration. In a participatory process, drafts are discussed and enriched by all stakeholders. At the end of the exercise, the bill is examined by both houses of parliament (National Assembly and Senate) that may propose amendments or vote it through without any amendments. The draft text is then re-introduced into the channel for signature by legal councillors and the ministries concerned, the Prime Minister’s office and the Presidency. Thus, a text may easily spend a year in the pipeline before being signed off by the President of the Republic for

publication. It is a process that requires patience and endurance. Once the draft law is adopted, the next step is to enact implementation decrees – a process that follows the same course.

The law on national parks is a good illustration of this process. The enactment of implementation decrees of this law has not yet occurred. Several provisions still cannot be implemented today, in spite of the existence of the law.

Primacy of politics and economics over conservation exigencies

The Government of Gabon has responded swiftly to the positions taken by NGOs concerning issues related to the exploitation of natural resources. There has been some controversy about the exploitation of the iron deposits at Belinga, situated in the Ogoue Ivindo Province. For its exploitation, NGOs require that the legislative framework be respected (environment code) that requires an environmental and social impact assessment as a prerequisite. Since the company retained to exploit this deposit has not carried out any impact assessment, NGOs are opposing the operation. This is in keeping with regulations on the subject. The iron deposit of Belinga is situated at the crossroad of three national parks: Minkébé, Mwagna and Ivindo. Its exploitation, without security measures and any guarantee to respect the environment, may seriously affect these parks.

The mining of the Belinga iron is to be accompanied by the construction, over the Ivindo River, at the level of the Kongou falls, a hydro-electric dam. This huge investment will cause the Kongou falls, situated at the heart of the Ivondo National Park, to disappear, and has created an access road that is useful to poachers.

After clearly manifesting their opposition to these two projects by demanding that certain prerequisites be respected – such as an environmental impact assessment, and the choice of an alternative site for the hydro-electric dam – the NGOs were initially suspended by the Government which accused them of being manipulated by foreign organizations. However, subsequently the NGOs were summoned to a meeting by the President of Republic for a direct exchange of views. As a result of this, the President decided that the NGOs should take part in all discussions related to the exploitation of the Belinga iron deposits.

Conclusion and recommendations

The march towards an adequate legal framework for rational and sustainable management of natural resources has started and is irreversible. This process makes local communities active participants and aims at improving their social conditions.

Civil society, hardly mentioned in the regulatory instruments, should develop its activities around the interests of local communities and build their capacities so as to intervene in a relevant manner.

The tendency for some administrations to cause all stakeholders to take part in the formulation of some legal instruments on the management of natural resources is appreciated and has to be maintained and encouraged in other sectors of activity. All stakeholders defining the content of legal instruments that orientate and organize the management of natural resources is a very good way of appropriating the process by all and a guarantee for conservation projects to succeed.

For greater harmony and national cohesion, this approach has to be extended to other ministries involved in the management of natural resources: Planning, Mines and Land Management.

The management of forests requires a legal framework that commits States to jointly protect their common heritage. '

Case Study 3

Lessons Learned on the Promotion of Policy and Governance in the Conservation of Natural Resources in the Republic of Congo

Marcellin Agnagna

Background

The Republic of Congo (ROC) has a surface area of 325,000 km^2 with 60 percent forest cover, distributed in two major blocks: the Mayombe and Chaillu massifs and the great forest block of Northern Congo. Congolese forests that are an integral part of the Congo Basin are home to the greatest biological diversity in Africa. They contain many species of wild fauna of which some are rare and spectacular like the Gorilla, the Chimpanzee, the Mandrill, the Leopard, the Elephant, the Buffalo, the Bongo, the Grey parrot, the Abyssinian ground hornbill, the Aardvark, the African manatee, etc.; there are also high-value plant species such as okoumé, sipo, sapele, oroko, longui, ebony, etc. Because of their exceptional importance at a global level, the forests of the Congo Basin in general and those of the Republic of Congo in particular require great conservation efforts. The conservation of these forests is not only essential for the wild fauna and flora but also for the millions of people for whom they are the only source of satisfying the most basic of needs – the need for food, medicinal plants, shelter, fuelwood and other products.
The forests play a leading role in maintaining the world's ecological balance and hence are indispensable for the wellbeing of humanity as a whole, directly and indirectly through various ecological functions that they fulfil. Their continued existence has to be guaranteed by sustainable and equitable management.

However, the Congolese forests are facing ever-increasing human pressures due to exploitation of resources, with a consequent significant loss of biodiversity. The main causes of this degradation are deforestation caused by forest exploitation and shifting cultivation (bushfires), subsistence hunting and poaching (commercial hunting). The practice of subsistence hunting is a tradition that has always been perpetrated from generation to generation to satisfy the animal protein needs of the rural population; the noble traditional rules of management guarantee sustainability of this practice. This balance is today being disturbed with the adoption of new management mechanisms that do not take into consideration traditional know-how. This imbalance is found at various levels:

- Logging and mining companies have opened new roads thereby facilitating access to areas hitherto inaccessible and that had served as refuges and zones of repopulation for animals.
- The staff needs of these companies have led to a demographic explosion and an increase of human pressure on forest resources (poaching and marketing of bushmeat).
- The gradual exploitation of new concessions accentuates pressure on natural resources to the detriment of indigenous village communities that continue to live in a state of perpetual poverty.
- In Congo, the forest is subdivided into Forest Management Units or FMUs, in accordance with Law No. 16/2000 of 20 November 2000 on the forestry code. For reasons of economic interest, these FMUs are primarily designated for timber exploitation and rarely or almost never as protected areas. The total surface area of exploitable forests is about 22,471,271 ha (FAO, 2005) of which 16,167,109 ha, more than 70 percent, are open to logging and this figure is constantly on the increase.
- The country has 14 protected areas representing about 11 percent of the national territory, but only those receiving financial and technical assistance from abroad are operational. Those that do not have any foreign assistance are effectively abandoned and they are in a state of serious degradation resulting from poaching and wanton exploitation of resources; this is the case with the Léfini Faunal Reserve some 200 km from Brazzaville, the Domonika Biosphere Reserve, the Mont Fouari Wildlife Reserve, the Tsoulou Faunal Reserve, the Nyangs Sud Hunting Ground and the Mont Mavoumbou Hunting Ground. The Government lacks the political will to promote protected areas and only contributes a trivial amount to their protection and enhancement. Out of the 11 percent of the ROC's surface area covered by protected areas, only about half of this area receives partial protection thanks to support from foreign partners including the Central African Regional Program for the Environment (CARPE). Very few protected areas have been created after independence whereas forest concessions are constantly on the increase. Protected areas attract very little interest from policy makers in spite

of the important role that they play in the maintenance of both animal and plant species and the preservation of ecological balance. This lack of interest is mostly because, to date, no protected area has been put to good use (e.g., through the promotion of ecotourism) in order to generate appreciable economic revenues. there are no management plans.

- Even if the deforestation rate resulting from logging only averages 0.5 percent per year, the rate of biodiversity loss is reaching alarming proportions. The exploitation of logs affects the composition of forests and modifies the quantitative and qualitative availability of habitat for the animal species that depend on the forest.

The national legal arsenal supporting the sustainable management of biodiversity and the environment is made up essentially of three basic laws: Law No. 16/2000 on the forestry code, Law No. 48/81 of 21 April 1981 on the conservation and management of wild fauna and Law No. 003 of 23 April 1991 on environmental protection, together with their subsequent ancillary texts. The Republic of Congo has also signed up to several international and regional conventions such as the Convention on International Trade in Endangered Species of Wild Flora and Fauna, the UN Framework Convention on Climate Change, the UN Convention to Combat Desertification, the Convention on Biological Diversity and sub-regional conventions such as the COMIFAC (*Commission des Forêts de l'Afrique Centrale* or Central African Forest Commission) etc. There are some problems concerning implementation of the law because of the very weak capacity of the public services responsible for its implementation; the transitory nature of some texts or some provisions; poor knowledge of the law on the part of the majority of the public (due to lack of awareness and little popularization of legal texts). At an institutional level, the Ministry of Forest Economy is both player and referee for it is in charge of forest exploitation and of the management of biodiversity and protected areas. This situation does not favour the promotion of protected areas, especially as the Ministry's priorities seem to be geared towards accelerated exploitation of the forest (for timber) without any guarantee of the conservation of other resources such as wild fauna and non-timber forest products. The lack of capacity within the public services to monitor and control logging activities encourages fraud and causes inestimable losses in kind and in cash. It is estimated that about 40 percent of the timber exported from Congo is illicit. The forestry sector, though a revenue generator, only contributes a trivial amount to the economic development of the country and to the wellbeing of communities that continue to live in perpetual poverty. The redistribution of revenue derived from logging amongst local communities is a real problem.

This legal and social shortfall in terms of biodiversity management at a national level is gradually being overcome with the country's adherence to regional and sub-regional initiatives such as COMIFAC, the CBFP (Congo Basin Forest Partnership), RAPAC (*Réseau des Aires Protégées d'Afrique Centrale* or Network of Central African Protected Areas), CARPE, etc. Voluntary partnership initiatives with the private sector over issues such as timber certification, and on the legality of marketed timber (Forest Law Enforcement, Governance and Trade (FLEGT)) are tools that exist to help correct the persistent shortcomings of the forest sector in Congo. These initiatives and partnerships create consultation frameworks and can also lead to the revision and harmonization of policies and laws. On-going management plans in some forest concessions may contribute to improving forest management in Congo.
The question asked is: What needs to be done for logging to be sustainable and economically profitable in Congo? The answer to this question will undoubtedly come from partners such as CARPE.

CARPE strategy for the promotion of policy and governance for the conservation of natural resources

CARPE has been active in the Republic of Congo since 1995 by providing substantial support to the management of protected areas and their peripheries through a key partner – American NGO, the Wildlife Conservation Society (WCS) – that has given large amounts of money to develop activities for conservation and the sustainable management of natural resources in three protected areas, two peripheral zones, and a protected area under creation. These are the Nouabalé-Ndoki National Park, the Lac Télé Community Reserve, the Conkouati-Douli National Park, the peripheral zone of the Nouabalé-Ndoki National Park (Kabo, Pokola and Loudoungou FMUs), the south-east peripheral zone of the Odzala-Kokoua National Park (Ngombe FMU) and the national park under creation in the Batéké Plateau. WCS is the main partner of the Government of Congo on issues of nature conservation and protected area management.

A CARPE Congo Country Office has been operational since May 2006, and is run by a Focal Point. It serves as a base for carrying out the strategic objectives of the programme that include, *inter alia*, the reduction of the rate of deforestation and slowing down the rate of biodiversity loss through good governance of natural resources and institutional capacity building; and also for monitoring the activities of its partners. CARPE is more and more well known within the local administrations,

scientific and public institutions as well as amongst civil society, thanks to its efforts to promote and disseminate information about its activities.

A local consultation and discussion forum bringing together the main actors involved in environmental and nature conservation issues has been set up. This forum is called the Country Team. The role played by the Country Office and Country Team is key – it consists of influencing national policies and governance on the management of natural resources in order to achieve the objectives of the programme. To this end, activities are undertaken at various levels, and with various groups.

Local administrations in charge of environmental and biodiversity management issues

In the Republic of Congo, two ministries are directly concerned with environmental and biodiversity management issues. They are the Ministry of Forest Economy on the one hand and the Ministry of the Environment and Tourism on the other hand. The CARPE Focal Point works closely with the two ministries by putting at their disposal its expertise in the treatment of issues related to environmental and biodiversity management problems and by actively taking part in technical meetings and other activities of common interest organized by these ministries. Working sessions are regularly organized between the Focal Point and the technical departments on issues of concern. The Focal Point has encouraged the nomination of CARPE correspondents within each administration to maintain the momentum for collaboration and information sharing. Also, these administrations are represented in the Steering Committee for the selection of micro projects (Small Grants) and in the CARPE Country Team. The Focal Point, who has a not insignificant audience, regularly addresses technical papers on issues of concern (and sometimes of a sensitive nature) to the Ministers in charge of the environment, forestry and biodiversity, which have often had a positive effect.

Partners

The Country Office and the Country Team play a role in monitoring and guiding partners that receive funds from CARPE for carrying out activities on the ground. In Congo, the key privileged partner is the American NGO, WCS, that has signed memoranda of understanding with the Government of Congo to manage biodiversity in a number of protected areas and their peripheries. At this level, the Focal Point (FP) plays the role of facilitator between WCS and local administrations as well as other institutions working in the same field and helps disseminate scientific information gathered in the field to other conservationists, so that they can take advantage of it in their conservation activities. With local NGOs and other institutions, the FP has instituted various fora for discussion and consultation on the management of biodiversity such as the network of local environmental NGOs, the CARPE Country Team. The FP takes part in guiding local NGOs and strengthening their operational capacities for them to be able to play their role of counterweight to the Government and actively take part in the management of natural resources. It is the same for village communities especially those that live in and around protected areas and in forest concessions. At the level of protected areas, the CARPE Focal Point supports actions aimed at organizing grass-roots communities, raising their awareness on environmental preservation and community development initiatives. In collaboration with the management units of two large forest concessions in northern Congo, notably in Ngombe (IFO Danzer) and Pokola (CIB: *Congolaise Industrielle du Bois*), the FP has initiated activities aimed at organizing and preparing local communities so that they are able to benefit from revenues derived from logging and assisting them to carry out community projects. At the level of these two concessions, a village fund was created provisioned by part of the surface area tax that the company pays directly to the account of communities. There also, the CARPE Focal Point has supported a local NGO in drawing up a proposal to be submitted for funding to the IUCN Small Grants Program. It has to do with preparing village communities of the Ngombe forest concession to take up their rights and manage the revenue derived from logging in a sustainable manner, especially the village fund. The purpose is to strengthen these communities so that they fully participate in the management of the resource.

The Country Team is also a strategic instrument. By its very composition (actors and partners influential in conservation), it indirectly influences national policy and government decisions on the management of natural resources. Members of the Country Team, in their professional capacity, are directly involved in decision-making bodies in environmental and natural resource management.

There is permanent contact with local nature conservation NGOs and associations through the network established by the Congo CARPE Office. Capacity building for local NGOs is a key issue given the role they should play in influencing government decisions and policies. The results are very encouraging: two local NGOs – *Conservation de la Faune Congolaise* and *Association pour la Protection des Ecosystèmes Tropicaux et Développement de la Sangha* – are influential members of the independent body that oversees the Kabo, Pokola and Loundoungou FMUs (CIB) and actively participate in the processes of certification and of establishing the legality of marketed timber. These two

A SUCCESS STORY: ACTIONS UNDERTAKEN BY THE CARPE CONGO FOCAL POINT TO INFLUENCE THE SUSPENSION OF THE MINISTERIAL ORDER NO. 7053/MEF/CAB AUTHORIZING THE KILLING OF ELEPHANTS IN THE SURROUNDINGS OF THE ODZALA-KOKOUA NATIONAL PARK (MIÉLÉKOUKA ZONE) AND NOUABALÉ-NDOKI NATIONAL PARK (BOMASSA AND KABO ZONES)

Background: Over the past five years, human-elephant conflicts have increased in Congo, especially in the vicinity of, or within, protected areas where elephants enjoy protection. The sites affected by this problem are the Odzala-Kokoua National Park and periphery, the Nouabalé-Ndoki National Park and periphery, and the Conkouati-Douli National Park and periphery. These three sites are the best protected from poaching in the country. The first is managed by EU-funded regional environmental programme ECOFAC with support from WWF and WCS; the other two sites are managed by WCS with funds from CARPE-USAID, the US Fish and Wildlife Service, and other donors. Conservation efforts made in these areas have been successful, leading to an increase in the animal population. Large mammals in particular are increasingly abundant in the periphery and in areas of human occupation. As regards the elephant population, field data do not show an increase in the population except for migration to areas of human activity including the vicinities of villages and farmlands. This trend is observed at all three sites. Why elephants prefer the edges of villages to the depths of the forest is unknown. Some people, such as Forestry Administration staff, claim that the population has increased but there has been no inventory to confirm this. On the other hand, data analysis from game warden patrols has led to the following hypothesis: that pressure from poaching carried out deep in the forest pushes elephants to seek refuge around and sometimes in villages where they have more security because of the regular presence of game warden patrols. Poachers do not dare kill elephants in areas that are close to human settlement for fear of attracting attention.

The presence of elephants in villages is certainly spectacular and attractive to visitors (tourists) who come. In Bomassa, for example, tourists have a 100 percent chance of seeing an elephant in the WCS base camp and in the village, and a less than 60 percent chance of seeing one in Mbeli bay for example. But this coexistence has advantages and disadvantages. In Bomassa, for example, people stopped planting cassava (a staple food) over five years ago because of the destruction of their farms by elephants. The WCS Nouabalé-Ndoki project has since then subsidized cassava for the entire population of Bomassa, something that is not sustainable. On the other two sites, crops are regularly destroyed by elephants, and the local people are demanding compensation. The farmers' anger is fierce, and can lead to attacks on conservationists and representatives of the administration in charge of wildlife and protected areas, to whom claims are addressed. In Miélékouka, for example, farmers locked up the conservator in exchange for compensation by the Forestry Administration for farms destroyed. However, it is necessary to ask if it was not a hoax by poachers to leave them free to rescue the ivory tusks from their hidden booty. The Miélékouka area is one of the hottest elephant poaching spots. About ten years ago, a mass grave was discovered with more than one hundred elephants, massacred almost at the same time in the Moadjé clearing. This massacre will be engraved in the annals of wildlife conservation in the Congo.

It should be noted that there has been no attempt on human life (no cases of human death).

Although conservation partners and managers operating on these sites initially downplayed the scale of the situation, they have recently begun to think and try to find solutions to this problem. In Bomassa, WCS launched an experimental pepper barrier to protect crops, which unfortunately has proven not to work. At other sites such as Conkouati, they thought of putting up electric fences to protect crops. The fences have been ordered and supplied; the farmers just need to install them and then wait for the results.

While partners were brainstorming and looking for solutions, the technical services of the forestry administration opted for killing the elephants without any reference or assessment and without consulting other stakeholders and partners. They submitted, without valid arguments, a draft order for signature by the Minister of Forest Economy. Despite the lack of arguments, the Order was signed by the Minister with immediate effect.

Faced with this momentous decision, which could trigger the killing of elephants on other sites already threatened by poaching, the Focal Point upon analysis of the situation began to take steps to engage with the Minister of Forest Economy in order to avoid disaster. He wrote to the Minister of Forest Economy seeking suspension of the Order and consultation with other stakeholders. The Minister responded by convening an urgent meeting with partners. The meeting took place in a tense atmosphere, but the outcome was favourable – the Order in question was simply suspended.

For the record, this is how the Congo CARPE Focal Point was able to save elephants and at the same time influence the position of the Forestry Administration, which now always asks for the opinion of the Focal Point and partners in such circumstances.

The elephant in question in Bomassa (WCS Nouabalé-Ndoki).

NGOs have received CARPE training and were recipients of the Small Grants Program in 2006. They promote CARPE's vision in any discussions in which they have the opportunity to take part. Local NGOs have begun to assert themselves and have in some cases become indispensable to the private sector. Their advice is sought in the development of management plans for forest concessions, something that was rare and almost taboo a few years ago.

Parliamentarians

The CARPE Focal Point and the Country Team interact very closely with the Parliamentary Commission in charge of environmental issues with which working sessions are held fairly regularly to raise topical issues and examine the status of files related to the management of natural resources and the environment that have been submitted to the Assembly. They have worked to revive the process of promulgating the new law on wildlife, which has just been put back on the agenda of the next session of parliament for transfer to the General Secretariat of Government, the final step.

Local media

The Congo CARPE Office has contributed to the establishment of a communications network specializing in environmental issues. This network receives the regular support and supervision of the CARPE Office in Congo, which has already organized two capacity-building workshops for its benefit. The press is widely used to disseminate environmental information; it has a significant impact on the public and the government. The CARPE Office in Congo contributes, and supports the publication of, articles on environmental issues and nature conservation in the local press. The same channel is used to some extent to attract the attention of the public and policy makers to issues of concern in the management of forest resources. Articles on forest management issues, such as sharing revenue from logging, deforestation and habitat degradation and the impacts of logging on the survival of indigenous communities, etc. have thus become quite common in the local press. The Focal Point is involved with the NGO INCEF (International Conservation and Education Fund) in the production and distribution of documentary films to raise public awareness on issues related to the environment and nature conservation and on advocacy of indigenous peoples. The same is true for awareness on legislation and national policy on conservation and natural resource management. The documentaries produced by INCEF are distributed across the country by partners involved in conservation and serve as tools for public awareness. A weekly programme called "espace environnement" involving the Country Office of CARPE Congo is broadcast once a week on national television. National and local radio are also used to disseminate environmental information. This is especially because the people in the hinterlands listen to the radio more than anything else.

The creation of the network of environmental communicators and the workshops organized for them have had a significant impact in the local press in relation to the increase of articles and column inches on environmental issues. Through this network, CARPE is becoming better known to the Congolese public.

The public awareness campaign on climate change launched by the ROC CARPE Focal Point has had a considerable impact. Public meetings held in halls and the screening of the film "La vérité qui derange" has impressed more than a thousand people of all social levels on this important issue. This has had a ripple effect on other institutions such as UNDP and *Médecins d'Afrique* who have requested that the CARPE Country Office assist them in the screening of the film. The Focal Point has received many requests for copies of the film which is not available locally.

Some lessons learned

Lessons learned are summarized as follows:

- The country offices of CARPE generally not only contribute to the promotion of the programme in the host country, they play an important role in national policies on environmental management. They become to some extent indispensable.
- Close collaboration with local administrations, political bodies such as Parliament, civil society, the media, research institutions, international agencies and other stakeholders is crucial in resolving environmental issues.
- Consultation and dialogue among actors remain an essential element of a harmonized approach to the resolution of conflicts and differing views on environmental issues and sustainable management of natural resources.
- Man is central to all issues; the success of actions undertaken is reflected first of all in the interests of communities being satisfied.
- Good conservation and sustainable management of natural resources is not possible without taking into consideration the interests of local communities.
- Awareness and information dissemination as well as sharing of experiences are essential in changing habits and attitudes to environmental issues.
- Multi-faceted support and assistance of partners (donors and other funding bodies) remain the main and essential sources of support to conservation efforts and sustainable management of natural resources. The countries of the sub-region in general and Congo in particular can not do without these.

Case Study 4

Lessons Learned on Policy and Governance in the Democratic Republic of Congo

Serge Osodu Omba

Background

The Democratic Republic of Congo (DRC) covers an estimated surface area of 2,345,000 km^2 of which more than 60 percent is covered by forest which contains a very high level of animal and plant biodiversity. Indeed, it ranks as the fifth richest country in the world in terms of biodiversity. The country is endowed with several natural resources that unfortunately, because of problems of governance and the recent armed conflicts that have plagued the country, are not benefiting the majority of its people who live in abject poverty. The DRC is among the poorest countries in the world and the majority of its population lives below the poverty line, on less than a dollar a day.

The government's Strategic Growth and Poverty Reduction Document (*Document Stratégique pour le Croissance et la Réduction de Pauvreté* or DSCRP) has identified improving governance as a priority. The DRC is a post-conflict country, which is emerging from several decades of mismanagement of public resources, including natural resources, followed by a decade of instability characterized by conflicts that have been disastrous for the population. The cumulative effects of this negligence and these wars have had a disastrous impact on the capacity of the country's public institutions, the living conditions of its local populations and the wealth of its biodiversity. Social and economic infrastructures have deteriorated, and the systems of forest management, of access to benefits, of control and follow-up have been disrupted or are non-existent. Post-war DRC is today looking towards reconstruction. The forests which used to be protected from industrial logging, as well as the country's other natural resources, are now the focus for exploitation. The government of the DRC is strongly committed to exploiting the forest and natural potential of the country in order to successfully carry out its five-pronged programme of reconstruction, and improve the living conditions of its people. This all the more so, as the DSCRP identified natural resources, especially forests, as a crucial sector in the drive towards growth.

Alongside this keen interest, the country is undergoing institutional reconstruction with the putting in place of democratic institutions, which has entailed a formidable process of acquiring the appropriate tools of modern governance. Several fundamental texts for the management of various sectors have been drawn up or are being revised, including the Constitution of the Republic, the new mining code, the new investment code, the law on the management of portfolio companies, the appointment of new agents/representatives, the draft agriculture code, the law on decentralization, etc.

In the forest and nature conservation sector, with the support of its conservation and development partners, the government has drafted a new Forestry Code since 2002. This new code enshrines the principles underlying a modern vision of its forestry policy. The government has also initiated a priority reform programme geared towards transparency, law enforcement and increased participation of the

public. This reform programme has led *inter alia* to the withdrawal of 25 million hectares of forest concessions from the forest tax system in a bid to re-orient the tax regime towards taxes that are easier to recover and control, and that have a positive incentive effect. Other elements of the reform programme include periodic publication of the list of forest contracts and their fiscal status, in order to keep the general public informed on the management of the country's natural resources; setting up a Technical Working Group (*Groupe Technique de Travail* – GTT) to undertake a legal review of old forest titles with the participation of an independent international observer, the private sector, civil society and local and indigenous communities; recruiting a third-party observer to support forest control; and drafting the text of the main implementing instruments of the Forestry Code, with the support of the FAO. The European Union will continue the process of finalizing the texts of the 11 priorities that have been identified to accompany the post conversion. In terms of biodiversity protection, the government is in the process of reforming Law No. 069 on Nature Conservation. In accordance with the Convention on Biological Diversity, a priority action plan with 11 priority actions has been validated. Alongside these efforts, in a bid to be consistent with the logic of the new Forestry Code, a national forestry and conservation policy (*politique nationale forêt et conservation* – PNFOCO) is being formulated, using a consultative and participatory approach at a national level.

In spite of all these efforts, the path towards better governance remains a long one given the challenges that need to be overcome – lack of transparency; the lack of capacity within the forest administration to monitor and control; under-valued and aging staff; and the problem of illegal logging. There is a need for more environmental information and monitoring; a more efficient tax collection system; and more effective implementation of the benefit-sharing mechanisms laid down by the Forestry Code (from the central to the regional and district administrations, and all the way down to the local communities living around the forest concessions). Conflicts are arising between communities and loggers as a result of land being allocated without a land-use plan (LUP) leading to encroachment onto local communities' lands. The issue of indigenous peoples' rights also needs to be dealt with, and general capacity building is required so that all stakeholders, especially within civil society, are better able to play an effective role in natural resource management. Legal instruments need to be finalized and implemented, including those that will enable the enactment of the Forestry Code. Poverty in forest sites must be addressed, and cooperation between government sectors and between instititutions must be fostered in the course of developing the necessary programmes and policies. It is against this background that the Country Team of the Central African Regional Program for the Environment (CARPE) has made its contribution to the promotion of national laws and policies aimed at the sustainable management of natural resources, and to attaining the strategic objectives of CARPE.

Methodology

The Country Team as a tool for CARPE to take action on governance and policy

The inaugural meeting of Phase IIB of CARPE, held in Yaoundé in February 2007, enabled some members of the CARPE Country Team in each country to identify and plan priorities in terms of governance agendas in the form of laws and specific national policies to be addressed. These priorities included: contributing to the finalization of the implementing instruments of the Forestry Code; monitoring the decentralization process; finalizing the law on nature conservation; promoting the creation of reserves and community management; developing an environmental framework law; establishing a land-use planning process; developing a new hunting law; popularizing the Forestry Code, and contributing to the process of legal review of forest titles, to mention just a few. In addition, a strategic recommendation aimed at broadening it was formulated. The DRC Country Team is made up of the following: officials of the six protected landscapes funded by CARPE DRC, the CARPE Focal Point, the National Coordinator of the Central African Forest Commission (*Commission des Forêts de l'Afrique Centrale* – COMIFAC), a National Assembly representative, a Government representative (from the Ministry in charge of forestry), a representative of the Congolese Institute for Nature Conservation, and a civil society representative. Recently, in light of the challenges and realities thrown up during the implementation of the programme, the Country Team has decided for strategic reasons also to include representatives from the private sector, the Senate and two international organizations working in the landscapes, to collaborate on aspects such as community participation fora.

Contribution to the process of promoting laws

The Forestry Code and its implementing instruments

The Country Team has participated in the process of promoting new laws by contributing ideas, lobbying and also by providing financial support. The CARPE Country Team has actively contributed to the process of producing implementing instruments for the Forestry Code through its engagement with the validation committee put in place by an Order of the Minister

in charge of forestry. Points of view put forward by the Country Team were a reflection of the consensus obtained within the team during previous discussions. The validation committee was headed by the FAO within the framework of its project. This contribution facilitated the signing and publication of these legal instruments.

Furthermore, having identified as a priority the finalization of instruments on procedures for allocating community forests and for their management, the CARPE Country Team supported the validation of these instruments by ensuring the presence of their Focal Point at the relevant meeting. This made it possible for two draft instruments to be validated while waiting for them to be published.

Contribution to the implementation and popularization of the Forestry Code

The Forestry Code, besides its dissemination and popularization, remains both a need and an unprecedented challenge. Moreover, there is also the problem of differing interpretations. In the past, the Rural Development Service, together with some local and international organizations (including CARPE), has launched several initiatives to disseminate, translate and popularize this code. The CARPE Country Team supported (both technically and financially) the preparation of an annotated version of the Forestry Code by Congolese Government experts. This document, that has already been submitted to the Minister in charge of forestry for comment and final approval, will enable popularization of the Code and will allow all stakeholders access to the spirit of the Code. It will be a working tool on which all user rights can be based, but also a teaching support for popularizing activities identified within the PNFOCO framework. The Country Team intends to translate it into two national languages for wider distribution.

The process of converting forest titles in the DRC

The Forestry Code allows the conversion of old forest titles (letters of intent and guarantee of supply) into forest concession contracts. To this end, a two-phase process was instituted, the first of which was the setting up of a Technical Working Group and an independent observer respectively for identification work and data collection on titles submitted for conversion. The second component of the process concerns the work of the inter-ministerial commission in charge of the review within which there must be representatives of the local communities and indigenous peoples living around these titles. A total of US$ 250,000 was raised by the World Bank and managed by CARPE.

The contribution of the CARPE Country Team represented by the Focal Point, SNV (the Netherlands Development Organisation), and civil society was to guide and support members of the Coalition of NGO Networks in the implementation of the strategy to designate community representatives. The team supported the administrative and technical management of the project and carried out lobbying activities with partners on legislative aspects accompanying the process. The ministry and other partners were kept informed at all stages of the process.

Several radio and television programmes and newspaper articles were produced on the process. The CARPE Country Team also facilitated the designation of a permanent indigenous peoples' representative to take part in the inter-ministerial commission. The same team also lobbied the ministry over the signing and publication of two ministerial decrees on how to modify the composition of the inter-ministerial commission and on the appointment of commission members. The Country Team also assisted in the drafting of a ministerial decree on the terms and conditions of management of those titles that remained unconverted after the review, because the current Code does not cover this eventuality in the text of its implementing instruments.

As a result of these activities, civil society has been strengthened, and partners and the general public have been kept informed about the process. Altogether, the Team facilitated the designation of 195 community representatives including many from amongst the indigenous peoples, and local communities have learnt about the Forestry Code.

Institutional representation

The Country Team (Focal Point, SNV and civil society) has lobbied the ministry on several occasions for representation in a number of national governance processes. These include the PNFOCO Coordination Unit where a member of the Coalition of NGOs is represented; the forest advisory council instituted by the Forestry Code; the steering committee in charge of revising the law on nature conservation; and the validation committee for legal instruments (the African Wildlife Foundation and the Focal Point are members). The Country Team also contributes actively to various national fora and meetings on governance in terms of endorsing policies, operational guides, and national and sectoral action plans related to governance and forests.

Capacity building

National Assembly

Since 2006, the DRC has set up democratic institutions for its governance including a two-chamber parliament. This budding National Assembly, that will be playing a key role in the country's governance, approached CARPE for assistance with capacity building.

Conscious of the strategic importance of this institution, the Country Team organized a training and discussion session on the Forestry Code and its vision, as well as the environmental challenges ahead, for 20 Members of Parliament (MPs) from the environment commission. The success of this training is visible today with the active participation of MPs in environmental debates in the parliament.

Civil society

One outcome of Phase IIA of CARPE was the creation of a Coalition of Networks of environmental NGOs. This platform had neither legal status, nor a strategic vision, nor a programme of activities. The Country Team helped with the drawing up and legalization of the Statutes of the coalition, organized a training session on the formulation of the organization's logical framework and strategic planning, and supported them in carrying out their programme. All of these activities have helped them become more involved in advocacy aimed at policy change or reform, with the objective of further involving the indigenous and local peoples in the process of conversion of forest titles, or the annotated Forest Code.

Forest land-use planning process

The DRC has neither a national land-use plan, nor a forest LUP and has therefore been groping its way in the dark when it comes to allocating forest concessions. This has caused several conflicts on usage and occupation between various stakeholders. With the new Forestry Code, the DRC wants to have its own forest LUP. A national workshop was organized (with the help of IUCN) to capitalize on the experiences of several partners on the matter. CARPE partners as well as the Focal Point gave presentations and pleaded for CARPE experience of large-scale planning to be made use of. Discussions are still underway.

Diplomacy

In the course of implementing the programme, several strategic partnerships have been developed with public institutions and partners, as well as contacts in various ministries whose activities could be considered to interact directly with those of CARPE. These include the Ministry of the Interior and Decentralization, the Ministry of Planning, the Ministry of Agriculture, the Ministry of Mines, the Ministry of Public Works and Reconstruction, the Ministry of Rural Development, and the Ministry in charge of forests.

We have also been privileged to work in collaboration with the National Assembly through its commission and the Presidency of the Republic in the execution of our activities. Thanks to the work of the Country Team, CARPE's reputation and image are strong in the eyes of its partner institutions, and collaboration is fruitful. In the near future, the expansion of the Country Team will allow it to open up to the private sector, to the Senate and to the Prime Minister's Office.

Lessons learned

The Country Team as a platform for action

The Country Team has facilitated the creation of a coalition of various actors of different interests, of diverse horizons indispensable to governance around CARPE objectives and outputs. This platform has enabled the team to capitalize on the contributions from some very influential actors who have leverage in decision-making circles. Partners come together, discuss the context and the implementation of the programme, its strengths and weaknesses as well as avenues to be explored. All the appointed members were chosen for their potential to contribute and their added value. The Country Team is a driving force, a melting pot of ideas and a facilitator of discussions.

Achieving acceptance of CARPE and its objectives

During Phase IIA, the programme was neither well perceived nor understood by the Government. It was viewed with much suspicion, as something from the Americans, and what was being done in the landscape was shrouded in obscurity. But the Country Team has made it possible for there to be a rapprochement not only with the government (the Ministry of environment), but also with other government agencies and other institutions such as the Presidency and Parliament. Through their representation in the Country Team which facilitates information sharing, and especially as a result of seeing the actual activities undertaken, the reputation of the programme has been enhanced and CARPE is now well accepted. Relations with the government and especially the Ministry of Forestry have improved significantly. Members thus recruited undertake advocacy and lobbying for the programme and its objectives. Everybody has understood that the CARPE's mission is first and foremost to facilitate conservation and the development of the Congolese people.

The principle of member-driven

The Country Team facilitates a sense of ownership and capacity building amongst its members. The sense of ownership is nurtured by allowing participation in sessions to identify and plan the programme's strategic activities, and in core discussions on the programme. Capacity building occurs by the mere fact that participants are involved in the planning forum of USAID/CARPE. This principle allows for the validation of the planning matrix in relation to annual priorities and allows for judgment to be passed on the evolution of the project.

Communication amongst members should be developed

Communication is an important element within the Country Team especially as it only meets formally twice a year. Although a certain amount of information sharing already takes place, much effort is nonetheless required to improve communication both laterally and horizontally within the Country Team. It would be good for members to know what activities are taking place in each other's institutions and organizations, but the Team also needs to find ways of regularly keeping all members informed on progress made on the evolution of activities and also giving them vital information on monitoring governance and on identifying priorities within the context of the government's priority actions.

The need for preparatory technical meetings

The whole area of forest and natural resource governance is very dynamic. New facts and information are emerging all the time that require consultation, analysis and a jointly prepared response. This is the case with the texts under preparation on local community forests, for validation under the Forestry Code. A meeting bringing together strategic members of the Country Team was held and, after heated discussions, a common position was adopted. But in practice, since all members are not available at all times, there have been very few meetings of the kind especially for on-going processes of the law in the country. Efforts will be made to have extraordinary sessions to focus on events that come up that are unforeseen but nonetheless must be followed up.

Motivation of Country Team members

The work of the Country Team is time-consuming for its partners (participating in meetings, carrying out activities, reacting to produce the means of verification). This fact, and acknowledging the quality of the members facilitating the implementation of the programme, have made the subject of motivation of members come to the fore. It is accepted that, besides current allowances, a mechanism needs to be found to pay members for activities carried out within the framework of the programme.

Strengthening civil society

The Coalition of eight Networks of national environmental NGOs is a member of the CARPE Country Team. It has a strategic vision, strategic plan and work plan with actions covering three CARPE intermediary outputs and touching on various environmental themes including governance. Its functioning is greatly handicapped by a lack of operational capacity. More resources should be raised in addition to those awarded by the Small Grants Program to further support the operational capacity of the coalition. The Country Team has made a start by helping provide the coalition with a vision, a critical analysis of its strengths and weaknesses, a strategic plan and a work plan, and a legalized statute for its legal recognition.

Chapter 7

Using Small Grants as a Strategy to Mobilize and Empower Civil Society to Strengthen Natural Resource Governance

Nicodème Tchamou

Introduction

Central Africa contains the second largest area of contiguous moist tropical forest in the world. More than 80 million people that live in the forested region depend on their rich forests and other biotic resources for their livelihoods and economic development. The Central African forests form the catchment basin of the Congo River, a watershed of local, regional and global significance. The forest also provides valuable ecological services by controlling and buffering climate at a regional scale, and by absorbing and storing excess carbon dioxide released from the burning of fossil fuels, helping to slow the rate of global warming. Nonetheless, the forest is subject to many threats, including slash-and-burn agriculture, indiscriminate harvesting for fuelwood and charcoal production, poaching and logging. All these threats are derived from an underlying factor – human survival. Mitigating these threats is a challenge that goes beyond national boundaries to require regional and international mobilization.

A principal strategy of the Central African Regional Program for the Environment (CARPE) for creating sustainable natural resource management (NRM) practices in the field is to implement a “People-Centred Approach” to conservation in the field and to foster improved environmental governance in the region. Strengthening local NGOs has been a long-standing CARPE strategy since its inception in 1995.

Conservation efforts will not be sustainable without a strong constituency within civil society as well as government. Hence, CARPE has, since its inception, devised and implemented a small grants component as a mechanism to build civil society capacity to: a) mobilize national and regional constituents to advocate for a strong regulatory framework for good NRM practices; b) engage in robust dialogue with governments to reform forest management policies through the application of empirical data from landscape programmes and field research; c) promote livelihood and income-generating activities in a rural setting; and d) integrate gender considerations into conservation strategies and policies.

The IUCN Small Grants Program, funded by CARPE, acknowledges that painstaking effort is required to build local NGO capacity, but after ten years of consistent support to NGOs, it is clear that the results are exceptional and far-reaching. This is a synthesis of lessons learned from six country case studies, four of which are included in this chapter. It distils some of the major accomplishments

of the small grants programme as a way of illustrating what has been learned from these years of experience in:

1) empowering civil society to advocate for and contribute to sustainable NRM through the promotion of laws and policy reform;

2) supporting livelihood activities that reduce threats to natural resources;

3) laying the foundations for a stable partnership amongst a multitude of stakeholders for forest conservation in the region; and

4) integrating gender considerations into conservation strategies.

What is CARPE?

The USAID Central African Regional Program for the Environment (CARPE) is a 20-year US Government (USG) commitment to help reduce the rate of forest degradation and loss of biodiversity through increased local, national and regional NRM capacity in nine countries of the Congo Basin. CARPE is the principal USG contribution to the Congo Basin Forest Partnership (CBFP), established at the World Summit on Sustainable Development in 2002. CARPE partners aim to apply and implement sustainable NRM practices in the field, improve environmental governance in the region, and strengthen natural resource monitoring capacity. To achieve its goal, the CARPE strategy comprises three integrated elements; three pillars called the intermediate results framework:[1]

1) Natural resources managed sustainably, or the landscape programme;

2) Natural resources governance strengthened (institutions, policies, laws) known as the programme for good governance; and

3) Natural resources monitoring institutionalized, or the monitoring and evaluation programme.

The CARPE approach to small grants

Conserving the tropical forest of Central Africa is a challenge beyond the capacity of national governments, individual donors or international organizations alone. A network of actors working in concert, including national and local civil society, is essential if CARPE's goals are to be attained. However, when CARPE started in 1995, NRM capacity within civil society was all but non-existent (Pielemeier *et al.*, 2006). The first Earth Summit in Rio de Janeiro in 1992 inspired the first local conservation NGOs in Central Africa. Before then, one-party governments had frowned on any organization or association which seemed to pose a threat to State authority or influence. Governments believed that only they could solve the problems facing their country and their people. This centralization of power reduced people's enthusiasm for self-help groups, which often develop into NGOs.

Notwithstanding, CARPE in its design strategy posited that the long-term sustainability of conservation efforts was impossible without the strong empowerment and involvement of civil society. Hence, since its inception, the programme has taken two approaches to building civil society capacity: 1) support to the CEFDHAC (*Conférence sur les Ecosystèmes Forestiers Denses et Humides d'Afrique Centrale*) process which started in 1995 to provide an opportunity for the nascent Central African civil society to gain access to a platform for international and regional discourse on environment and to get their voices heard; and 2) implementation of a small grants programme in six Central African countries with the main objectives over the first five years (1998–2002) of: a) building institutional and human resource capacity amongst civil society organizations for NRM through a sort of learning-by-doing process; b) increasing Central African participation in CARPE activities and encouraging their buy-in; c) raising local awareness of CARPE by providing information about CARPE objectives and strategies; and d) raising awareness of gender considerations. In the course of these five years, approximately 80 small grants were awarded (worth an average of US$ 8,000 each) through a system of proposal submission and review. Screening proposals was a two-stage process: first a national review by the country Focal Points, followed by final approval from the regional office. Preparation of proposals and their subsequent evaluation were based on two pages of general guidelines with intensive exchanges between the CARPE Focal Points and the potential grantees to fine-tune the content of proposals. Awarded grants focused on small-scale research and field studies, seminars and workshops, education and sensitization, training sessions, policy studies and publications. The average project duration was five months.

In 2003, CARPE moved (Phase I to II) towards a much larger field operational presence in response to the USG-initiated CBFP. Phase II was designed based on the increased USG knowledge of Central African institutions, forests and biodiversity gathered from the Phase I experience. The operations of the small grants programme evolved in this new context to capitalize on the civil society capacity developed over the first five years. This allowed the small grants to become more focused as a mechanism to mobilize and motivate civil society to advocate for good governance in the forestry sector, foster economic growth to improve local livelihoods, and integrate gender consideration into conservation activities.

During this phase, grants have been awarded to local NGO networks,

1 See page 5 of the CARPE Performance and Monitoring Plan (PMP).

community-based organizations (CBOs) and local associations based on a "new" comprehensive manual of policy and procedures[2] that set the rules and regulations including environmental compliance, monitoring and evaluation. The amount of each grant has increased substantially to an average of US $30,000 and the average project duration is one year. This increase reflects the increased capacity of the recipient NGOs. Proposal selection still involves two steps: the first step is at the country level led by the national CARPE Focal Point charged with coordinating a multi-actor National Steering Committee. Proposals shortlisted at the country level are sent to a Regional Steering Committee for a final decision. Once the grant is awarded, its implementation is monitored by the Focal Points and results are included in the CARPE overall reporting system.

On-the-ground impact of the Small Grants Program

The implementation of the Small Grants Program over the past 12 years has yielded substantial results, exceeding expectations in several ways:
a) civil society is much better organized and mobilized for advocating common interest policy reforms and/or implementation of good governance in the forestry and NRM sector;
b) the promotion of economic growth and social welfare activities within communities is greatly enhanced; and
c) the integration of gender considerations into NRM and forest conservation has been given a great deal of attention.

Civil society mobilization and advocacy for policy reform and good governance

Critical threats to the integrity of forest resources in Central Africa are primarily from small-scale slash-and-burn agriculture, illegal and unsustainable forest harvest operations and general ignorance of the consequences of unsustainable practices and viable alternatives. Dealing with these threats at the local level is difficult and awkward to manage for both government administrations and international NGOs. However, in many cases, local NGOs and CBOs, empowered by small grants, have shown outstanding responses in addressing this challenge.

When the Small Grants Program started in DRC in 2000, the country was just emerging from a long period of instability and had neither a forestry code nor an environmental code. Decrees, *arretés* and *notes circulaires* regulating forestry activities or environmental compliance were scattered in different offices and ministerial departments, and there was no single resource document that contained the entire regulatory framework for environmental protection. A small grant to a local NGO called "Avocats Verts" enabled them to assemble all these decrees and legal regulatory documents into one source book entitled *Recueil des texts juridiques en matière environnementale en République Démocratique du Congo.* This publication set the stage and paved the way for the production and endorsement by the government of the 2002 DRC Forestry Code. Now the same NGO is helping the DRC Ministry of Environment and Nature to draft and promulgate implementing decrees under this new forestry code.

Getting the laws and regulations guiding the use and management of natural resources to the grass-roots communities, particularly women that are intimately involved in managing or extracting these natural resources on a daily basis, is needed if good conservation practices are to be maintained at the grass–roots level, but this poses a massive administrative, logistical and educational challenge. All too often, the laws and regulation documents are available to the elites in cities but are neither known, nor applied in the field by local communities. Even when some of these documents become available in print form, literacy is a barrier. Documents written in French for poor and barely educated people are ineffective. REFADD (*Réseau des Femmes Africaines pour le Développement Durable*), a regional network of a large number of female NGOs, identified this weakness, and through a CARPE small grant decided to take on this challenge. To date, REFADD has translated the entire Forestry Code of DRC into Lingala, the most commonly spoken language in the forested area of the country and has disseminated more than 500 copies of the Code in the Bandundu territories of Lisala and Bongandanga in the Equator province. This activity triggered international donor interest – SNV, a Dutch organization, then translated the same forestry code into the so-called "Simplified Lingala" and disseminated it widely in the DRC.

In the Ituri-Epulu-Aru Landscape in DRC, artisanal illegal logging for charcoal production is a principal driver of deforestation. With the help of a small grant, a local NGO called *Comité des exploitants et négociants de Mambasa* (CENEM) has mobilized these illegal artisanal loggers into formal associations hence providing them with a legal status that has turned their activities into formal operations with all that entails, including obtaining legal logging permits, paying taxes, using operational techniques that are more friendly to the environment, and the production and dissemination of improved stoves to women. This halved the charcoal consumption in the community. The project was so successful that it was extended to the Virunga National Park to address the issue of deforestation due to wood harvesting for charcoal production.

2 See the IUCN/CARPE small grant policy and procedure manual at http://carpe.umd.edu/resources/Documents/IUCN_small_grant_policy_and_procedure_manual_EN.pdf.

Poaching is a serious threat to biodiversity. Harvesting species from the IUCN "Critically Endangered (CR)" category and/or endemic species is a crime. However, in Central Africa, many poachers are ignorant of the law, and hence cannot be held wholly responsible for their crime. Therefore, following on from its work on disseminating the Forestry Code, REFADD through a small grant mobilized its entire network to promote and disseminate wildlife laws. The wildlife law in DRC was translated into local languages and 1000 copies disseminated. Noticeboards featuring wildlife laws in local languages and pictures of endangered and endemic species were drawn up and posted around protected areas in four of the most forested countries of the Congo Basin (DRC, ROC, Cameroon and CAR). Hunters/poachers were organized into networks and were trained in wildlife laws. Communities were organized into *Comités de vigilance* in the Ituri area of the DRC (these included local associations, police, government territorial administration officials and judiciary members) for an anti-poaching campaign, a sort of local eco-guard team.

In Cameroon, where a forestry code and associated legal forest regulation frameworks had been well established for many years, local NGOs, with the help of CARPE small grants, analyzed the constraints of implementing the forestry code at local level, which highlighted and identified gaps between theory and practice. This information then informed new written operational guidelines and implementing texts, essentially with the outcome of empowering the local NGOs to serve as technical advisors to policy and decision makers.

In some countries like Gabon and ROC where NGOs were still very weak and inexperienced, yet established legal frameworks for NRM such the forestry code and the wildlife code were well developed, CARPE small grant funding supported environmental education and the dissemination of legal information governing natural resources. Thus, the *Centre d'Actions pour le Développement Durable et l'Environnement* (CADDE) received a small grant to set up a botanical sanctuary with a 2km nature trail in the Mondah forest to train secondary school students from Libreville and students from the school of forestry (Cap Esterias) in environmental sciences. *Aventures Sans Frontières* (ASF) launched a large environmental advocacy campaign through the design and display of photos and images highlighting unsustainable natural resource exploitation in Gabon and its subsequent impacts on wildlife.

The *Association des femmes juristes du Congo*, with a CARPE small grant, produced the first ever Republic of Congo *Code de l'environnement*. In Gabon, *Les Amis du Pangolin* (ADP) received a small grant to edit and distribute free of charge several volumes of a regional environmental newspaper, *Le Cri du Pangolin.* Another NGO in ROC, ANN (*Alliance Nationale pour la Nature*), received a grant to produce and disseminate the first newspaper specializing in environmental issues. The newspaper called *L'araignée* publicized provocative information that mobilized the community to combat wildlife poaching and illegal logging in the Conkouati National Park of ROC.

Still in the spirit of getting environmental information to the public, the NGO called *Club des Amis de la Nature de l'université Marien Ngouabi* in 2002 received a grant to establish a "green" cyber-café in the Brazzaville University campus open to all students and the public, serving as an internet café and interactive information centre for research on forestry and environment to inform and develop future environmental advocates.

In countries like Burundi and Rwanda where forest areas have been almost completely converted into farmland, the small grants have supported a different approach, emphasizing the conservation of the remaining patches of protected areas and the restoration of degraded lands. In Burundi, small grant activities focused on a) building civil society capacity to compile all the laws and regulations guiding the management of protected areas; b) developing advocacy materials such as pamphlets in French as well in local languages and to disseminate these materials to communities living around protected areas; and c) organizing information campaigns to stimulate government members including the national police to enforce the implementation of the country's laws.

The development and promotion of economic growth and social welfare activities within communities

The promotion and development of economic growth and social welfare activities as a natural resource conservation strategy is a fundamental requirement but a substantial challenge for the large international conservation NGOs and government agencies alike. However, civil society in several instances has been able to be effective in this role through the Small Grants Program.

In DRC, the female NGO network REFADD has revived agriculture in the CBFP Maringa/Lopori-Wamba Landscape, helping a network of 50 local associations composed of about 350 women to organize themselves to plant 300 ha of improved staple food crop varieties. In Gabon, just informing the local communities in the area west of the Minkébé National Park of their rights under the logging concessions' *cahiers de charges,* has allowed these communities to defend and improve their livelihoods through demanding benefits from the logging companies that are laid down in Gabonese law.

Small grants have enabled civil society organizations to mobilize local communities to seek solutions to various environmental threats such as deforestation for charcoal production. In Rwanda, two local NGOs, SERUKA and AREDI, have mobilized the Ministry in charge of forests, technicians from the *Institut des Sciences Agronomiques*, community leaders in three sites and students to develop and put in place a plantation of about four hectares of trees, bamboo and rattan. They have also trained 12 agricultural monitors and 40 student members of the *Club de l'Environnement* while raising awareness of the threats of unsustainable practices.

In the ROC, an NGO called *Association des Femmes Veuves de Fatima* (AFVF) has organized itself with the support of a small grant to address the challenge of fuel wood shortage by planting three hectares of fast-growing species such as eucalyptus, while in Burundi, some local NGOs such as Enviro-protect have identified the need for and have promoted more efficient stoves for rural households, as another solution to the same problem. Other successful livelihood activities supported by the Small Grants Program include the promotion of ecotourism and beekeeping.

Integrating gender considerations into conservation strategies

CARPE recognizes the importance of promoting gender equity in its strategy of civil society empowerment. In addition to integrating gender considerations into its overall programme, it has specifically focused efforts on building the capacity of two networks of female NGOs. The network REFADD has had a substantial impact on the management of natural resources in Central Africa by effectively integrating women into NRM policies and activities. REFADD staff have benefited from intensive CARPE mentoring and training. The *Centre d'Appui aux Femmes et aux Ruraux* (CAFER), a local NGO managed by women, is conducting research on alternatives to slash-and-burn extensive agriculture and unsustainable hunting practices with CARPE small grant support, a challenge that many international research institutes such the World Agroforestry Centre (formerly the International Council for Research in Agroforestry – ICRAF), the International Institute of Tropical Agriculture (IITA) *et al*. have been working on for years with little effect in the field. These networks of female NGOs are increasingly the voice of all females among the civil society network.

Lessons learned

The CARPE strategy of distributing small grants, first as a tool to strengthen civil society's institutional and human resource capacity for NRM, and second as a mechanism to capitalize on these new capacities to empower civil society for good governance in forest conservation has shown positive results. The Central African landscape has evolved substantially since CARPE began in 1995, and at least some of the socio-political changes can be traced to the Small Grants Program. Today, the emergence of a responsive and accountable civil society that provides serious representation in environmental decision making is widely acknowledged. Civil society opinion now carries some weight in forestry and NRM policy making. While these changes can not be attributed solely to the Small Grants Program, it is reasonable to conclude that the capacity built through the small grants "learning-by-doing" approach over a period of many years has had a major impact on the sector.

Despite the demonstrable impacts shown in these cases, there are still possible improvements suggested by the review and feedback received over the past few years. Experience has shown that the Small Grant Policy and Procedure Manual should be revised to take into consideration some of the concerns of civil society as reflected in the last seven years of implementation.

1. Proposal preparation, screening and award procedures

Applications for grants should be done in two stages

The first stage should just entail a project concept, which should only be followed by a full proposal if the Steering Committee declares the concept worthy of further development. Several complaints have been recorded from civil society organizations about the fact that too much time and energy is devoted to developing a full project proposal for a small grant which may have a low probability of being funded.

Screening of small grant proposals needs to be transparent

The system used during CARPE Phase I raised doubts over the transparency of the Small Grants Program. The CARPE Focal Point in each country was solely responsible for the first screening, and the final decision was made at the discretion of the Regional Coordinator. During Phase II the screening process is done at the national level by a national steering committee and the final grant approval made by a regional steering committee, which is perceived as being more transparent and even-handed.

Accountability in the use of small grant funds by civil society is greatly improved through close technical support from the Focal Points and scrutiny by the steering committees

Embezzlement and misuse of grant funds are common amongst local NGOs. Many of the organizations lack proper accounting and audit systems. Having international NGOs and/or the CARPE Focal Points coach local NGOs as part of the monitoring and evaluation of the grant activities has shown promising results. The Small

Grants Program has not encountered the problem of misuse of funds. As further evidence of increased fiscal management capacity, a network of local NGOs in the DRC called CRONE, a group long supported by the DRC CARPE Focal Point, received a grant of US$150,000 from the World Bank to assist local communities in becoming engaged in logging title conversions. The money was deemed well spent and properly accounted for, which is considered a result of the mentorship provided by the CARPE Focal Point.

Providing grants to networks of local or regional NGOs has exponential effects

Environmental problems are of a common nature, both nationally and throughout the Central Africa region. REFADD, a network of female NGOs active in the four main forested countries of the Congo Basin, has tackled the issue of ignorance of the bushmeat law at the grass-roots level by translating the law into local languages and disseminating the result to local communities. This network approach is efficient and effective.

Providing grant applicants with feedback on why their proposals were funded or rejected is crucial for civil society capacity building

In CAR a NGO called CODICOM (*Comité pour le Développement Intégré des Communautés de Base*) finally succeeded in being awarded a small grant in 2008 after four separate rejections in previous years. Their ultimate success was the result of continuous and long-lasting counselling with specific feedback each year to CODICOM on the weakness of their proposals.

2. Project implementation

Local NGOs implementing small grant activities need coaching and support

Most projects that have been completed successfully have required either CARPE Focal Points or international NGO support. In Gabon the local NGO IBONGA-ACPE (*Association pour la Connaissance et la Protection de l'Environnement*) has been successful in mobilizing communities around the Gamba network of protected areas for ecotourism development, mostly because WWF provided them with technical support.

Tying the Small Grants Program to the CARPE landscape programme has been very important in integrating local associations and CBOs fully into CARPE activities on the ground

This is the case with IBONGA in the Gamba landscape, REFADD in the Maringa/Lopori-Wamba, ROSE in the Lobéké and many others. During CARPE Phase I, most of the NGOs that benefited from the Small Grants Program were based in the capital cities.

3. The capacity of small grants to empower civil society

Local NGOs' ability and credibility when addressing subjects of national interest in the realm of environmental protection and natural resource exploitation has increased with "learning-by-doing" experience and expanded institutional capacity

Local NGO voices are heard much more than a decade ago. In Gabon for instance they are represented in specific government structures such as the Economic Council of Gabon and the national park system agency, which are political decision-making government institutions. This official recognition has turned civil society organizations into government technical advisors rather than opponents of government *per se*. In DRC, a local NGO was appointed as a consultative member to the Economic and Social Council of the United Nations (ECOSOC) on questions concerning local development. In Cameroon, efforts by civil society to help the ministry to inform policy decisions with empirical information has inspired the Minister of Environment to appoint the CARPE Focal Point as the facilitator to compile civil society inputs in the form of policy briefs to inform the process of revising the 1994 Forestry code.

4. The capacity of small grants to mobilize civil society for advocacy

Experience of local NGOs in implementing projects and mobilizing public opinion has increased their capacity for more structured advocacy efforts

In several instances, local NGOs have raised objections to government decisions. In Gabon, the concession to the Belinga iron mine, an environmentally sensitive site surrounded by three national parks (Minkébé, Ivindo and Mwagna), was granted to a Chinese company by the government without any provision for environmental impact assessment. A coalition of Gabonese NGOs advocated very strongly for the government to follow its own environmental laws, with great success. The government decision was eventually amended and the concession agreement was revised to include measures to mitigate potential negative environmental impacts.

Governments have grown to respect the voices of NGOs in making development decisions with environmental impacts

The site chosen by the Gabon government for the construction of a second airport in Libreville was feared by citizens to have substantial negative consequences such as too much noise, impacting on the nearby Akanda National Park, a site internationally well known as a critical nesting site for migrating birds. Additionally, it was feared that the airport would destroy a nearby relic rain forest that serves as a site for practical training for the Cap Esterias forestry school. Again the coalition of local NGOs advocated

for a review of the decision, and the government responded by putting the project on hold.

Strengthened NGOs can play an important role in promoting the "rule of law" by educating citizens on legal requirements and the impacts of illegal NRM activities

In DRC, REFADD's efforts to disseminate information on relevant laws to local communities, and setting up networks of *comités de vigilance* have achieved concrete results. Local communities have reported eight cases of wildlife poaching and/or trafficking to the police, and the poachers and traffickers were prosecuted and fined. This outcome was unprecedented in DRC and it shows how small grants, by building civil society capacity and providing some funding for specific activities, can be effective tools for law enforcement as well as compliance.

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Case Study 1

The Use of Small Grants to Build Civil Society Capacity to Support Conservation in Cameroon

Antoine Justin Eyébé

Objectives of the IUCN Small Grants Program

The IUCN Small Grants Program, funded by the Central African Regional Program for the Environment (CARPE), has strengthened the role of civil society organizations (CSOs) in sustainable forest management. Their role is very important in implementing CARPE's Strategic Objective which is to reduce the rate of deforestation and loss of biodiversity in Central Africa. Moreover, civil society will play a leading role in promoting good governance in natural resource management – a pivotal component of the CARPE Phase II Results Framework.

After the Rio Conference in 1992, the importance of CSOs in Cameroon was recognized because they were considered by members of the Government and other international partners as catalysts for local, national and international development. However, despite this trend, some forest dwellers were increasingly disappointed because they still felt excluded. For instance, they resented the fact that the benefits they received from the forest were insignificant compared to those received by other forest exploiters, notably logging and mining concessions. Due to this imbalance between stakeholders, it became very important to design appropriate strategies to facilitate their involvement. Hence, CSOs opted to make them aware of the existing legal and policy frameworks, and how these could better serve the interests of local populations. However, they noticed that this could only be effective if they were supported technically, administratively and financially.

CARPE has been very supportive to CSOs because of their potential key role in improving natural resource management in the region. The Small Grants Program has supported, both technically and financially, a wide range of micro-projects submitted by local NGOs in areas where they either had a comparative advantage in implementing them or needed the necessary capacity to improve natural resource management. These micro-projects focused on themes such as understanding the local context of natural resource management, improving transparency in the forestry sector, combating illegal logging and poaching, enhancing knowledge of non-timber forest products (NTFPs) in order to improve livelihoods, assessing the Cameroon logging industry, etc. These projects required precepts which could fill the gaps in the activities of some of CARPE's international partners such as the World Wildlife Fund (WWF) which receives funds from CARPE to implement the "Sustainable natural resource management practices applied" component in two landscapes in south-east Cameroon. In general the Small Grants Program targets the following groups: community-based organizations (CBOs) and associations, local populations, research institutions and students. The objectives of the Small Grants Program include:

- Filling gaps in conservation's analytical agenda such as designing a suitable mechanism to provide feedback to local communities on conservation strategies, exchanges of field experiences, and success stories between and within landscapes;
- Promoting and building a constituency for conservation among civil society;
- Fostering partnerships between landscape consortia and local civil society in the field;
- Enabling Central African institutions to participate in CARPE activities in order to ensure host country "buy-in" of conservation initiatives;
- Reinforcing the capacities of local civil society in institutional development and strategic planning to sustain CARPE activities and objectives in the region in the long term;
- Effectively integrating CARPE activities in the field with host country institutions;
- Fostering gender equity through the promotion of female-based community organizations and associations;
- Raising local, national and regional awareness of CARPE and therefore providing knowledge and support to the programme objectives.

Implementation strategy and results achieved

A small grant policy and procedure manual has been prepared.[1] Grants are awarded, after a two-tier selection process, to local NGOs working within

1 See CARPE website for copies of the manual in English and in French – http://carpe.umd.edu/Plone/resources/smallgrants.

the framework of the natural resources governance strengthened components. The first level of selection is organized at the country level by the CARPE Focal Point who coordinates the National Steering Committee. Shortlisted proposals are sent to the Regional Steering Committee for a final decision. In both the National and Regional Committees, CARPE staff members play a strictly neutral role as they guide participants of the group to better understand the programme's vision, objectives and priorities.

Since 1998, about 50 projects have been funded by the Small Grants Program in two key areas: a) research and b) the natural resource policy and legal framework.

Research has mostly focused on non-timber forest products (NTFPs) as a means to improve the livelihoods of millions of forest dwellers. The research topics included:

- the importance of forest resources used by local communities;
- field testing and training in a methodology for the socio-economic valuation of NTFPs;
- state-of-the-knowledge studies of specific NTFPs such as *Tabernanthe iboga Baillon, Prunus africana, Gnetum africanum* and *G. buchholzianum*, threatened with extinction by unsustainable harvest techniques;
- the establishment of a gene bank of *Gnetum* spp. in Limbe Botanical Garden;
- production and dissemination by the National Herbarium of three volumes of Cameroon flora presenting Orchidaceae and Dichapetalaceae;
- the role of community institutions in the management of NTFPs to highlight restrictions and rights in their harvest at the local level, and the co-existence of customary rules with legal regulatory frameworks;
- the promotion of gender equity with the creation of the network of women for the sustainable management of the Central African moist forests – one of the dynamic CEFDHAC (*Conférence sur les Ecosystèmes de Forêts Denses et Humides d'Afrique Centrale)* networks;
- alternatives to slash-and-burn agriculture and unsustainable hunting practices.

On the natural resource management front, activities were geared towards discussions between field researchers and policy makers on the theme "conserving and managing biodiversity in central Africa: global challenges and local solutions" to ensure that policy decisions are based on empirical data and on international conventions. After this general framework, small projects tackled specific issues such as:
a) constraints in implementing the regulatory framework on timber exploitation in Cameroon based on the 1994 Cameroon Forestry Code and its 1995 implementation decrees;
b) mapping the hunting practices and circulation of wildlife products along the Moloundou-Bertoua-Yaoundé road to establish a geographical information system database on the exploitation and circulation of wildlife products;
c) contribution to the revision of the regulation related to the management of incomes from logging and hunting activities, with a view to improving the livelihoods of communities living around the exploited forest area; and
d) constraints related to wildlife law enforcement.

Lessons learned

The procedures

- The manual is essential in helping civil society identify and write sound project proposals that meet CARPE's requirements.
- Although it may sound lengthy, the two-tier selection process (National and Regional Steering Committees) is key for transparency which in turn is key for conflict mitigation.
- Involving other donors in the National Steering Committee for proposal selection is essential because it avoids duplication of funding and creates synergy among donors.

Implementation

- Flexible in nature, the small grant projects have covered a wide range of activities, all relevant to CARPE's overall strategic objectives, such as biological research, community mobilization, livelihood improvement, good governance etc.
- Because CSOs are the centrepiece of the Small Grants Program, their success in implementing field activities can only be effective if they receive outside technical and financial support, something which the CARPE Focal Points have been focusing on.
- The Small Grants Program is an effective tool to bridge the gap between activities executed within the landscape and those at the community level. One concrete example is as follows: the Gene Bank that was set up in 2000 is still producing seedlings for the domestication of endangered wild plant species which are unsustainably harvested in the landscapes.

Positive and negative impacts of the Small Grants Program

- The Cameroon Government is making the effort to incorporate results from the small grant activities into decision making. Part of the decision to review the Cameroon Forestry Code of 1994 was triggered by civil society advocacy initiatives.

- The Small Grants Program is an efficient way to foster gender equity because it has led to the creation of a regional network of women for the conservation and sustainable use of forest ecosystems. This network has been able to translate the Forestry Code into local languages and disseminate it to local communities, especially the section on wildlife management and poaching in the entire forest zone of the Congo basin.
- Funds received by NGOs are mostly targeted towards short-term activities (one year maximum), thereby restricting their opportunities for long-term commitment to action in the field.
- Dissemination of the results of small grant activities tends to be confined to the geographical area covered by projects hence there is an urgent need for the Focal Point to help package and disseminate the results throughout the entire country (to decision makers, donors, etc.).
- Though CARPE has been encouraging local NGOs to work in networks to maximize their impacts on the ground, only one (*Réseau des Femmes Africaines pour le Développement Durable* (REFADD)) project was submitted by a coalition or network of NGOs, showing that individualism still prevails in civil society in the Congo Basin.
- Although CBOs that operate in the landscape have a good grasp of the local and field context, they lack the capacity to develop sound proposals to compete for the small grants; hence, there is still a tendency for most of the small grant funding to go to NGOs based in large cities, managed by elites.

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Case Study 2

The Use of Small Grants to Build Civil Society Capacity to Participate in the Conservation of Natural Resources in Rwanda

Thaddée Habiyambere

Objectives of the IUCN Small Grants Program

The overall objective of the IUCN Small Grants Program funded by CARPE is to build the capacity of civil society organizations (CSOs) to enable them to mobilize themselves more effectively and to support advocacy for rational management of natural resources in the Congo Basin.

Since CARPE began operating in Central Africa, several national NGOs have received small grants from this programme. Details of two recent projects (2007–2008) are described below, to illustrate the lessons learned from this programme. These are the "Domestic Production of Bamboo and Rattan" project, carried out in three sectors located close to the Nyungwe National Park in the Nyaruguru District in the South Province; and the "Support for the Makera gallery forest conservation efforts" project in the Kirehe District in the West Province.

Domestic production of bamboo and rattan

The Nyungwe natural forest, recently designated the third National Park in the country, has suffered widespread destruction caused mainly by the harvesting of bamboo and rattan by the local population from the surrounding areas. The products derived from these two species are commonly used in the local construction and craft industries. Trade in these products has increased since the war and the genocide that took place in the country. This has been to the detriment of sustainable conservation of the Nyungwe forest.

The overall objective of this project was to reduce the negative impacts on the environment resulting from the wanton exploitation of bamboo and rattan in the Nyungwe natural forest. It was implemented by the local NGO "Seruka" (the Association for Promoting the Active Contribution of Rwandan Women to Development).

Support for the Makera gallery forest conservation efforts

The overall objective of this project was to put in place an appropriate platform for the sustainable conservation of this forest by involving the local population, local government services and environmental experts. It was implemented by the local NGO "AREDI" (*Association Rwandaise pour l'Environnement et le Développement Intégré*).

This small forest (74 ha) is one of the gallery forests in the eastern part of the country that up until now has managed to maintain its integrity almost intact in spite of the multiple threats that it faces. It is surrounded by very poor communities, including those repatriated or chased away from neighbouring Tanzania, who have no adequate means of subsistence and not enough arable farmland.

There are a number of problems threatening the integrity of the Makera gallery forest. One is the destruction of crops by the wild animals that it harbours. This arouses the anger of the local populations who complain that the local authority favours and protects wild animals at the expense of human beings. Another threat is the shortage of wood (for energy, construction, crafts, etc.) in the area surrounding the forest. Local people are sometimes tempted to exploit the forest in order to satisfy their need for timber and non-timber forest products, even though there is a protection regime (game wardens) in place.

Implementation strategy and results achieved

Domestic production of bamboo and rattan

The following four expected outputs were selected for this project:

- Twenty officials and opinion leaders, 40 major bamboo and rattan users (young house builders, makers of household utensils, etc.) and 600 conservation activists living in the three sectors surrounding the Nyungwe forest are made aware of the magnitude of the negative impacts on the environment caused by the wanton exploitation of bamboo and rattan in this natural forest.
- The 600 conservation activists of Nyaruguru are trained in small-scale growing and exploitation of bamboo and rattans;
- These activists commit themselves to growing bamboo and rattan and

to ensuring that 60 hectares of bamboo and rattan farms will be developed on 12 target sites before the end of the project.
- Monitoring and coordination of activities are carried out thanks to a strong organizational structure with sound bodies responsible for decision making, implementation and financial auditing.

The following achievements are worth mentioning:
- **Awareness raising:** Using individual visits and group meetings, the Forestry unit of the Ministry in charge of forestry (MINITERE), local authority and technical personnel at all levels, the bamboo research unit at the Institute of Agronomic Sciences of Rwanda (ISAR) as well as opinion leaders within the populations of the three sectors, were all made aware of the rationale of the project, its objectives and their need to collaborate;
- **Training:** Twelve agricultural instructors (four per sector) were recruited and trained for six days on the growing of bamboo and rattan (in nurseries and then plantations), and on the laws governing environmental conservation and management.
- **Establishment of nurseries:** A nursery for the production of deep-rooted bamboo cuttings was developed in each of the three sectors of the project (see Table 1).
- **Engagement of local communities:** There has been a massive demand for the bamboo and rattan shoots produced in the nurseries, but due to a lack of availability, only 564 people from the three sectors have so far been declared eligible to receive a certain number of these shoots for planting.

Table 1. The number of cuttings planted and available for cultivation, as of October 2008

Sector (site)	Number of beds developed	Number of cuttings planted	Number of shoots that sprouted	Number of shoots that didn't survive	Number of shoots available for planting
Nyabimata	36	16,854	6,989	6,367	622
Muganza	37	16,008	4,043	2,683	1,360
Ruheru	33	16,757	2,153	1,773	380
TOTAL	106	49,619	13,185	10,823	2,362

Mihanda nursery in the Samiyonga Cell, Muganza Sector.

Support for the Makera gallery forest conservation efforts

The following three expected outputs were selected for this project:
- A workshop is organized to validate the action plan drawn up by the project, bringing together representatives of the Mpamga sector, of the Kirehe District, of the Pupils' Environment Club of the Nyawera School, local NGOs, ISAR researchers and the CARPE Focal Point, amongst others.
- A nursery of forest plants is developed and placed under the responsibility of the Nyawera/ Nasho Primary School.
- Equipment and materials (microphones and loudspeakers, etc.) are put at the disposal of the Pupils' Environment Club and teachers of the local primary school.

The following achievements are worth mentioning:
- **Establishment of a nursery:** An agroforestry nursery was developed near the Nyawera Primary School and the day-to-day management (watering) was entrusted to the pupils under the supervision of a technical staff member recruited by the project. Various agroforestry species were sown as seedlings (*Grevillea*

Table 2. Seedlings produced in the nursery

Species	Number of seedlings
Grevillea robusta	18,000
Cedrella serrata	2,500
Jacaranda mimosaefolia	5,500
Sena siamea	1,500
Sena spectabilis	4,500
TOTAL	32,000

Pupils of the Club are in white T-shirts, singing and dancing.

The nursery while under development – the seedlings inside are still at an early stage of cultivation.

robusta, Calliandra callotyrsus, Markhamia sp., etc.). Thirty-two thousand seedlings produced in the nursery were specifically planted in the primary school farm over a surface area of about 4 hectares and each pupil has planted 20 trees that he/she has to care for.

- **Establishment of a school club:** A Friends of the Environment Club was formed, made up of 40 pupils of the school supervised by their teachers, and it is raising awareness of the conservation of the Makera gallery forest especially through songs, poems, dances and games.
- **Distribution of equipment and materials:** Seeds, watering cans, shovels, hoes, plastic bags for the nurseries, T-shirts, etc. were distributed to members of the Friends of the Environment Club.
- **Development of an action plan:** An action plan for the conservation of the Makera gallery forest was drawn up for the period 2009–2013.

Lessons learned

Rwanda is a densely populated country with around 9.7 million inhabitants over an area of about 27,000 km^2 (close to 360 inhabitants/km^2) in 2008.[1] Potential forestland is estimated at a total of 190,000 ha of which 140,000 ha could be used for agroforestry and 50,000 ha for traditional reforestation. Meanwhile, the existing forested area, including dense montane natural forests, eastern natural formations, plantations and potential reforestation and forestation zones, is 888,660 ha.

In spite of their apparently small contribution to the country's economy, the important role played by forests in the country is unquestionable. Wood is the household fuel of the great majority of the population. Also, forests contribute in terms of incomes derived from job creation for rural people.

1 World Bank. (2008). *World Development Indicators.* Washington DC: World Bank.

After the 1994 war, the appearance of the forested land has changed somewhat given that it is estimated that 15,000 ha of plantation forest were destroyed while 35,000 ha were seriously damaged.

The result is an acute need for reforestation and afforestation. Thanks to the Small Grants Program, the two projects described above have contributed to this need by helping local communities to reforest 60 ha of bamboo, and encouraging 40 primary school pupils to plant 32,000 seedlings of five different tree species on four hectares of land. If guided well by their teachers, these pupils represent an important long-term potential in the field of forest conservation.

Conclusion

The potential for the Small Grants Program to help mobilize CSOs, build capacity and raise awareness of issues of sustainable management of natural resources is obvious. In the case of Rwanda, the crucial problem of management of natural resources is the loss of forest cover through deforestation and soil degradation. Sustained activities such as those of the above-mentioned two environmental NGOs can slow down or reverse the trend of forest cover destruction, the main objective of CARPE in Central Africa. Therefore, the IUCN Small Grants Program should be reinforced and the size of grant per project increased to overcome constraints such as the massive and increasing demand for bamboo and rattan shoots in the Nyaruguru District in Rwanda.

Case Study 3

The Use of Small Grants to Build Civil Society Capacity to Support the Conservation of Natural Resources in the Democratic Republic of Congo

Serge Osodu Omba

Introduction

The Central African Regional Program for the Environment (CARPE) is undertaking activities for the conservation and sustainable management of natural resources in nine forest countries of the Congo Basin. To this end, one of the programme's key strategies is building the capacity of civil society actors with the aim of stimulating their active involvement in policy reform through advocacy and the development of income-generating activities at a local level, in a bid to reduce pressure on forest resources. The IUCN Small Grants Program (SGP), funded by CARPE, is intended to support this strategy.

The Democratic Republic of Congo (DRC) is facing mammoth challenges in terms of natural resource management. In order to overcome these challenges, the involvement of all stakeholders in a participatory and inclusive approach is imperative. Civil society is essential to this process. It can contribute significantly to improving forest governance, facilitating the organization and structuring of communities, developing income-generating activities to improve social welfare, and promoting gender considerations.

The contribution of the Coalition of Environmental NGO Networks (*Coalition des Réseaux des ONGs de l'Environnement – CRON*) to the government's legal review of its forest titles clearly demonstrated the determining role that civil society could play with regard to advocacy in the interests of communities. Civil society has proven its ability to work to support the government, and also to promote the interests and build the capacities of local communities.

The SGP has been operating in the Democratic Republic of Congo since 2002 and has supported several small civil society (local NGOs, associations, etc.) projects. Though not exhaustive, this document is a synthesis of lessons learned from the implementation of the SGP in the DRC.

Objectives of the Small Grants Program

The SGP aims to promote and create a platform within civil society to support conservation and specifically to:

1. Build the capacities of civil society in institutional development and strategic planning, as a prerequisite to the sustainability of CARPE activities and objectives in the region;
2. Promote social welfare through the development of income-generating activities;
3. Effectively mainstream CARPE activities into the institutions of the host country;
4. Identify natural resource management policies that require national advocacy either to reform them or to draw them up;
5. Raise awareness at local, national and regional levels on forest governance issues;
6. Encourage gender equality.

SGP projects implemented and their impacts

The compendium of legal instruments on the environment in the DRC

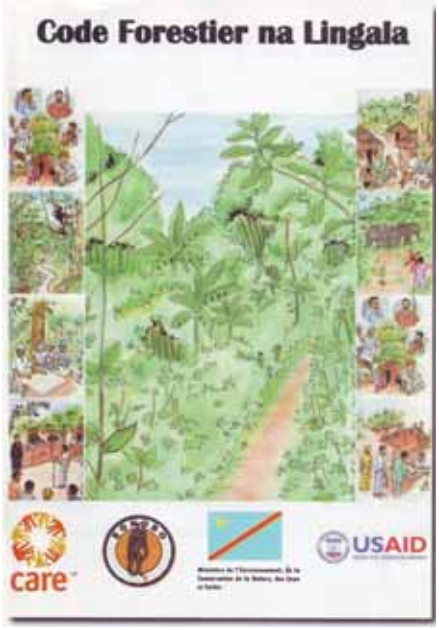
The DRC is a post-conflict country. For some time all the legal instruments governing its natural resources sector were widely dispersed and almost inaccessible to most interested parties except for the legal profession. Thanks to help from the SGP, a national NGO called *Avocats Verts* (Green lawyers) was able to produce the first version of the compendium of legal instruments

on the environment. This document was distributed to all the actors in the environmental sector at national, provincial and local levels. This exercise has been very successful in terms of training and raising public awareness on regulatory instruments governing environment management. The document was even used as a reference throughout the process of developing the DRC's Forestry Code, produced in 2002.

Following the enactment of the Forestry Code, several implementation decrees were promulgated and in the process the matter of updating the compendium was raised. Consequently, the same NGO, still supported by the SGP, produced a second edition of the compendium with the support of other partners.

Translation of the *Forestry Code* into Lingala and its dissemination

Good governance also entails transparency through the dissemination of laws and regulations governing forestry activities to grass-roots communities. This is a real challenge for those communities living in forested areas in the DRC, who represent about 70 percent of the country's population, and most of whom have received little education.



This challenge was taken up by an NGO, the national branch of a women's NGO called the Nework of African Women for Sustainable Development *(Réseau des Femmes Africaines pour le Développement Durable* – REFADD). This NGO translated the *Forestry Code* into a national language (Lingala), thanks to support from the SGP, and undertook an awareness-raising campaign in the Bandundu Province in the Lisala and Bongandanga territories in the Equator Province. This initiative has been really successful in raising the communities' awareness of their rights and duties with regards to forest management, and several international partners, notably SNV (the Netherlands Development Organization) and Care International, have produced revised and improved versions of the document in Lingala, Swahili and Kikongo in order to extend the dissemination of the Forestry Code all over the country.

Promotion of wildlife laws

Poaching is still a major concern affecting all biodiversity conservation efforts in the DRC. One of the factors that aggravate poaching is ignorance of the law and, even more so, ignorance of which species are totally or partially protected because they are on the IUCN Red List of Threatened Species.

Again with the help of a small grant, REFADD, which had already gained the trust of the communities in the Ituri-Epulu-Aru Landscape, developed posters showing the protected species of the DRC and posted them around protected areas. This resulted in local communities reporting to the police eight cases of poachers who had in their possession whole specimens or parts of integrally protected species (Okapi).

The success achieved by REFADD through their awareness-raising campaign and production of visual aids (posters) has inspired other partners, notably the NGO SOS Nature that has paid for the translation into Swahili of the law governing hunting and its annexes, and disseminated 1,000 copies around the hunter communities in the forests of Mambasa around the Okapi Faunal Reserve. This has raised the level of awareness and knowledge amongst hunters as well as communities, the majority of whom up to now had only been interested in the hunting calendar and the types of species to be hunted.

The same NGO (SOS Nature) enabled the creation of a multi-stakeholder platform for the management of wildlife resources, involving several territories and provincial government authorities. This platform monitors and guides female bushmeat sellers, and reports cases of poaching protected species. This platform has also become the body in charge of wildlife issues in the land-use planning process undertaken by the CARPE-CBFP-WCS Ituri Project.

In addition to these activities promoting laws and regulations, the SGP has also contributed to reducing deforestation, promoting rational management of forest resources and alleviating poverty.

Poverty alleviation through the promotion of development actions

Local NGOs work directly with grass-roots communities and consequently they know their socio-economic realities and their development imperatives in relation to the conservation and sustainable management of resources. Two NGOs (including an association of six NGO networks – *Protection de l'écosystème et des espèces rares du sud-est de l'Equateur* (PERSE); *Initiative locale de développement intégré* (ILDI) *; Faune, flore et santé à Yahuma* (FFSY) *; Centre de développement intégré de Lomako* (CEDILO)*; Centre de Développement Agro-Pastoral de Djolu* (CEDAP) *and Action pour le Développement et la Conservation de la Nature* (ADCN) – operating in six territories of the flagship Maringa/

Lopori-Wamba Landscape (Djolu, Bongandanga, Befale, Lomako, Yahuma, Basankusu)) have through the SGP supported the revival of sustainable agriculture (agroforestry), with more than 300 ha planted with varied foodstuffs, affecting more than 300 women. A second project has supported grazing and fishing activities in the Monkoto Territory in the Salonga-Lukenie-Sankuru Landscape. These two projects have enabled the communities to improve their livelihoods and to engage in conservation activities.

Still more projects supported by the SGP…

(a) A local NGO called *Comité des exploitants et négociants de Mambasa (CENEM*) has tackled small-scale illegal logging in the Ituri Landscape, a growing problem on this site, by identifying the small-scale exploiters and raising their awareness of the legal instruments governing forest exploitation. In addition, CENEM organized the illegal loggers by assisting them in the process of formalizing their activities with the local administration by obtaining legal permits. The loggers have since formed themselves into an association. Thanks to these efforts made by civil society, the administration can now control this group of small-scale exploiters and raise revenues through imposing taxes.

(b) The NGO called *Programme d'action pour le développement intégré des paysans* (PADIP) is working towards finding alternatives to deforestation for the sake of satisfying energy needs by producing and popularizing improved stoves destined for women of the Ituri-Epulu-Aru and Virunga Landscapes. More than 500 households have received improved stoves of which about 1,000 were distributed to women.

(c) The Coalition of Environmental NGO Networks (CRON)
Within the framework of the quest for alternative uses of forests in the DRC, CRON has collected scientific data in Bongo in the Inongo Territory, a zone that was being logged before the government's legal review of forest concessions declared it no longer suitable for this purpose. This wildlife and non-timber forest products inventory in the Lake Tamba Landscape has succeeded in demonstrating the unique value of the site in terms of biodiversity. The results of this project will serve as a useful tool when advocating for the gazettement of the zone as a nature reserve.

Lessons learned

The outputs obtained from the projects supported by the SGP are tangible and fall in line with CARPE's strategic objectives in the region:

(a) The compendium of legal instruments on the environment in the DRC, first published in 2000, was the very first document that comprehensively put together all environmental legal instruments (decrees and others) in force in the country. This compendium served as a legal basis in the process of developing the first Forestry Code of the DRC, which replaced the Royal Decree of 1949.

(b) Translating the Forestry Code from French into Lingala and disseminating it has made it possible to pass on, to the communities living in and around the forest massif, the legal instruments on the management of forest resources. Lingala is a very popular vernacular language that is understood by village communities that more often than not have received little education.

c) The promotion of the wildlife law using visual aids such as posters in Lingala placed around protected areas has served as a catalyst for strengthening law enforcement and encouraging local communities to report cases of poaching of protected species. As of today, eight cases have been recorded in Ituri around the Okapi Faunal Reserve. This proves that NGOs have the capacity to mobilize local communities to combat poaching,

transforming them into game wardens.

(d) The SGP has helped civil society to collaborate effectively with government institutions, thus breaking the myth that has always classified civil society as a source of nuisance to the government. This is seen from the action of the NGO SOS Nature that has not only created a multi-stakeholder platform involving several territories and provincial government authorities for the management of wildlife resources in the Ituri, but also trained it to monitor and evaluate as well as provide guidance to female bushmeat sellers with the aim of reducing the poaching of protected species.

(e) The promotion and development of income-generating activities to improve social welfare goes hand in hand with the strategy to conserve biodiversity. While several international partners either lack the expertise or the willingness to invest therein, the SGP has been an efficient mechanism for bridging this gap by mobilizing village communities through local NGOs and associations. Through the SGP, an association of six networks of NGOs (CEDAP, PERSE, ILDI, FFSY, CEDILO and ADCN) has revived sustainable agriculture (agroforestry), with more than 300 ha being planted with varied foodstuffs, impacting more than 300 women in six territories (Djolu, Bongandanga, Befale, Lomako, Yahuma and Basankusu) in the Maringa/Lopori-Wamba Landscape

The work of promoting and building the capacities of civil society through the SGP is already bearing fruit with several multiplier effects. For example, the significant role that CRON played in the entire process of converting forest titles into forest concessions in the DRC with the support of the World Bank; and the CEDAP platform, that is active in the Maringa/Lopori-Wamba Landscape in the Djolu Territory, being granted the status of advisory body to the Economic and Social Council of the United Nations (ECOSOC) for local development-related issues.

Conclusion

The Small Grants Program (with its grants ranging from US$15,000–40,000) has shown itself to be extremely effective in building the capacities of civil society organizations and mobilizing them to raise awareness and undertake advocacy through;
(a) the dissemination of legal instruments governing the management of forest resources;
(b) the promotion and/or development of income-generating activities for the wellbeing of local communities; and
(c) promoting gender considerations and encouraging reporting of damages caused to biodiversity.

These are areas in which several international and even governmental partners generally lack expertise and hence they have often failed to include these concerns in their strategies for the conservation and sustainable management of natural resources.

Therefore, the SGP should not only be strengthened financially to satisfy increasing demand in the sub-region, but its approach should be mainstreamed into the programmes of government and international donor organizations, given that CARPE itself was only conceived to last for 20 years.

Case Study 4

The Use of Small Grants to Build Civil Society Capacity in Advocacy and Promotion of Laws for the Rational Management of Natural Resources: What Can Be Learned from Experiences in Gabon?

Constant Allogo

Objectives of the IUCN Small Grants Program

For national NGOs, insufficient financial and technical resources are a serious handicap hampering their development and their participation in national, regional and international efforts for the conservation and sustainable management of natural resources.

In order to address this situation, the Central African Regional Program for the Environment (CARPE), since its launch in 1995, set up a fund through the IUCN Small Grants Program for national NGOs with the aim of supporting them directly in their efforts to contribute to the process of rational management and use of Central African forest ecosystems.

In its objectives, CARPE has made environmental governance one of the key avenues for the sustainable and profitable management of natural resources for all. Its founding principle is to involve all stakeholders in the various stages of the decision-making process relating to issues of environmental governance.

Identifying and putting in place conditions and practices necessary to reduce the rate of deforestation and biodiversity loss in Central Africa is the driving force behind CARPE. To this end, the involvement of all stakeholders, especially civil society, in the management of forests is indispensable. The quality of this involvement is directly related to the technical capacity of NGO leaders.

The support given to national NGOs and other civil society actors is mostly in the form of capacity building, enabling them to better master the problems of natural resource conservation and management. Building the capacity of local NGOs also includes training (of various kinds) for managers as well as the purchase of state-of-the-art working equipment.

Civil society actors

Gabonese civil society has received support from CARPE on several fronts. This support, direct or indirect, is the outcome of the work of CARPE's partners and it makes visible the work that national NGOs are carrying out on the ground.

Communities living close to protected areas (national parks and reserves) have a huge responsibility in the use of the forest that surrounds them. In as much as these communities can contribute to resource degradation, so too can they take part in their protection.

Thus, in landscapes, CARPE partners, the World Wildlife Fund (WWF) and the Wildlife Conservation Society (WCS), have directly (without direct grants) given priority to local communities within the framework of community management of natural resources through the development and promotion of income-generating activities in a bid to arrive at cost-effective management of natural resources. This involvement of local communities is done through raising awareness and providing information while taking into account the potential and specificity of the area.

Around the Lope National Park, communities are organizing themselves to enhance their livelihoods through the development of cultural tourism. In Kasamabika, special emphasis is put on masked traditional dances.

Within the periphery of the Batéké Plateau National Park, several local community associations have been created and their officials trained. Some of these local associations are developing ecotourism activities based around elephants. After a WCS study of how often elephants visit the bay (shoreline) of the River Mpassa, the local communities decided to open channels along the river in order to enable tourists to visit the shores where a great number of elephants are found. This experience has galvanized the local communities of the Kessala group of villages that presently are still developing ecotourism around the elephant. This activity makes it possible to combat elephant hunting and poaching in general. These elephants, thus protected, are more economically profitable for the community concerned alive than dead.

Several young people visit this educational corridor at Combat II, Cap Estérias.

In Ebel Abanga, in the south of the Monts de Cristal National Park, WWF is doing some brainstorming with the local communities on exploiting the manatee for ecotourism purposes.

All of these CARPE initiatives within landscapes are pertinent ways of involving local communities in the management and use of natural resources. Meanwhile, better coordination of the actions of all stakeholders (business operators and the administration) increase the income (still low) generated from these activities.

Alongside this process of developing alternative income-generating activities, CARPE and its partners take part in the training of national NGO leaders. The World Resources Institute (WRI) has for more than a year been organizing a series of training courses in cartography and satellite imagery for better management of forestry information. This is to support forest control through the *Interactive Forestry Atlas of Gabon* Project.

Within the framework of the Small Grants Program, CARPE puts funds at the disposal of national NGOs, aimed at helping them develop and implement their projects. The goal is to encourage civil society to initiate activities that will guarantee the rational and sustainable use of natural resources. The funds are there to reinforce the efforts that national NGOs are already making in terms of the conservation and rational management of natural resources. Thus, projects that are funded are those identified and executed by the NGOs themselves.

Projects submitted to the Small Grants Program are mostly in the areas of environmental education and information. The *Centre d'Actions pour le Développement Durable et l'Environnement* (CADDE) received a small grant to establish an educational corridor more than 2 km long in the Gazetted Forest of Mondah. The biodiversity of this forest can be seen all along the corridor. This environmental education project has enabled CADDE to organize visits to the forest for several students from Libreville and its periphery.

The same Small Grants Program has financially supported environmental education projects initiated by *Aventures Sans Frontières* (ASF). This NGO has made presentations on the exploitation of natural resources in Gabon and on the threats caused by wildlife exploitation, in several primary schools in Libreville.

For several years, the *Amis du Pangoli*n (ADP) has received funding from the Small Grants Program for the publication of the environmental newsletter *Le cri du pangolin* (The cry of the Pangolin). These funds have made it possible to publish and distribute free of charge this sub-regional newsletter devoted exclusively to environmental information.

Within the Gamba and Mayumba regions, the Program has co-funded information and awareness campaigns run by IBONGA and Mayumba Nature. These campaigns, geared towards the hunting of turtles, invite children and

The ASF environmental education programme in schools and on the Pongara beach.

adults to change their attitudes towards this endangered species.

Other areas of activity are also covered, such as local community rights or research. On the issue of local community rights, the Program supports the Brainforest initiative whose goal is to make the population aware of their rights with regard to forest logging. The Brainforest project entails popularizing to the population around Minkébé National Park the legal provisions of the Forestry Code, namely that logging companies are obliged to invest in the communities situated close to their forest concessions.

Still through the Small Grants Program, the *Forêt-Développement* NGO has carried out a study on "the conservation of humid ecosystems and sustainable development in the Etimboué District". This project's goal is to come up with a map of the Etimboué humid ecosystem, raising the awareness of the population on the socio-economic and ecological challenges of the conservation of humid ecosystems, and providing training on the design and management of micro-projects that favour biodiversity conservation and socio-economic development.

Lessons learnt

Up to now, many environmental NGOs have aimed to focus their efforts on specific areas. However, although individual NGOs will always specialize to some extent in the projects that they develop and activities that they carry out, there is also a strong willingness on their part to come together at times and form a platform in order to work together to raise some of their concerns and better coordinate their actions.

At a national level, it has been observed that there has been a marked improvement in the interventions and positions of national NGOs on delicate questions related to the preservation of the environment and exploitation of natural resources.

The decision to combine efforts has made it possible for national environmental NGOs to be represented in several national structures. Thus, they have a member who takes part in the Social and Economic Council of Gabon and in the Management Committee of the National Agency for National Parks.

National environmental NGOs, organized into a platform, are increasingly being listened to. It was they who pointed out the inadequacies of the iron mining project in Belinga. This project was to be carried out without a preliminary environmental impact assessment. Its mining activities would seriously impact the three national parks situated close to the site: the Minkébé, Ivindo and Mwagna National Parks. It also includes building a hydro-electric dam on the Kongou Falls. The internationalization of this project, through the actions of the NGO, has caused national authorities to revise the project in a number of ways that includes doing an environmental impact assessment.

The project to construct a second international airport in Libreville has

also prompted some reaction from national NGOs. The State is proposing to construct this airport in the Mondah Gazetted Forest (FCM), situated within the northern periphery of Libreville.

The construction of this airport and the development of related activities will lead to the complete destruction of the FCM. This forest plays a key role in the training of National Forestry School students, as their practicals are carried out there. Also, the new airport will seriously impact the Akanda National Park, a site that is well known worldwide for the thousands of migratory birds that visit it annually.

Criticisms

Out of the various criticisms levelled at national NGOs by both national and international actors, we will comment on two that could be solved if the will was there:

1. The present level of capacity building of NGOs, though appreciable, still falls far short of what is needed. Their weak structure means most of them lead a very precarious existence which can have a negative impact on their activities. Very few national NGOs have permanent staff; several of them work mostly on a voluntary basis and only exist due to the dedication of their leaders. A sustainable funding mechanism for NGOs would help stabilize them and make their activities more visible.
2. The legal framework governing and organizing associations is not adapted to the context. The big changes that associations have known, with the coming of national organizations and the execution of large-scale activities, require a legal framework that is in line with the realities of the day. In terms of the legal provisions of Law No. 35/62 of 10 December 1962, on the creation and organization of associations, many NGOs are working illegally.

Conclusion

As mentioned above, several national and international actors have criticized local NGOs on matters of form and content.

Administrative authorities assert that local NGOs are mere mouthpieces for their international partners, i.e., they only express the thoughts of the “foreigners” on whom they depend. Apart from this, these same authorities often accuse NGOs of being involved in politics, even though they are constituted as “apolitical associations”. This criticism was used to justify the suspension of Gabonese NGOs in January 2008. Besides these criticisms from the authorities, development partners think that national NGOs are “weak” and “not well structured”. They may not have the required capacities to face the challenges of achieving sustainable development.

The experience of the Small Grants Program shows clearly that national NGOs need more financial resources and technical guidance to promote the principles of sustainable and rational management of natural resources.

In order to build on the work already undertaken by CARPE, and moving beyond national initiatives, greater coordination of the efforts of members of the Congo Basin Forest Partnership is needed, to help strengthen the capacity of NGOs at the organizational and financial levels. To achieve this, the Commission for the Forests of Central Africa (COMIFAC) may, through its specialized bodies, create a project development fund for national NGOs.

A sustainable funding mechanism for national environmental NGOs will inevitably contribute to building up their organizational capacities, and quantitatively and qualitatively improve their participation in the sustainable management of natural resources.

In spite of these inadequacies, civil society has already undergone a remarkable evolution, with a marked improvement in the activities carried out.

The CARPE strategy of involving all of civil society in the management of natural resources and in the improvement of the living conditions of local communities underlies all efficient field activities that play a part in environmental conservation as well as the rational and sustainable use of resources. It is essential for national NGOs to be committed to acquiring adequate skills and to shouldering their responsibilities. '

SECTION THREE:
MONITORING OF NATURAL RESOURCES


Ficus
bengalensis

Chapter 8

THE MONITORING OF NATURAL RESOURCES TO SUPPORT CONSERVATION PROGRAMMES

Case Study 1

USAID's Monitoring and Evaluation System for CARPE: Lessons Learned from a Large-Scale Regional Environmental Conservation Programme

David Yanggen and Jacqueline Doremus

Introduction: The goals and challenges of monitoring and evaluating CARPE

Virtually all donors require some system for monitoring and evaluation (M&E) of their grants. The most fundamental goal of any donor M&E system is to create a conduit of communication between the donor and the programme implementers. These systems seek to increase the transparency of implementation while simultaneously gathering data to provide a basis for assessing the results of the project. The results assessment provides a feedback mechanism for adaptive management based on successes and failures, and thereby for restructuring the on-going project and/or future projects of a similar nature. In addition, a donor uses this information to inform decision making about continued funding by policy makers within the agency and, in the case of most government donors such as USAID, with the legislative branch of government and taxpayers.

CARPE presents some unique challenges for M&E given its large scale and complexity. The programme has been going for 20 years and has contributed over US$100 million in funding during its seven years of field implementation to date (2004–2010). The programme consists of three components: governance and policy; a landscape programme of field-based improved natural resource management; and monitoring. For simplicity this chapter focuses on the landscape and monitoring components.

The landscape programme is vast. It includes 12 different Landscapes in seven countries[1] and covers roughly 80 million hectares, approximately the size of the US state of Texas. These 12 Landscapes were prioritized for conservation in an international forum by a large number of national and international experts based on the level of intact forest, biodiversity richness and presence of endemic species.

The idea of the landscape approach is that ecosystems, and in particular wide-ranging animals such as elephants, need larger spatial areas than those covered by a typical protected area (PA)-focused strategy. A CARPE Landscape therefore includes not only PAs but also forest concessions (and other extractive resource zones or ERZs) and community-based natural resource management (CBNRM) zones, and explicitly considers the ecological interactions between these zones. The 12 Landscapes are made up of 37 PAs, 68 CBNRM zones and 43 ERZs, giving a total of 148 "macro-zones" as they are known in CARPE terminology.

Each of the 12 Landscapes is headed up by a institutional landscape leader from one of four international conservation NGOs that include the World Wildlife Fund (WWF), the Wildlife Conservation Society (WCS), Conservation International (CI) and the African Wildlife Foundation (AWF). Each landscape lead institution heads a consortium of institutional actors with competencies in diverse areas such are wildlife monitoring, botanical inventories, forestry, community development and institutional capacity building that are needed for an integrated conservation approach. In addition to the four lead institutions, there are currently 14 other consortium partners (many of whom work in multiple landscapes) and a significantly larger number of other institutional collaborators including notably national government institutions.

A further challenge has been that many of the conservation NGOs and the individuals working within them did not have a depth of experience of working on the large-scale field implementation of a conservation project such as CARPE. Much of the institutional culture and individual experiences related more to working on field research, often relatively narrow in scope.

1 Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon, Republic of Congo and Rwanda.

Given the large number of institutional actors working across a large and widely dispersed geographical area, the USAID/CARPE team sought to use the M&E system as a means to provide coherence to the overall programme. The very word *programme* implies there is a desire to have a coordinated and consistent approach to attaining conservation objectives, and not simply a large number of disparate and isolated projects. Furthermore, disparate and isolated projects tend not to leave a lasting impact. An additional goal of CARPE and its M&E system is to leave structures in place that the national governments and NGOs as well as other donors can build upon in the future.

The funding given to each landscape is in the form of what USAID calls a "Cooperative Agreement". USAID Cooperative Agreements specify that the USAID management team has a "substantial involvement" role which includes approval of annual budgets and work plans. The M&E system therefore needed to propose a standardized format for a technical work plan and technical budget in order to provide for consistent evaluations across partners and landscapes.

In sum, the challenge of developing the CARPE M&E system was to create a structure that harmonized the metrics for assessing the progress of numerous actors in a large number of remote sites with different ecological and socio-economic conditions. An additional objective of the system is to help the implementing partners coordinate their field-based conservation work over a broad range of sites and with multiple institutions within a landscape. All this has to be achieved while still leaving enough flexibility to meet a broad range of site-specific conservation challenges across the Congo Basin.

The USAID/CARPE approach to monitoring and evaluation

CARPE objectives

To introduce CARPE's M&E system it is first necessary to discuss the specific objectives set by USAID for CARPE, in order to understand what exactly is being monitored and evaluated. There are in fact two levels of objectives: the ultimate objectives known as strategic objectives (SOs) and the shorter-term objectives know as intermediate results (IRs). The strategic objectives of the programme are to slow the rate of deforestation and to conserve biodiversity.

In order to measure the rate of deforestation over a large area such as the Congo Basin, CARPE has relied upon satellite data provided by the National Aeronautics and Space Administration of the United States, interpreted by researchers from the University of Maryland and South Dakota State University (SDSU). This specific indicator involves measuring forest-cover change over time. The initial baseline was set at 1990 with change measurements for 2000 and 2005 which have been updated annually up to 2009 using an automated system developed by SDSU. This analysis permits the generation of deforestation rates across the basin, within and outside landscapes, and helps to identify hotspots of environmental degradation in order to better plan conservation interventions.

For the biodiversity conservation objective, the chosen approach was to select a number of indicator species and track their population status over time in selected sites in each of the 12 Landscapes. The most common indicator species chosen include elephants and primates such as gorillas, chimpanzees and Bonobos. A key challenge has been to standardize the methodologies used for measuring these indicator species so that spatial and longitudinal comparisons would be meaningful. A working group involving the lead international conservation NGOs was set up and has addressed this methodological issue.

The work on deforestation and wildlife indicator species, along with parallel work that monitors logging concessions, constitute the component of capacity strengthening for monitoring of natural resources in the programme (though obviously the M&E aspects of the programme go substantially beyond this particular component). An important initial observation is that results concerning both these strategic objectives (deforestation and wildlife populations) are long-term in nature and therefore do not permit a shorter-term feedback on progress from the CARPE M&E system. It was therefore necessary to define intermediate results (IRs) that contribute to reducing deforestation and biodiversity loss and track the shorter-term progress of CARPE landscape partners' work. For the CARPE landscape management programme, these intermediate results revolve around land-use planning (LUP) processes for each of the 12 Landscapes and for all the macro-zones specified within each Landscape.

The CARPE/USAID management team has defined four stages in the LUP process. The first stage is the development of a "strategy document" and is known as "convening" the LUP process. A strategy document essentially describes how to develop a management plan and identifies the data needed, planning team members, an activity timetable, etc. The second stage, known as "design", involves the development of a management plan. The third stage is "adoption" and entails the recognition of the management plan by the competent national authority. The final stage is "implementation" and involves carrying out the needed management activities

specified in the management plan. Each of these stages constitute benchmarks to assess progress in achieving the intermediate results.

The CARPE M&E system: into the heart of the matrix

The central operational tool of the CARPE M&E system is known as the CARPE monitoring and work planning matrix which can be found on the CARPE website.[2] Partners fill out and send to USAID annual matrices which are updated three times a year: prior to the beginning of the year with a proposed work plan and budget for USAID's review and approval; at a midpoint in the year with the semi-annual report; and after the end of the year as part of the annual report containing an assessment of the year's accomplishments. A review of the individual components of this matrix provides a detailed overview of the M&E system. The matrix is divided into three principal sections; a benchmark monitoring section, a work plan section and a budget section. The benchmark monitoring section defines and breaks down the yearly standardized LUP benchmarks from five-year established targets for each Landscape and every macro-zone. Each Landscape is a reporting unit and fills out an integrated matrix with all the consortium partners contributing.

The far left-hand side column of the monitoring and work plan section of the matrix lists all the intervention zones, starting with the Landscape itself followed by each individual macro-zone grouped in the three land-use categories starting with PAs, then CBNRM zones and finally ERZs. At the landscape level, there is a space to list the wildlife monitoring SO indicator of animal population densities. Moving to the right across the matrix, the next column lists the current year's LUP benchmarks for each of the zones. A benchmark is listed in percentage terms such as PA X is 100 percent convened, CBNRM zone Y is 50 percent designed, or ERZ Z is 25 percent implemented. The size of the zone in hectares is also listed in order to calculate the area of land that is engaged at any given stage of the LUP process.

The next column to the right lists the "means of verification" or MOVs that are needed to verify the progress of each zone in the LUP process. Partners propose these and the USAID management team's review of the initial work plan approves them or asks for revisions. The MOVs can roughly be divided into three categories following the LUP process. Planning MOVs during the convening process typically include reports on activities such as socio-economic surveys, ecological studies and stakeholder meetings that are conducted to inform the plans and contain informational inputs for the subsequent development of the management plan. LUP MOVs logically include strategy documents and management plans both in draft and final form. Finally there are implementation MOVs. These serve to document the application of the activities specified in the management plan and include reports on a broad range of activities such as eco-guards patrolling, environmental education, tourism, community livelihood activities and on-going site-specific monitoring.

It is worth underlining at this point, as just mentioned above, that all the individual zonal management plans have their own system of monitoring and evaluation. These M&E systems track results in each of the Landscapes and in each of the macro-zones as a function of the objectives set out in the management plans. These systems are a more site-specific layer of M&E and complement the standardized basin-wide CARPE M&E system.

Continuing to the right in the CARPE M&E matrix, the next section is the actual work plan itself. The work plan identifies six standardized work activity categories. These include: data collection and assessment; stakeholder meetings and workshops; training and capacity building; policy advocacy; media and outreach; and implementation. These activity categories are standardized and are included for each individual planning zone unit. The next level of disaggregation in the following column is for specific tasks associated with each activity category. Typically there are several tasks for each activity category. For example, in the training and capacity building category, there may be tasks related to community environmental education, GPS (Global Positioning System) training for eco-guards, and training in database management for national government collaborators. Finally, each task is assigned to one or multiple institutions in the consortium and a specific person or persons. The last column sets a target date for finishing the task.

The second main component of the M&E matrix is the budget section. As stated above, CARPE Cooperative Agreements require the USAID management team to approve annual budgets. A well designed budget matrix facilitates programme evaluation from a financial point of view. The budget section is disaggregated into six standard categories which match the work plan standardized activities. This alignment therefore provides consistent and useful insights into each Landscape's technical approach.

The first disaggregation is between USAID funding and match funding. The level of match funding a consortium raises is a performance criterion and also allows the US Government to show how much additional funding it has leveraged into the programme. Activities supported by match funding

2 http://carpe.umd.edu/Plone/resources/carpemgmttools.

must be integrated into the CARPE work plan and must also correspond to the landscape programme description found in the Cooperative Agreement between USAID and the landscape consortium lead organization.

Another level of disaggregation is by consortium partner. Each consortium partner typically contributes a specific competency for the integrated conservation programme. The institutional distribution of funding therefore gives an insight into the weight given to different landscape programme components providing an input to USAID's evaluation. In addition, USAID puts a special provision into the landscape cooperative agreements that states that any change in a consortium's teaming arrangement must be approved by USAID. This was included principally as a guarantee against landscape lead organizations taking unilateral action to redistribute budgets in a way that could undermine an integrated conservation approach. Budget disaggregation at the partner level allows for this type of monitoring oversight.

Finally, budgets are disaggregated by zonal categories (Landscapes, PAs, CBNRM zones and ERZs) and by the six standard work plan activity categories for each zonal category (but not for each individual zone). The landscape approach seeks to balance conservation interventions between protected areas, extractive resource zones and community zones. In fact, USAID/CARPE requires that a minimum of 50 percent of financial resources be spent outside protected areas. This level of disaggregation allows USAID to evaluate whether a landscape consortium is implementing a balanced landscape conservation approach.

The activity category budget disaggregation also gives useful insights into evaluating a Landscape's technical approach. For example, at earlier stages in the LUP process it is logical that an important percentage of funding should go towards planning activities related to data collection and stakeholder engagement. As the LUP process matures, this percentage should shrink as more funding goes towards implementation activities. In some cases, certain institutions and/or individuals were more comfortable with research-related activities and continued to emphasize data collection beyond the initial planning stages of the LUP process. As CARPE is an applied conservation programme, USAID used this budget information for evaluations and to provide constructive feedback as needed.

Lessons learned

CARPE is relatively unique in that it is a 20–year-old programme operating in nine different countries and with 18 direct institutional partners in the landscape component alone. It would be difficult to overstate the level of complexity of the programme. A number of experiences and innovations associated with the M&E system could prove useful particularly to other large-scale conservation initiatives.

The M&E system design primarily took place over a period of two years, from about 2004 to 2006. As this timeframe implies, the design was an iterative process based on trial and error, and incorporating feedback from the CARPE implementing partners. An M&E workshop was held in 2005 for all the landscape leaders. There was a dual purpose to this workshop. Firstly, to teach the landscape leaders how to use this M&E system and secondly, to provide a venue for eliciting feedback from the implementing partners on how to improve the system.

The workshop adopted a learning-by-doing approach and partners filled out sample M&E matrices for their landscapes and then shared their questions and concerns with the other landscape leaders and the USAID/CARPE management team. This greatly increased partners' comfort level with the CARPE M&E system and significantly improved the quality of reporting. To further reinforce the workshop training, USAID developed a CARPE reporting guidance manual (see CARPE website) that explains section by section how to fill out the M&E matrix. This manual has been updated as the M&E system has evolved over time. The lesson learned from this experience is that a complex M&E system needs to provide supplementary training and guidance to users in order to ensure quality implementation.

Secondly, given that the CARPE partners are the direct users of the M&E systems (i.e., they fill out the matrix) they have the best knowledge of the challenges to actually making it operational. By facilitating partner feedback and using their suggestions, the USAID/CARPE management team has been able to improve the effectiveness of the system as well as to reduce the time burden needed to fill it out. The lesson learned here is that a participatory approach to M&E development with end users is critical to improving the system's design and to achieving a greater buy-in from the partners and therefore increasing their willingness to provide the highest-quality information.

Another example of the critical importance of technical backstopping involves the development of LUP documents (management plans and strategy documents). As noted previously, LUP planning is at the heart of the programme and therefore its M&E system as well. Further, the LUP documents are arguably the most important category of MOV required to show accomplishment of established benchmarks. However, land-use planning can mean different things to different people, and certain partner institutions and individuals have had

limited experience with this aspect of conservation.

The USAID/CARPE management team therefore decided to call upon the US Forest Service (USFS) to write a series of technical guides (see CARPE website) for each of the four CARPE zone categories. These guides focus on identifying the minimal common components that should be found in a management plan and strategy document while leaving ample flexibility for site-specific applications. USAID and the USFS organized two parallel workshops in Libreville and Kinshasa to train landscape partners in LUP. The minimal common components now serve as a standard by which USAID can evaluate the quality and completeness of the LUP documents. A lesson learned is that for particularly complex endeavours such as land-use planning, it may be necessary to provide outside technical backstopping that not only trains partners but also provides a clear standard by which their accomplishments will be evaluated.

The institutional cultures of many of the conservation NGOs and the individuals within them often were more oriented to narrow research and did not include experience in implementing complex large-scale conservation programmes. Many of the partners initially viewed the CARPE reporting system as an additional burden beyond their actual conservation work. And yet any applied conservation or development project needs to set objectives and establish a work planning framework. The CARPE M&E system, as designed, sets clear benchmarks and lays out a rigorous system for planning conservation work. With time and training, CARPE partners came to appreciate the M&E reporting system as a useful tool for structuring their own activities, in particular for coordinating and integrating the activities of diverse consortium partners within a Landscape. The lesson learned here is that an M&E reporting system should be designed to facilitate work-planning and objective-setting activities that an implementing organization needs to conduct regardless of donor requirements.

An enormous amount of data has been generated by the CARPE M&E system. There are a large number of variables, numerous sites, and many years of data. The USAID management team developed an MS Access database that facilitates the aggregation and analysis of the data received. This tool is critical for the evaluation of partners' performance and reporting to USAID headquarters, the US Congress, other donors and interested stakeholders in general. A typical data query, for example, could be how many hectares of each type of macro-zone are under an operational land-use management plan. This database can also be used to engage in more policy-oriented analysis, such as the average cost per hectare of the development of management plans for the different types of macro-zones. The lesson learned from this experience is that a complex M&E system needs to establish a database system that can easily upload data from standardized reporting matrices in order to facilitate the ability of the management team to evaluate and disseminate programme results in a timely fashion.

Adding together the Landscapes and macro-zones, there are 160 zones. For each one of these zones, a CARPE partner typically sends in several MOV documents per year. The CARPE management team thus receives well over 500 documents each year. There is a tremendous wealth of information contained within these reports. One of the key constraints the CARPE management team noted was that these reports were not easily accessible to national governments, other Landscapes in the programme or even within a given conservation NGO working in multiple sites.

In response to this situation, the USAID/CARPE management team in collaboration with the University of Maryland developed the web-based CARPE Information Management Tool[3] or IMT. The IMT organizes and makes publicly available on the web all the MOV reports generated by the programme. In order to facilitate locating the reports, the IMT presents a Congo Basin-wide map with the Landscapes outlined. By clicking on a given Landscape, the user is directed to all the information for that Landscape. The user can then click again to get a map of all the individual macro-zones within each Landscape. A final click brings the user to all the reports for a given macro-zone categorized under the following headings: land-use planning, ecological information, socio-economic information and stakeholder participation documents. The lesson learned from this experience is that information sharing can be a critical constraint in any large-scale conservation programme so a mechanism for sharing is of critical importance to facilitate collaboration and to disseminate programme results. Web-based geo-referenced information management tools can be particularly effective to this end.

This chapter has previously noted that CARPE M&E takes place both within different timeframes and at different geographical scales. The wildlife population and deforestation monitoring take place over the long term, whereas the LUP process, which contributes to reducing deforestation and biodiversity loss, is a short to medium-term result. The CARPE M&E matrix is a standardized system that covers all twelve Landscapes across the Congo Basin. The individual management plans developed by CARPE and national partners for each Landscape and macro-zone are site-specific and adapted to local conditions and

3 http://carpe-infotool.umd.edu/IMT/.

objectives. The lesson learned from this experience is that, for a large-scale and long-term programme such as CARPE, it is useful to carefully consider multiple time and spatial scales and to design a multi-layered M&E system to capture the full range of spatial and temporal results generated.

A final lesson learned concerning M&E involves the generation of lessons learned. The CARPE M&E system generates a massive quantity of data and information that permits the monitoring and evaluation of results achieved by the programme. However, this information does not always permit a more analytical evaluation of the conservation practices and strategies employed by the different actors in the programme. The USAID/CARPE management team therefore decided to launch this CARPE Lessons Learned Initiative covering all the key thematic components of the programme and of which this article represents one of many chapters. These lessons learned are published both in book form and on the web. They permit a sharing of conservation experiences both between partners and geographical sites within the programme as well as with the broader conservation community. The documentation and dissemination of lessons learned add to the overall knowledge base and therefore contribute to improving the effectiveness of conservation programmes in the Congo Basin and around the world.

Case Study 2

Lessons Learned on Forest Concession Monitoring in Central Africa

World Resources Institute (WRI)

Introduction

The objective of this paper is to share the most relevant lessons that WRI has learned on forest concession monitoring in Central Africa (CA) through its USAID-CARPE funded activities with CARPE, its partners, and other stakeholders.

Forest monitoring and WRI objectives and goals

WRI's overall mission statement is "to move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations". Its contribution to CARPE falls under WRI's People and Ecosystems Program's goal of reversing the rapid degradation of ecosystems and assuring their capacity to provide humans with needed goods and services. More specifically, through its Forest Information and Governance Initiative, WRI seeks to:

> *"…increase the capacity of governments, businesses, and civil society to act upon better and more widely-shared information to protect intact forests, manage working forests more effectively, and restore deforested lands".*

The main premise behind WRI's forest strategy is that the provision of accurate, user-friendly information will promote more sustainable forest management (SFM) practices when linked to relevant decision-making and capacity-building efforts coupled with making this information publicly available as a means to hold decision makers accountable for their actions. WRI's niche is the provision of accurate, credible, accessible and timely forest landscape information and the promotion of its inclusion in decision making. This information is developed through strategic partnerships with national, regional and international actors (private sector, governments, multilateral and bilateral agencies, research institutes, and local and international NGOs). WRI's ability to work across multiple levels (local, national, regional and international) and sectors is crucial to its effectiveness in connecting forest information to the variety of decision-making processes focused on strengthening forest management in Central Africa. This includes its ability to draw on WRI's experience in other forest-rich regions, including Southeast Asia, Russia and South America. Other players in the region typically focus at the site scale (i.e., specific protected areas or landscapes).

In that respect, WRI's mission, goals, objectives and programmes respond directly to CARPE's strategic objective, which is to:

> *"reduce the rate of forest degradation and loss of biodiversity through increased local, national and regional natural resource management capacity in nine Central African countries: the Central African Republic, Equatorial Guinea, Gabon, Republic of Congo, Burundi, Cameroon, Rwanda, Sao Tome & Principe and the DRC".*

The above highlights the compatibility between WRI's involvement in forest concession monitoring in Central Africa and USAID-CARPE's goals.

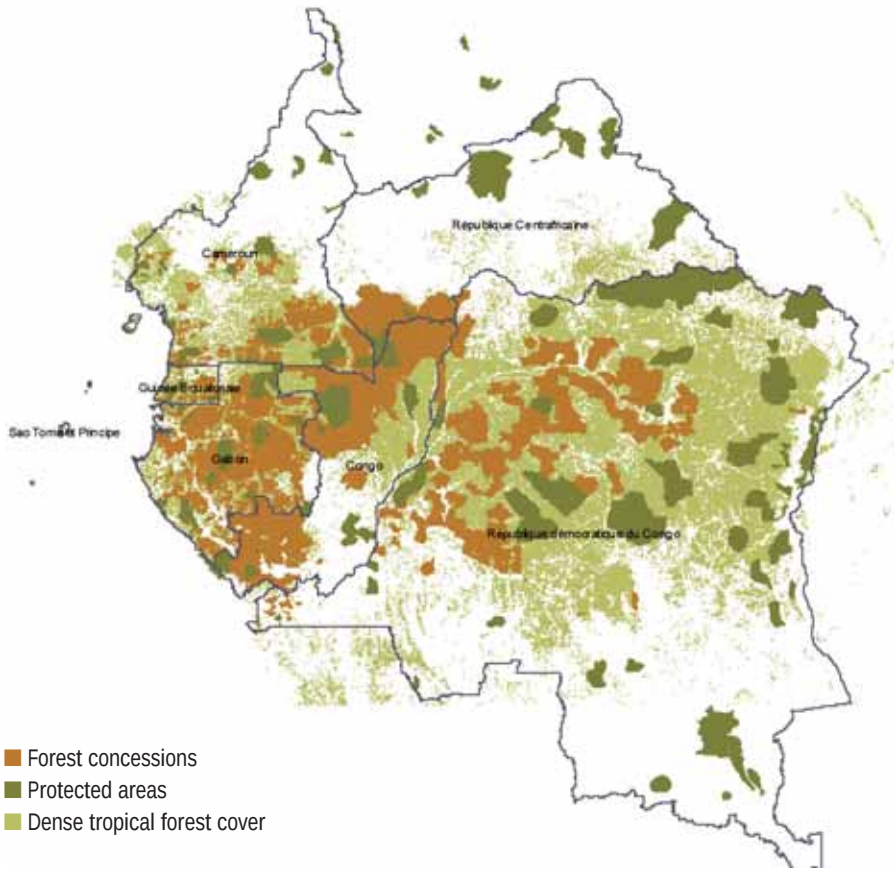
The need for forest concession monitoring

Monitoring production forests

Forest concessions and other logging titles (e.g., council or communal forests, sales of standing volumes, etc. – "production forests" writ large) represent the vast majority of classified forest in the forested countries of Central Africa (Figure 1). Within these forests exist immense and valuable renewable resources: from the timber itself targeted by the extractive industries to the non-timber forest products (e.g., bushmeat, fruits, nuts, medicinal plants, etc.) on which local populations are largely dependent for subsistence, to ecosystem services provided (locally and globally) from an intact tropical forest ecosystem.

Additionally, logging titles form much of the connecting forested corridors between protected areas. Therefore, maintaining current production forests as integral habitats with viable floral and faunal populations is integral to conservation planning at both the landscape and regional scale. The monitoring of resource extraction activities occurring within production forests is critical in addressing issues of legality and SFM, as well as for providing information on how land use within these areas affects the overall landscape.

Figure 1. Distribution of forest concessions, protected areas and dense tropical forest cover in Central Africa



Status of commercial logging in the Congo Basin

While commercial logging does not officially constitute more than 15 percent of GDP in any of the countries of the region, it is the most important sector in terms of occupied forest surface area and formal employment for most of the region's countries. On a positive note, the last 10–15 years have seen improvements in the commercial forest sector in Central Africa, particularly in terms of generally adhering to SFM practices, establishing a clear definition of the legal boundaries of logging titles, building the capacity to actually monitor logging activities, contributing to the improvement of local livelihoods and, finally, pursuing certification or other legality standards.

On the other hand, however, industrial logging continues to extend into areas of the Congo Basin not previously exploited, thus opening up these new areas to pressures from hunting, forest degradation and/or conversion. Furthermore, while some companies have committed to best practices (environmental and social) in their activities, many continue to operate outside environmental and social dictates, and institutional capacity to enforce adherence to the law or management plan obligations remains weak.

Objectives of forest monitoring

Forest concession monitoring

The monitoring of activities in production forests and more generally in forested areas allows stakeholders to address several important issues. Some general environmental and social applications for example include:

- Monitoring and measuring forest cover change over time;
- Determining drivers of deforestation or forest degradation, notably through slash-and-burn agriculture;
- Monitoring and mapping the extension of road infrastructure;
- Monitoring environmental compliance;
- Combating illegal trade of bushmeat;
- Monitoring populations of key indicator species to measure impacts and guide mitigation;
- Informing landscape management of plants and animals;
- Addressing issues of resource-use overlap with local populations.

When done well, commercial logging can be a sustainable contributor to local employment and the national economy; when executed poorly it can be a purveyor of forest degradation, local impoverishment, corruption and tax evasion. Monitoring commercial logging activities can provide necessary information to support the enforcement of national laws and development goals as well as help ensure that these activities are carried out within the realm of SFM and that they contribute to local wellbeing. With regard to logging activities, the main applications of forest monitoring include:

- Combating illegal logging outside legally allocated logging titles (forest concessions and annual logging *coupes*) or inside protected areas;
- Combating illegal activities related to logging such as non- or under-reporting of logs felled, harvesting forbidden species, felling below authorized minimum diameters, deliberately reporting wrong species, etc.;

- Enhancing the ability of the ministries in charge of forests to carry out more targeted enforcement of logging infractions, thus reducing the overall costs of field controls;
- Monitoring implementation of sustainable forest management plans;
- Monitoring adherence to allotted annual volume or surface area restrictions;
- Informing stakeholders of the requirements and effectiveness of certification programmes with the aim of moving towards more socially responsible and environmentally sustainable logging;
- Verifying compliance of logging companies to the social contracts (*cahier des charges*);
- Verifying compliance with forest certification and legality processes;
- Monitoring the contribution of industrial logging to local livelihoods, notably through the payment and redistribution of area and volume-based forest taxes.

Complementary initiatives

In addition to addressing the immediate needs listed above, monitoring production forests and forested areas contributes valuable information that informs on-going and proposed bilateral, multilateral and international initiatives. Amongst actual and potential beneficiaries are:

- Carbon sequestration initiatives related to climate change;
- The World Bank programme to reduce emissions from deforestation and degradation (REDD);
- Timber trade agreements such as the European Union's Forest Law Enforcement, Governance and Trade (FLEGT) process;
- Convention on Biological Diversity and other global biodiversity conservation initiatives (e.g., IUCN's Red List).

Methodology of forest concession monitoring

Integrated approach to forest concession monitoring

Forest concession monitoring, especially if it aims to combat illegal logging, requires an integrated approach that encompasses three un-dissociable components:

1. Ways or tools to identify on-going activities: *Remote sensing (RS) and field controls;*
2. Indicators to measure or assess those activities: *Criteria and indicators,* notably of legality and of sustainable forest management;
3. Ways to collect, process, verify and communicate the information collected on the activities: *Geographical Information Systems (GIS), Interactive Forest Atlases, Forest Information Management Systems (FIMS).*

WRI activity in Central Africa over the last several years covers all three of these components, to varying degrees. WRI has also provided input and support to the FLEGT and other forest certification processes, thus further contributing to forest concession monitoring and the fight against illegal logging.

Remote sensing and field controls

The forest concession monitoring work performed by WRI under CARPE in Central Africa has not been limited to forest concessions, but extended to include all types of logging titles, such as communal and community forests and annual logging *coupe* sales as well as protected areas (national parks, game ranches, reserves, etc.). Consequently it is best to discuss forest monitoring at large, rather than simply forest concession monitoring.

There are basically two major methods by which to identify on-going activities in the forests: remote sensing and field controls. Each method has its advantages and limitations, as can be seen in Table 1.

It is important to note that neither of these methods is a practical or

Table 1. Description, advantages and limitations of the two main forest monitoring methods

Methods	Remote sensing	Field control
Description	Interpretation of satellite images or aerial photography to monitor canopy loss, forest degradation, logging activity and road building.	Physical inspection of logging activities by technical staff – generally involves the use of maps, GPS and other hand-held tools.
Advantages	• Covers large tracts of forest with limited costs; • Access to remote regions; • Limited staff requirements; • Provides global picture; • Limited field work needed; • Discreet.	• Enables one to control a very large number of elements that can not be seen from satellite images or aerial photography (e.g., logs, stumps, bushmeat hunting, working conditions, etc.); • Information collected stands up legally; • Can be carried out with limited technical training.
Limitations	• Only able to detect activities visible within resolution ability of images; • Regular cloud-free satellite images difficult to get for many areas of Congo Basin; • Resolution of available images often not high enough to detect certain activities; • Technology-dependent – requires certain amount of training, software, hardware and ability to acquire necessary images; • Requires some field verification.	• Requires large workforce and supporting infrastructure; • Expensive and time-consuming; • Difficult to construct global picture – site-specific; • Not capable of measuring land-use change effectively; • Leaves more room for corruption between operator and enforcement agents; • Extremely difficult to access remote areas.

complete forest monitoring method in isolation – rather that they are best used complementarily to achieve some effective results. WRI has limited its efforts to remote sensing and has not been involved in actual field controls of logging or other forest-related activities other than validating limits of forest titles and forest roads identified through RS, notably through the use of the Global Positioning System (GPS). The information generated by WRI with remote sensing has, however, been widely used by other forest actors to actually conduct field controls, notably the ministries in charge of forests as well as international NGOs involved in combating illegal logging and poor forest governance, such as Resource Extraction Monitoring (REM), Global Witness and Greenpeace.

Criteria and indicators

From 2003–2006, WRI was active in developing and promoting the implementation of a step-wise approach to forest certification in Central Africa, in partnership with IUCN and the InterAfrican Forest Industries Association (IFIA). This Forest Concession Monitoring System (FORCOMS) was conceptualized as a voluntary and independent monitoring system that would provide information on the status of the legality of the logging and wood-processing operations and on the actual commitment to SFM of the participating forest concessionaires. Legality and the meeting of certain environmental and social criteria were to be third-party verified through a specific set of targeted indicators (see Figure 2 for outline of structure). This was not meant to be another certification or legality verification system, however; rather, it was intended to support on-going initiatives in filling the large gap between the certified and non-certified actors in the region. FORCOMS was developed to be the first step towards meeting baseline legality standards and towards the eventual achievement of certification (Figure 3).

Figure 2. FORCOMS means of assessment architecture

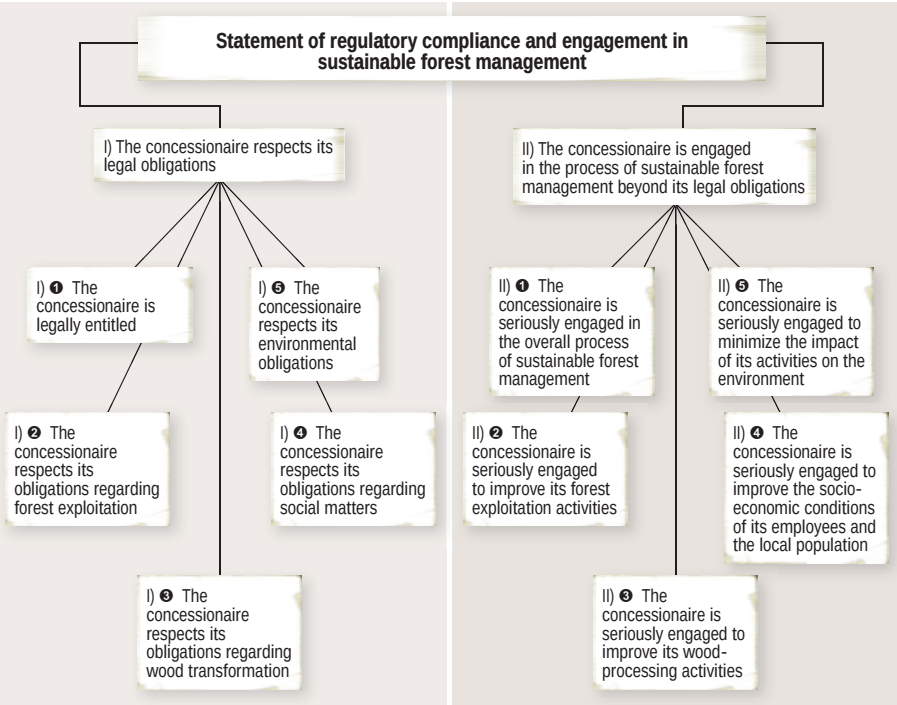
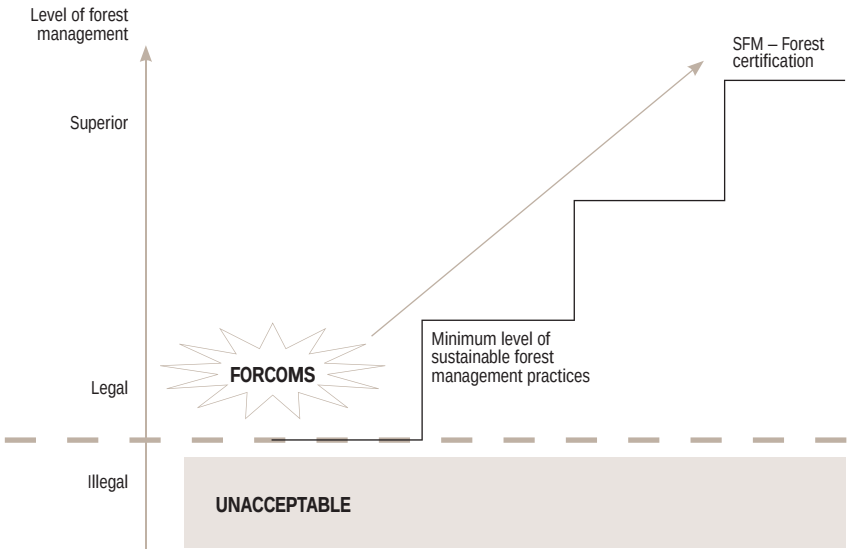


Figure 3. Presentation of FORCOMS and step-wise certification scheme



GIS, Interactive Forest Atlases, FIMS

GIS and Interactive Forest Atlases

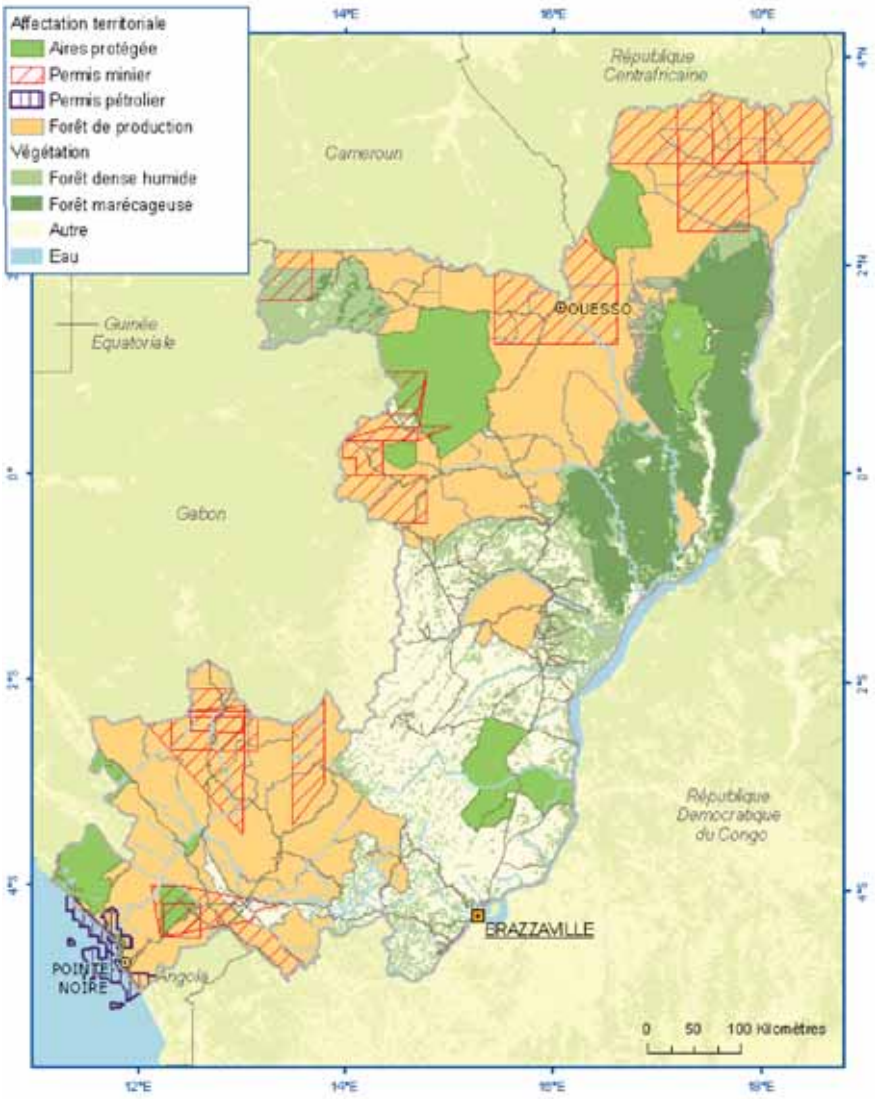
Most WRI activities within CARPE over the last seven years have focused around the development and implementation of remote sensing, GIS and mapping tools to monitor activities within or surrounding logging titles and protected areas. The culmination of these activities is the development and dissemination of the interactive forest atlases and related products (see Figure 4).

The aim of developing these tools and associated activities is to:

- Provide and map verified geo-referenced boundaries of all logging titles and protected areas;
- Locate, qualify, date and map the forest roads and trails within and outside forest titles and protected areas;
- Partner with host country forest ministries to collect, process and disseminate this information;
- Build local capacity in remote sensing, GIS and mapping to carry out the monitoring of logging titles.

The GIS and Interactive Forest Atlases databases, and the Forest Information Management Systems, are cross-feeding each other with useful forest monitoring information.

Figure 4. Distribution of production forests, protected areas, mining and oil permits in the Republic of Congo



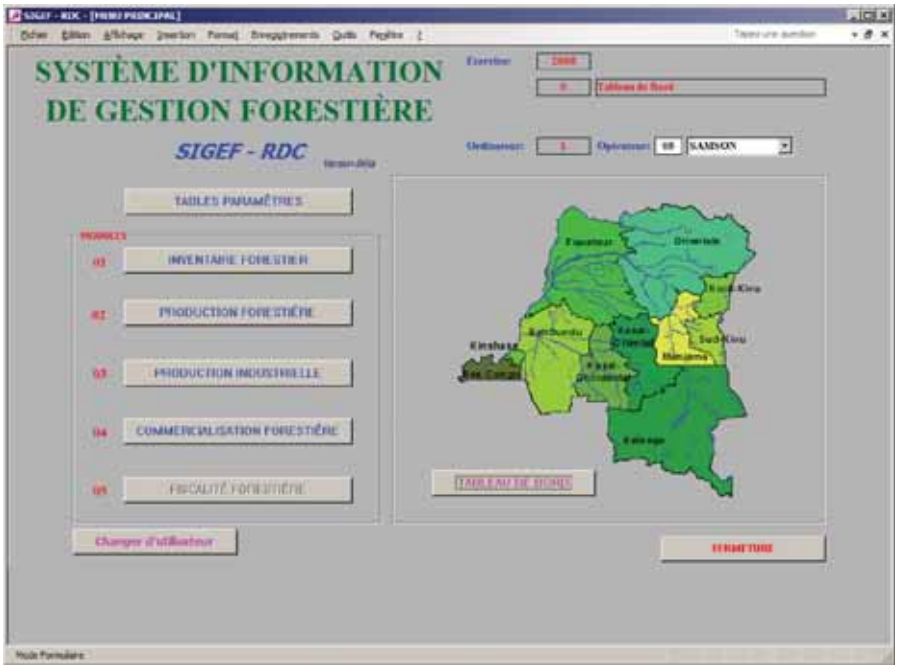
Source: Spatial data and map developed through the Interactive Forest Atlas 1.0 for Congo.

Forest Information Management Systems (FIMS)

Since 2006, WRI has been working with the Ministry of Forests in both the Republic of Congo (RoC) and the Democratic Republic of Congo (DRC) to design and implement an integrated computer-based Forest Information Management System (FIMS, or SIGEF – *Système d'Information de Gestion Forestière* – in French).

The FIMS is a an important decision-support tool that allows for the collection, processing, control and publication of data pertaining to commercial logging, log and wood products declaration, wood processing, and forest taxes (see Figure 5).
The FIMS is comprised of two integrated sub-systems: a computerized forest accounting system and a physical log tracking system. The forest accounting system allows for the collection, processing and logical (e.g., paper trace) validation of data. The forest accounting system can, for instance, trace the various operational steps through the value-chain of a log ready to be exported, from the actual allocation of a valid logging title, to pre-harvesting forest inventory, felling, skidding, transport, storage and finally loading onto a sea-going

Figure 5. Presentation of FIMS database interface



vessel or entering into wood-processing plants. Finished product (sawn wood, plywood, etc.) value-chains can also be tracked with the FIMS. The log tracking system allows for the actual physical field control of the validity of the data fed into the forest accounting system. Log tracking is thus one of the numerous required field verifications for a complete forest concession monitoring system. The log tracking system now in use in Central Africa is based on paint numbering on logs and a set of paper supports for every step of the value-chain, such as the DF10 in Cameroon to report volumes logged. More modern log tracking systems use bar-coding with hand-held computers to scan, verify and communicate the data directly to the forest accounting system.

Through deployment in all Ministry of Forestry departments and active logging companies, FIMS allows for the government to monitor logging activities much more effectively throughout the country as well as over time. Anticipated results include increased capture of forest tax revenue, improved monitoring of management plan implementation, and an overall reduction in illegal logging and corruption in the sector. When fully operational, the FIMS will enable countries like RoC and DRC more easily to meet the Voluntary Partnership Agreement (VPA)'s legality requirements being negotiated under FLEGT.

Support to FLEGT and forest certification processes

WRI has been providing direct and indirect support to FLEGT and forest certification initiatives in Central Africa notably through: a) the provision of spatial information on forest concessions (Interactive Forestry Atlases); b) FORCOMS legality and sustainable management indicators; c) development and deployment of FIMS; and d) participation in sub-regional meetings.

Results achieved

Interactive Forest Atlases – remote sensing, GIS and mapping

The use of the Interactive Forest Atlases as a tool, the dissemination of verified spatial and non-spatial data on logging titles to involved stakeholders and all levels of the forest administration, together with capacity building in remote sensing and GIS, has enabled the participating governments and collaborating partners to better monitor logging titles by:

- Assessing where illegal logging might have taken place in recent years;
- Improving administration capacities and knowledge for monitoring and control activities; and
- Enabling the administration to avoid future conflicts in forest production areas.

Over the course of working with the ministries in charge of forests in five countries of the sub-region over the past seven years, WRI has achieved some significant results towards improved definition of legality in the forest sector and the monitoring of logging titles. Some of the major achievements generated through these activities include:

- Versions 1.0 and 2.0 of the Interactive Forest Atlas in Cameroon and version 1.0 in RoC have helped these respective governments to resolve commercial disputes over boundaries between logging titles as well as between logging titles and protected areas.
- The Congolese Ministry of the Forest Economy has been able to make more efficient use of limited enforcement personnel and resources by using information contained within the Interactive Forest Atlas to identify suspected cases of logging encroachment

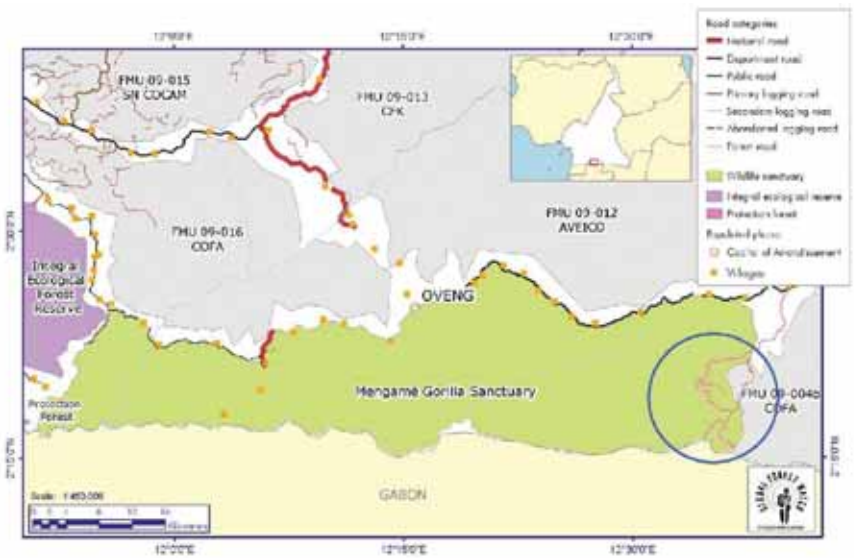
and thus more effectively target field control missions by the Ministry's agents.

- In Cameroon, the Atlas data and derived products (i.e., maps, GPS points, satellite images, road datasets, etc.) are extensively used by CETELCAF (*Centre de Télédétection et de Cartographie Forestière* – the Ministry of Forest technical unit in charge of producing forest title maps and definitions) and the Control Brigades in order to access information with improved accuracy, and plan and support field missions. One of the more notable examples was the identification of logging in the Mengamé Gorilla Sanctuary by the neighbouring concessionaire (see Figure 6).
- GIS mapping tools enabled the Congolese government to verify and revise the taxable area of each forest concession using standardized and objective GIS-based surface area calculations. This exercise led to an overall increase in forest tax revenues for Congo.
- As a result of extensive training in GIS and remote sensing, the Congolese Ministry of Forest Economics is now requiring all logging companies in the country to submit their annual logging *coupe* requests on a GIS platform (as opposed to paper-based).
- An analysis of the current status of forest title information conducted in Gabon provided the impetus for the Gabonese government to dedicate resources and personnel to collaborate with WRI in the verification and reconciliation of forest title spatial and non-spatial data.

Additionally, indirect but very important achievements through this work included the generation of political support *vis-à-vis* this decision-support tool and a change in mindset regarding its utilization in lieu of the existing antiquated and inefficient systems in place, as well as the willingness of the Forest Administrations to provide the information and allow for it to be made widely public. Those are very significant steps towards transparency and improved governance in the forest sector.

Finally, through a series of capacity-building and training activities related to remote sensing, GIS, mapping and GPS, the forest administrations have been reinforced.

Figure 6. Presentation of logging road encroachment in a protected area in Cameroon



Criteria and indicators (FORCOMS)

For numerous reasons, FORCOMS as a system remains non-operational. However, work under FORCOMS has provided impetus and support to the concept of regional frameworks and a step-wise process to forest certification schemes. Furthermore, it produced a complete set of indicators on legality and SFM that are being largely used by countries in the sub-region to develop their own national legality standards, notably in view of their upcoming FLEGT VPA negotiations with the EU.

Forest Information Management Systems (FIMS)

Much work has been invested up-front in the participative development of FIMS in both RoC and DRC with the host-country forest ministries, but only a test field deployment has been carried out so far. However, WRI work has thus far been limited to the forest accounting sub-system of the FIMS, with no action taken on field log tracking.

A pilot deployment of the forest accounting sub-system of the FIMS took place in the RoC during the first half of 2008, with full national implementation to begin following successful execution of the pilot. Implementation in DRC will follow that in RoC.

As with WRI's GIS and Interactive Forest Atlas work, the FIMS work has generated political support and a

change in mindset amongst government officials that has led to increased transparency and improved governance in the forest sector.

Also, through a series of capacity-building and training activities related to database management and forest statistics, the forest administrations have been reinforced.

Lessons learned – analysis and recommendations

The most important lessons that can be drawn from WRI's work over the past seven years in its forest monitoring activities are presented below.

Analysis

Limitations of monitoring tools

WRI's work in forest monitoring at large and with concession monitoring in particular has provided numerous practical and significant results. However, much more still needs to be done to ensure compliance with legality and SFM requirements by logging operators, as well as to better understand how current industrial logging practices are impacting the forest ecosystem in order to inform landscape and national resource management agendas. The bulk of WRI's activities revolve around the use of remote sensing, GIS and forest accounting system (databases) with only limited field control activities in support of data verification and ground control points.

While the Interactive Forest Atlases and FIMS are highly practical and effective tools, they are limited in the information they are able to provide with regards to forest concession monitoring on the ground as well as the real-time tracking of logging activities. For example, these methods are useful in determining where new roads are being built, ensuring there is no overlap between forest titles, keeping tabs on the status of forest concessions and titles, planning effective field missions, and tracking harvested logs. However, they are not directly capable of monitoring activities which are not detectable by satellite images (e.g., bushmeat hunting, overharvesting trees, creation of skidder trails, and other social and environmental obligations) or measuring change on a regular (weekly, monthly or semi-annual) basis. They are also of limited use for detecting illegal felling of individual trees by chainsaw operators. These other activities can only be detected through on-site field verification, and thus the Atlas and FIMS tools are most effectively used in conjunction with targeted field verification – each one complementing the other. Similarly, the FIMS has to include both the forest accounting and log tracking sub-systems in order to be fully efficient.

As shown in Table 1 above, by relying on satellite imagery and GIS-based monitoring tools, the process is inherently limited by the technological constraints. In our experience, depending on Landsat images for road detection has severely limited our ability to monitor forest concessions remotely, due primarily to the malfunction and subsequent discontinuation of Landsat 7 in 2003 and lack of an affordable and comparable substitute. Furthermore, even when the images are available, large swathes of the Congo Basin are rarely cloud-free enough to be effectively observable with visible band imagery. Another type of obstacle faced is the barrier that this technology may impose to certain users who are not computer-literate.

Limitations of the approach

Besides the technical questions identified above, there are constraints accompanying our chosen approach that limit our ability to tackle forest concession monitoring, especially for combating illegal logging. Indeed, this approach:

- Puts the emphasis on law enforcement while other tools, such as putting pressure on importers of CA timber products only to buy timber from legal and sustainable operations, for instance, could have a stronger impact;
- Does not tackle the issue of the legal and regulatory environment which may not allow proper determination of legality;
- Does not take into consideration illegal activities related to wood processing, timber trade, and financial management and flows;
- Does not properly define illegal logging;
- Is not able to deal with the legal and regulatory environment varying from one country to another, thus making it difficult to have a standardized approach to illegal logging in CA (some activities that are illegal in one country could be legal in another);
- May be seen as taking over governments' responsibilities (e.g., law enforcement) and therefore as interference;
- Is hampered by widespread corruption in the sector;
- May not get cooperation from governments or logging companies;
- Doesn't tackle the problem of political will i.e., if there is a lack of political will to enforce laws, no amount of tools or methods are going to be effective;
- May generate animosity and conflicts with logging companies as well as local populations with whom they have to work if we are perceived to be engaged in law enforcement activities aimed against them;
- Is in real danger of not being able to properly and completely identify the various illegal activities and

thus being seen as incompetent or inefficient; and
- May be unwillingly perceived as green-washing certain logging companies since the monitoring is not capable of capturing all illegal activities and, as such, it may harm the international credibility of the programme.

In conclusion, a wide array of tools and actions are needed to be comprehensive and efficient in combating illegal logging. Table 2 provides a general schematic view of various factors allowing illegal activities to occur and identifies the different sets of actions and tools required to combat illegal activities.

Need for partnerships

The data required to perform forest concession monitoring has to come from various stakeholders including: the ministries in charge of the forest and their specialized services (such as the *Service Permanent d'Inventaire et d'Aménagement Forestier* in DRC or the *Centre National des Inventaires et Aménagements Forestiers et Fauniques in Congo*), the private sector (logging companies, *the Société Générale de Surveillance*), international NGOs (CI, WWF, AWF, IUCN, etc.), local NGOs and, finally, parliamentarians.

Solid and well-working partnerships between WRI and those main actors have to be established to ensure not only the collection of data but also the validation of the end-products, as well as the integration of the data and the tools developed by WRI into the decision-making process.

Recommendations

Taking into account the achievements to date, as well as the identified constraints and limitations, WRI proposes the following recommendations for future forest concession monitoring conducted under CARPE:

- Pursue the remote sensing, GIS and mapping activities and expand their scope both thematically and geographically;
- Pursue and intensify the FIMS work in both Congos, notably by also getting involved in the development and implementation of the log tracking sub-system and eventually by expanding to the sub-region. This will however require substantial new funding;
- Continue working on finding solutions to the lack of affordable cloud-free satellite images;
- Work to promote the involvement of new partners within the programme to assist the governments of the sub-region in conducting field verifications, in collaboration with other donors involved in that issue (such as the World Bank);
- Expand forest concession monitoring collaborations with complementary initiatives (e.g., REM, Global Witness), where feasible; and
- Work on ensuring continued strong political will so that the tools are fully incorporated in the decision-making processes.

Table 2. Main tools and actions to combat illegal logging

Factors allowing illegal activities to occur	Examples of illegal activities or problems generated in producing countries	Tools or actions to combat illegal logging						
		Remote sensing, GIS and FIMS	Field monitoring (including log tracking)	Capacity building	Advocacy and public information	Policy, law and regulation changes	Convening stakeholders and promoting dialogue	Improving technologies
Within producing countries								
a) Lack of legislation	Inappropriate and unfair allocation of forest concessions			X	X	X		
	Inappropriate and unfair allocation of other logging rights			X	X	X		
	Unsustainable extraction (no forest management plan)			X	X	X		
	Unfair benefit sharing from use of the forests			X	X	X	X	
	Socially or environmentally damaging operations			X	X	X		
	Difficulties in defining what is legal or illegal			X	X	X		
	Unenforceable regulations			X	X	X		
b) Lack of law enforcement	Company is not legally authorized to carry out logging	X (FIMS)	X					
	Logging outside authorized areas (concession or annual coupes)	X	X	X (GIS)				
	Logging above allocated or authorized volumes	X (FIMS)	X					
	Logging forbidden or unauthorized species	X (FIMS)	X					
	Tallying wrong species to pay less taxes		X					
	Underscaling of volumes logged to pay less taxes		X					
	Not reporting all volumes logged		X					
	Not respecting all clauses of concession contract		X					
	Not paying taxes due (area taxes, felling, export taxes, corporate, etc.)		X					
	Transporting timber products without proper authorization		X					
c) Lack of governance	All illegal activities listed in a) and b) above			X	X		X	
d) Lack of knowledge and asset sharing	Inappropriate and unfair use of natural resources			X	X		X	
	Inequity in benefit sharing			X	X		X	
	All illegal activities listed in b) as logging unchecked			X	X		X	
	Conflicts over use of forest resources			X	X		X	
Within consuming countries								
e) Lack of legislation	All illegal activities and problems in a), b) and c) above				X	X	X	
f) Lack of corporate accountability	All illegal activities and problems in a), b) and c) above				X		X	
g) Lack of legal verification and monitoring systems	All illegal activities and problems in a), b) and c) above	X	X	X	X	X	X	X
Within both producing and consuming countries								
h) Lack of dialogue and engagement	All illegal activities and problems in a), b) and c) above				X		X	
i) Lack of appropriate technology	All illegal activities and problems in a), b) and c) above	X	X	X				X

Case Study 3

The Use of Satellite Mapping and GIS to Support Large-Scale Conservation: Lessons Learned

Alice Altstatt, Diane Davies, Paya de Marcken, Chris Justice, Erik Lindquist and Minnie Wong

Introduction

Establishing a reliable baseline of forest extent and monitoring forest cover change across the Congo Basin is critical to evaluating the progress of CARPE towards meeting its strategic objective of reducing the rate of forest degradation and loss of biodiversity. Satellite-derived maps and geographical information systems (GIS) provide spatial information and analytical tools essential for large-scale conservation planning and effective monitoring of Congo Basin forests. Analytical tools, such as GIS, help conservation planners integrate geospatial data on land cover, population centres and ecology to inform planning and policy decisions. Remote sensing (RS) provides the capacity to monitor the impacts of conservation initiatives on land cover and land use, which in turn relate directly to forest resources and biodiversity.

The Food and Agriculture Organization of the United Nations (FAO) compiled the Africover geospatial database in response to the lack of information on land cover for Africa and in recognition that this deficit limits planning, development and sustainable management of renewable natural resources. Africover includes feature datasets and land cover classifications that are derived from the visual interpretation of high resolution satellite imagery acquired between 1994 and 2001. These data are a significant mapping contribution, but they are not available for all CARPE countries, nor can they at present provide rates of forest cover change. The FAO Forest Resource Assessments (FRAs) provide statistics on forest cover, derived primarily from "best estimate" information provided by national forest ministries, although those published for 1990, 2000 and 2005 are supplemented by analysis of samples of multi-temporal satellite data to estimate deforestation rates. Variability in forest categories and methodologies between assessments makes it difficult to make statistical comparisons. The FRA data are not spatially explicit, making them less useful for baseline assessments, monitoring rates of deforestation on sub-regional scales or evaluating the effect of specific programmes in reducing the rate of deforestation within the Congo Basin Forest Partnership (CBFP) landscapes.

In order to address these shortfalls and produce the detailed and spatially explicit information necessary to support CARPE's conservation initiatives in the CBFP landscapes, CARPE has supported satellite mapping of forest cover in the Congo Basin and worked with CARPE partners to use geospatial data. The geospatial datasets produced under CARPE have broader applications beyond the programme's objectives.

The following sections summarize land cover mapping using remote sensing in the Congo Basin and describe recent developments in forest monitoring at the Basin level, including a discussion on the availability of remote sensing data. There is an overview of GIS applications within CARPE and the development of GIS/RS capacity in the region. Finally, lessons learned regarding the importance of GIS/RS for CARPE as a basin-wide regional conservation initiative are summarized.

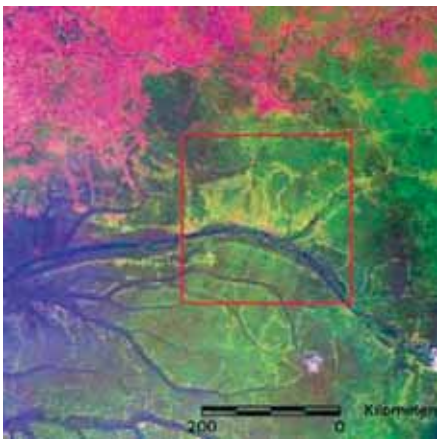
Satellite mapping for Central Africa

Since the 1970s, earth-observing satellites have provided data suitable for mapping land cover. These remotely sensed data have become the predominant means of mapping humid tropical forest on global and regional scales. Remote sensing data offer numerous advantages over ground-based data: large area coverage; collection over remote, inaccessible areas; internally consistent and repeatable measurements; systematic and continuous data acquisition; and, compared to labour-intensive field data collection, low cost. When coupled with corroborative ground-based data and improved geolocation methods, remote sensing data provide the means to produce vegetation maps of unprecedented precision and accuracy. Because remote sensing data capture biophysical and structural vegetation traits, the derived thematic classes are more general relative to the floristic detail that can be collected in ground-based surveys.

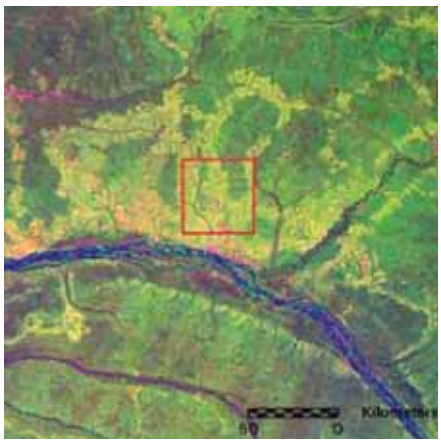
There are two classes of satellite[1] optical data used for global, continental and regional land cover monitoring: moderate (200–300 m) to coarse (1 km) spatial resolution data with

1 A list of acronyms and a table of earth observing satellites that provide data for vegetation mapping is provided in Appendix 1.

Figure 1. Examples of satellite data used for vegetation mapping at different spatial resolutions



SPOT VEGETATION (1 km)



MODIS (250 m)

Landsat (30 m)

daily/frequent global coverage, e.g., AVHRR, MODIS, SPOT VEGETATION; and high (15–30 m) spatial resolution data, e.g., Landsat and SPOT HRVIR, with repeat cycles of 2–3 weeks.
The frequent acquisitions of the low resolution data increase the likelihood of collecting cloud-free data, which is particularly important for monitoring Central Africa due to persistent cloud cover in the western Congo Basin. Frequent data acquisitions enable depiction of vegetation phenology (seasonal effects) which can be very useful in discriminating vegetation types. However, moderate and coarse spatial resolution data with daily coverage cannot capture the fine scale changes in the forest domain resulting from shifting agriculture, a predominant driver of deforestation in the Congo Basin. Likewise, logging roads are often only detected in high spatial resolution imagery and may be the only indication of selective commercial logging activity. Thus, both low and high spatial resolution data have information of value in monitoring forest cover within an environment such as the Congo Basin.

A number of land cover characterizations of Central Africa have been derived primarily from satellite optical data, either specifically for the Congo Basin, or as part of larger mapping projects. A global tropical forest inventory, the Tropical REsources and Environment monitoring by Satellite (TREES), was undertaken by the European Commission Joint Research Centre (JRC) and the European Space Agency (ESA) in support of the International Geosphere-Biosphere Programme (IGBP). That project produced a 1:5,000,000 vegetation map of Central Africa from 1 km (Local Area Coverage) and 5 km (Global Area Coverage) AVHRR data acquired in 1992 and 1993 (Mayaux *et al*., 1999).
In support of CARPE, a similar land cover map was also prepared from multi-temporal, multi-resolution AVHRR data acquired during the 1980s and early 1990s (LaPorte *et al*., 1998).
The Global Land Cover (GLC) 2000 project of the JRC produced a 1 km land cover map of the entire African continent from SPOT VEGETATION year 2000 data, supplemented by radar data to map flooded forests and a Digital Elevation Model to identify montane forests (Mayaux *et al*., 2004).
The *Université Catholique de Louvain* (UCL) produced a more detailed land cover classification for the Democratic Republic of Congo (DRC) also based on SPOT VEGETATION data from the year 2000 (Vancutsem *et al*., 2004). A 300 m resolution global land cover map, (GlobCover 2005) derived from Envisat MERIS data, is being produced by ESA in partnership with UNEP, FAO, JRC, the European Environment Agency (EEA) and GOFC-GOLD (Global Observation of Forest and Land Cover Dynamics).

Satellite radar data are also useful for mapping humid tropical forests because of the ability of the radar signal to penetrate cloud cover, to discriminate inundated forest from *terra firma* forest and to estimate forest biomass from radar interferometry. Processing and analysis of radar data are considerably more complex than for optical data. There have been two efforts to collect, process and derive forest maps from satellite synthetic aperture radar (SAR) data across the Congo Basin. The ESA/European Commission Central Africa Mosaic Project (CAMP) used C-band (3 cm wavelength) data from the European Remote Sensing (ERS) satellites, and the National Space Development Agency of Japan Global Rain Forest Mapping (GRFM) project relied on L-band (23 cm) data from the Japanese Earth Resources Satellite

(JERS-1). Both of these mosaic datasets were used to produce vegetation maps for Central Africa that distinguished periodically and permanently flooded forest from lowland forest (Mayaux *et al*., 2002).

In recognition that discrete categorical depictions of forest cover in the maps described above can vary depending on forest definition, a global map of proportional tree cover at 1 km was produced from AVHRR data (DeFries *et al*., 2000). A similar approach was subsequently applied to MODIS data to produce a 500 m resolution global percent tree cover map (Hansen *et al*., 2003). This Vegetation Continuous Fields (VCF) method was modified to create a 250 m resolution percent tree cover map specifically for the Congo Basin (Hansen *et al*., 2008). This map was consolidated with the GLC 2000 map to provide an initial survey of the Central African forest for *State of the Forest 2006* (CBFP, 2007).

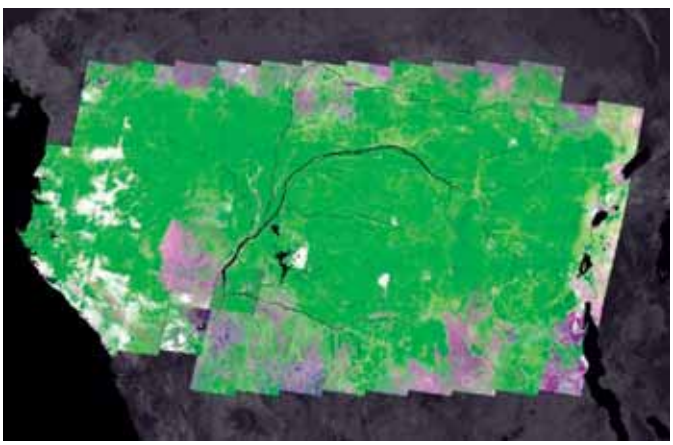
Detection and mapping of the fine-scale forest cover changes that are characteristic of the Congo Basin require imagery with a spatial resolution of less than 100 m. The NASA Landsat Pathfinder Humid Tropical Deforestation Project was a collaborative effort by the University of Maryland (UMD), the University of New Hampshire, and the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center to map deforestation using Landsat data (30 m resolution) for three epochs (1970s, 1980s and 1990s) in Southeast Asia, the Amazon Basin and Central Africa. Production of forest cover maps from these data was time-consuming and labour-intensive, but the primary limitation for mapping deforestation was a lack of sufficient cloud-free data for each time period. Nonetheless, the data archive compiled by the Pathfinder Humid Tropical Deforestation Project has been essential for subsequent high resolution mapping efforts.

An alternative approach to exhaustive, i.e., "wall to wall", forest cover change mapping is to employ a sample-based method such as the systematic sampling scheme developed by JRC/UCL for estimating forest cover change. This approach used 10 km x 10 km subsets of Landsat data from 1990 and 2000 distributed every ½ degree across the Central African forest domain to derive rates of deforestation, reforestation, forest degradation and forest recovery (Duveiller *et al*., 2008). The FAO has proposed using this sampling strategy for future global FRAs. For this method to be effective in a region like the Congo Basin where forest cover change is relatively rare, a large number of samples must be obtained in order to produce estimates with reasonable levels of uncertainty. For the purposes of CARPE, where the areas of interest, the landscapes or macro-zones, can be relatively small, estimates of change derived by this method would not be sufficient.

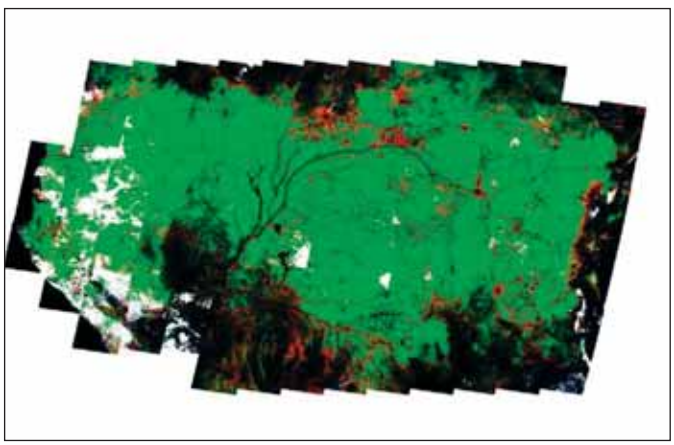
Recent Congo Basin forest cover and change mapping under CARPE: methods and results

CARPE has supported the development of a sophisticated, innovative method to map forest cover and forest cover change exhaustively across the Basin

Figure 2. Forest cover and forest cover change in the Congo Basin (1990s–2000)



DFCM multi-spectral 1990s to 2000s Landsat composite image for the Congo Basin superimposed on a grey-scale MODIS image.



Forested area of the Congo Basin derived from Landsat imagery using the DFCM process (green is forest, black is non-forest). Areas of forest cover change detected between the 1990s and 2000s are shown in red, enhanced for easier viewing. White areas within each mosaic were obscured by cloud cover in either or both of the time periods.

which combines a consistent regional characterization of forest derived from MODIS data with spatially detailed forest cover and cover change derived from Landsat data (Hansen *et al*., 2008). The Decadal Forest Change Mapping (DFCM) project automatically maps a forest likelihood variable and forest cover change[2] across the Congo Basin at 57 m, a resolution that is adequate to capture the small-scale changes in forest cover that are characteristic of this biome.

A 250 m resolution land cover map was produced from multi-temporal (2000–2004) MODIS data for the Congo Basin. The MODIS land cover map provides reference data to automatically derive land cover characterizations from Landsat imagery. Multiple Landsat acquisitions are included for each image tile[3] to compensate for cloud cover. Two epochs of Landsat data, *circa* 1990 and *circa* 2000, are used to produce a forest likelihood map and map of forest cover change between the two time periods. The result is a consistent high resolution depiction of forest cover and forest cover change for the entire Congo Basin. It is the first spatially explicit high resolution representation of forest cover change ever produced for this region.

The consistent basin-wide characterization of forest cover and forest cover change permits the derivation of comparable statistics at regional, national and local levels. The spatially explicit data enable analysis of forest cover change processes at different scales, including investigations of local drivers of deforestation which are important for land-use management decisions. For example, in the DRC between 1990 and 2000, nearly 98 percent of all forest change took place within 2 km of a pre-existing forest clearing and approximately 50 percent of all forest clearing occurred within 6 km of a major road. These preliminary results reflect what is visually apparent in the data: most of the deforestation is the result of expansion of the rural complex (the mosaic of settlements, fields and degraded forest which exists along the road networks) into the forest.

Regional analysis of the DFCM data shows a 1.4 percent overall decrease in forest cover in the Congo Basin from the 1990s to the 2000s. This corresponds to a loss of 25,720 km^2 of an original forested extent of 1.8 million km^2 at a rate of 0.14 percent per year (Lindquist *et al*., 2008). This estimate is smaller than but close to the sample-based change estimate of Duveiller (2008) of 0.22 percent per year from 1990 to 2000. Given the very different methodological approaches, and the heterogeneous, fine-scale nature of change within the Congo Basin, the relative agreement of the two estimates is an encouraging sign for monitoring within this environment. In the DRC, 19,575 km² of forest was converted

2 Forest likelihood is a measure of the probability, from 0–100%, that a given mapping unit, in this case a 57 m square pixel, meets the definition of closed canopy forest. A continuous variable, rather than a categorical depiction, allows the data user to delineate subsets of forest based on user-defined thresholds. Forest cover change, on the other hand, is defined by a DFCM algorithm and is assigned a unique value. The forest cover data presented here are based on a forest likelihood value of greater than or equal to 50 percent.

3 Landsat data is acquired in a fixed pattern of tiles across the earth's land surface. Each tile is referenced by path (the orbital ground track) and row (image segment).

Table 1. Forest cover and forest loss between circa 1990, 2000 and 2005 for the 12 CBFP landscapes

CBFP Landscape	Landscape area (km^2)	1990 Forest cover (km^2)	2000 Forest cover (km^2)	1990–2000 Forest cover loss (%)	2005 Forest cover (km^2)	2000–2005 Forest cover loss (%)
Monte Alén-Monts de Cristal	26,725	26,229	26,101	0.49	NA	NA
Gamba-Mayumba-Conkouati	46,549	29,153	28,709	1.52	NA	NA
Lopé-Chaillu-Louesse	34,925	33,845	33,647	0.59	NA	NA
Dja-Odzala-Minkébé Tri-National (TRIDOM)	192,403	186,065	185,729	0.18	NA	NA
Sangha Tri-National (TNS)	44,134	42,820	42,743	0.18	42,607	0.32
Léconi-Batéké-Léfini	36,077	7,073	6,968	1.48	NA	NA
Lac Télé-Lac Tumba	131,292	100,285	99,366	0.92	99,177	0.19
Salonga-Lukenie-Sankuru	104,670	101,570	101,198	0.37	100,034	0.26
Maringa/Lopori-Wamba (MLW)	72,693	68,756	68,162	0.86	67,938	0.33
Maiko Tayna Kahuzi-Biega	106,210	92,376	91,404	1.05	90,600	0.88
Ituri-Epulu-Aru	41,045	39,663	39,449	0.54	39,310	0.35
Virunga	17,465	3,480	3,279	5.79	3,143	4.14

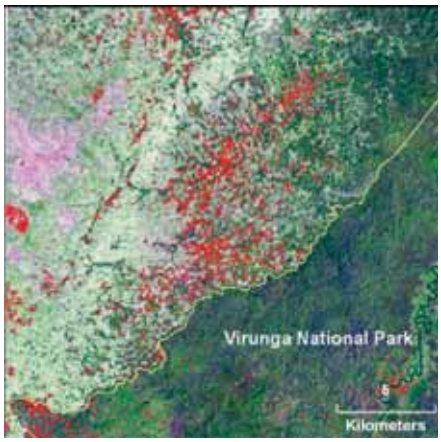
NA: not available

Note: Forest cover is defined by a DFCM forest likelihood value of greater than or equal to 50 percent. Forest cover change is determined by a specific DFCM algorithm. Where persistent cloud cover obscured the Landsat mosaic, MODIS forest cover data were used to augment the calculation of forest cover area and loss. The landscape boundaries available as of 5 September, 2008 were used for these calculations.

Figure 3. Examples of forest cover loss from *circa* 1990 to *circa* 2000, shown in red, overlaid on a multi-spectral Landsat composite from the same time period

Agricultural expansion into upland forest areas – flooded forest is avoided.

Expansion of the rural complex and logging roads north of Bumba.



Forest loss near Virunga National Park – as forest is lost outside the park, pressure on forest resources within the park increases.

Table 2. Forest cover and forest loss between *circa* 1990 and *circa* 2000 inside and outside protected areas in the Democratic Republic of Congo

Forested region	1990 forest cover (km2)	2000 forest cover (km2)	Forest cover loss (km2)	Forest cover loss (%)
DRC	1,110,092	1,090,517	19,575	1.83
Inside protected areas	147,004	146,006	998	0.68
Outside protected areas	941,088	920,418	20,670	2.20

from an original extent of 1.1 million km². This represents a 1.83 percent decrease in forest cover from the 1990s to the 2000s.

Mid-decadal Landsat composites and change detection

Because the DFCM method is an automated procedure, the maps can be updated as additional data become available. Work is currently underway to produce forest cover change maps for 2000–2005 from recent Landsat imagery, despite the Scan Line Corrector (SLC) failure of the ETM+ sensor which causes significant gaps in the data rendering about 22 percent of each image unuseable. While many researchers have purposely avoided using the Landsat SLC-off data, the DFCM approach generically handles the data gaps to create products for the 2000–2005 epoch.

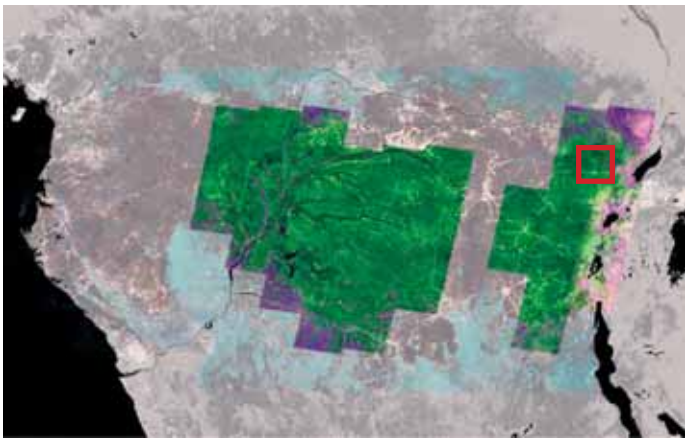
Mid-decadal Landsat mosaics have been completed for over 60 percent of the Basin and seven of the 12 CBFP Landscapes. Landsat image tiles for which multiple acquisitions are available produce more consistent results (e.g., free of scan gaps and scan line artifacts) than tiles without such data richness. Figure 4 shows the current extent of the mid-decadal forest cover map for the Congo Basin with an example of forest cover change as detected using the automated DFCM algorithm. Quantitative estimates of basin-wide mid-decadal forest change are currently being developed.

Additional forest characterizations – degraded and flooded forest

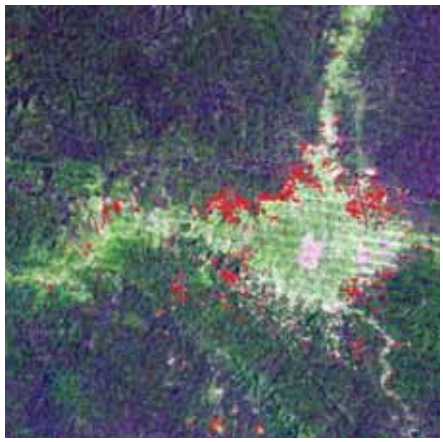
Distinguishing degraded (secondary) forest from mature (primary) forest is important for habitat conservation, biodiversity, and estimation of carbon stocks. Since the DFCM forest cover is represented as a continuous variable, it is theoretically possible to initiate characterization of a degraded forest class based on thresholds of forest likelihood values. Forest likelihood values were compared for field plots classified as forest, non-forest or degraded forest as from an FAO National Forest Inventory of Cameroon. There was a clear separation of forest likelihood values for forest and non-forest plots, but degraded forest plots comprised a wide range of values which overlap the forest plot values. Work is continuing on the characterization of a degraded forest class.

Flooded forest is a crucial cover theme for modelling regional hydrology, assessing habitats and biodiversity, and understanding human impacts on the forest environment. Most deforestation occurs within *terra firma* forests, due to

Figure 4. Mid-decadal forest cover map for the Congo Basin with an example of forest cover change



DFCM multi-spectral 2005 Landsat composite for image tiles processed to date using the DFCM algorithm. The 2000 Landsat DFCM mosaic is in the background to show the total extent of the study area. A MODIS map of Central Africa provides the backdrop.

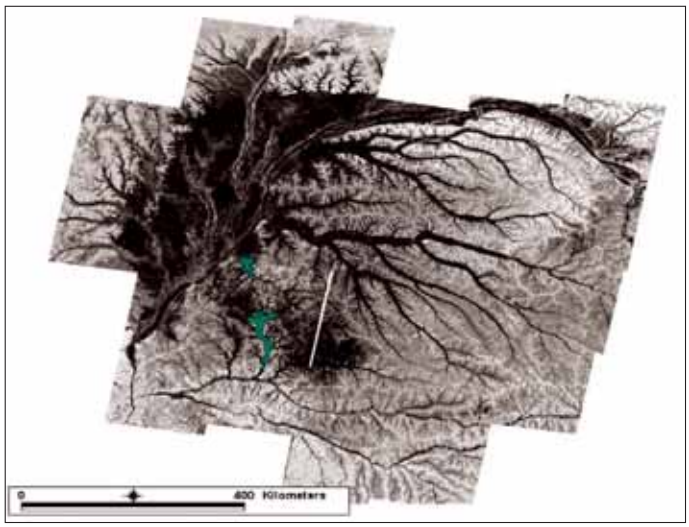


Example of forest cover loss (in red) detected between 2000 and 2005 for a site in eastern DRC (red box on larger map).

greater agricultural suitability and easier access. Flooded forests can be difficult to discriminate from *terra firma* forests on the basis of optical (reflected) data alone. A method currently being implemented, with support from CARPE, employs Landsat image mosaics, elevation data and derived hydrographical parameters from Shuttle Radar Topography Mission (SRTM) data, and radar data to map wetlands, including forested wetlands, across the Basin at 57 m.

As a suite of products, the forest cover, forest cover change, degraded forest and flooded forest maps will be valuable inputs for land-use planning, regional policy decisions, carbon accounting initiatives and climate modelling. They will also help to meet the goals of international monitoring programmes, such as the United Nations Framework Convention on Climate Change (UNFCCC) Reducing Emissions from Deforestation and Degradation (REDD) initiative.

Figure 5. Preliminary wetland mask for the central Congo Basin



Dark values indicate high likelihood of wetland occurrence, bright values are low likelihood. Lakes Tumba and Mai Ndombe are overlain.

Remote sensing data access

The success of RS-based forest mapping efforts has demonstrated the utility of satellite data for land cover mapping in Central Africa. Recent technological advances have made it easier to process large amounts of data, and methodologies for deriving vegetation characterizations continue to improve. Limitations to the derivation of more timely and accurate forest cover characterizations are primarily related to data access. Researchers typically use the data they can afford, not the data they truly need for implementing rigorous monitoring schemes. Therefore, it is paramount that future data policies ensure the regular delivery of the data required to meet policy goals. While some recent developments suggest a more liberal era of data access, the major hurdle to producing new satellite-based maps to date has been the cost of acquiring remotely sensed data.

NASA provides MODIS datasets for free through the United States Geological Survey (USGS) Land Processes Distributed Active Archive Center, and the National Oceanic and Atmospheric Administration (NOAA) AVHRR-derived Normalized Difference Vegetation Index (NDVI) is freely available via the Global Land Cover Facility. SPOT VEGETATION data that have been archived for three months or longer are also available free of charge. However, as mentioned previously, higher spatial resolution data are required to map the forest cover changes that occur in the Congo Basin.

The NASA/USGS Landsat series of satellites have been the workhorses for high resolution forest cover mapping since 1972. Landsat 5, launched in 1984, is still operational, but data must be directly downlinked to ground stations in view of the satellite, i.e., there is no on-board storage of data. Currently, due to the absence of a ground station in the region, there has been no collection of Landsat 5 data over most of the Congo Basin since 1999. The NASA/USGS Mid-Decadal Global Land Survey (MDGLS) initiated two limited Landsat 5 data acquisition campaigns which included part of the Congo Basin in 2008, downlinking to an ESA ground station in Malindi. However, this ground station will most likely not operate continuously due to technical challenges and the fact that the Landsat 5 sensor is likely to fail due to its advanced age. Landsat 7 was launched in 1999 and produced well calibrated, high quality images until May 2003 when the sensor SLC failed. As a result, there are linear gaps in the images which cause a 22 percent loss of data in any given image. Aside from the data gaps, the image quality remains unaffected, but additional images are required to compensate for the gaps. Meanwhile, the NASA/USGS Landsat Data Continuity Mission is striving to have a new Landsat satellite launched in 2011.

Until very recently, Landsat data have not been generically free, and pricing and distribution policies have varied over the duration of the programme. CARPE and its partners have benefited from NASA-funded acquisitions of Landsat data, under the Pathfinder project and the Science Data Purchase for the production of the GeoCover datasets. The GeoCover data consist of select, orthorectified Landsat scenes for the 1970s, *circa* 1990 and *circa* 2000, with near global coverage for each epoch, that are made freely available. These datasets are being reprocessed, with improved geometric and topographic inputs, under the USGS GLS project. In addition, the MDGLS is producing another global orthorectified Landsat dataset, the Global Land Survey 2005 (GLS 2005), from Landsat 7 and Landsat 5 data. Both the GLS 2000 and the GLS 2005 datasets for Africa are freely available for download from the USGS Glovis website (http://glovis.usgs.gov) as of March 2008. As of December 2008, the USGS is providing Landsat 7 archival data (both SLC-off and SLC-on) and Landsat 4 and 5 archival data at no charge through the Glovis website. New Landsat 7 and Landsat 5 images are also made available shortly after they are acquired. This is a significant positive development for forest cover monitoring under the CARPE programme.

Cloud cover will always be an issue for the Congo Basin, and full access to the entire Landsat archive will greatly facilitate the production of a mid-decadal forest change map for Central Africa. Other optical data can supplement the Landsat data. Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data has been acquired over the Congo Basin by UMD through the NASA Science Data Purchase, and will be used for filling data gaps for the DFCM method. ASTER scene footprints are approximately 1/9 the size of a Landsat scene and data acquisition is not systematic. Although thousands of scenes have been acquired over the Congo Basin since the sensor was activated in 2000, large areas remain for which there is no useable ASTER data. The Indian Remote Sensing Resource-1 Satellite (IRS) and SPOT HRVIR provide data that are suitable for forest mapping but the data are currently prohibitively expensive. IRS data at 50 m also offer the added advantage of obtaining several acquisitions per month. China and Brazil announced in November 2007 that they would make China Brazil Earth Resources Satellite (CBERS) data available to African countries, but the mechanism for data acquisition and transfer for Central Africa has not been established.

To meet the needs of CARPE, radar data may provide the best opportunity for monitoring CBFP landscapes in persistently cloudy regions. SAR C-band instruments are on two ESA satellites: Envisat and ERS-2. A radar instrument with multiple polarization capability (Phased Array type L-band Synthetic Aperture Radar or PALSAR) is on board the Japanese Advanced Land Observing Satellite (ALOS), launched in January 2006. A systematic observation strategy is planned for PALSAR in order to produce a consistent, global time-series data set. The ESA and Japanese data can be made available to researchers on a limited basis. A commercial SAR satellite, RADARSAT-2, was launched in December 2007.

GIS and CARPE

The integration of remote sensing products with other geospatial data using GIS can provide useful information for conservation and natural resource management. Within CARPE, GIS has been used to compile, model, analyze and disseminate geospatial data. Outputs in the form of digital and hard copy maps are used for orientation, education, community discussion and mapping, visualizing

land cover and land use, highlighting areas of forest change, and land-use planning.

When CARPE was first authorized in 1995, there was a dearth of geo-referenced data for the Congo Basin. Initial data collection efforts focused on collating and digitizing the locations of towns and settlements, as well as road features from paper maps or Landsat images. Currently, there are many more sources of geospatial data for Central Africa (Box 1), but these datasets are not always compatible, and depending on the scale of the application, datasets may be too coarse or imprecise. To help users determine what data are available, and whether they are suitable for a specific application, CARPE II placed more emphasis on the collection and sharing of geospatial data from and between CARPE partners. UMD established CARPE Data Explorer to facilitate this process (see Box 2).

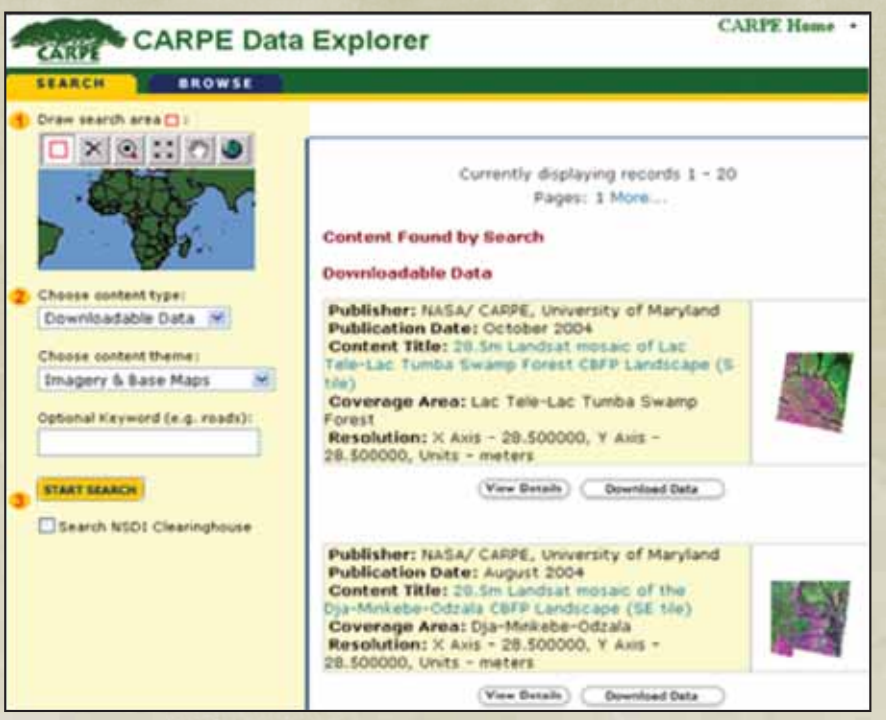
Box 1. Geospatial datasets currently available for Central Africa

- **ESRI (Environmental Systems Research Institute) global datasets**
- **UNEP-WCMC (World Conservation Monitoring Centre) and IUCN (International Union for Conservation of Nature) World Database on Protected Areas**
- **UN FAO Africover**
- **UCL maps of the Democratic Republic of Congo**
- **World Resources Institute (WRI) Forestry Atlases for Cameroon, the Republic of Congo and Democratic Republic of Congo (coming soon)**
- **Data at the landscape level from NGOs and *in-situ* projects, including ECOFAC (*Ecosystèmes Forestiers d'Afrique Centrale*)**

Key datasets are those that relate directly to CARPE activities; they include priority landscape boundaries, population centres, hunting camps, roads, rivers, protected areas, logging and oil concessions, flora and fauna inventories, habitat assessments, and more recently delineations of the land-use management zones.

Box 2. CARPE Data Explorer

CARPE Data Explorer is a customized version of ESRI's ArcIMS (Arc Internet Map Server) Metadata Explorer. Geospatial data and mapping services are organized to enable map-based or keyword searches for geospatial data. These data can be viewed and downloaded over the Internet. In our experience, users unfamiliar with geo-portals have found that the search function is not very comprehensive. Alternative solutions for accessing data are currently being assessed for improved functionality.



An on-line central data repository allows users to easily determine if geospatial data is available and suitable for their needs, and provides data access. For geospatial data to be of real value, ancillary information, or metadata, must accompany the geospatial data. Metadata, at a minimum, should include: spatial extent, projection, datum, information on when and how the data was created, and an explanation of attribute fields. Metadata is often compiled as an afterthought when data collection is completed and unfortunately, when resources are limited, the creation of adequate metadata is not a priority. Partners may be reluctant to contribute geospatial data through the CARPE Data Explorer due to a lack of adequate metadata, or the datasets are incomplete or partners are waiting to publish results. Datasets are sometimes revised by partners but not re-submitted in a timely fashion. The end result is that many GIS datasets held at CARPE are out-of-date or do not reflect new information. USAID has encouraged more sharing of GIS data within CARPE, requiring that geospatial data (e.g., shape files) be submitted as part of the MOV (means of verification) documents.

GIS integrates RS data and results with other geospatial datasets, which is critical for CARPE monitoring and reporting. Using GIS it is possible to analyze changes in forest cover by, for example, landscape, protected area, administrative area, watershed or distance from roads. An examination

Box 3. CARPE Mapper

CARPE Mapper is a web-based mapping service for viewing and querying geospatial data over the Internet without requiring access to GIS software. Map services are available for each of the 12 priority landscapes. Each contain data specific to that landscape provided by the NGOs working there. Four of the 12 landscapes contain Forest Elephant telemetry data, provided by the Wildlife Conservation Society (WCS). CARPE Mapper provides a useful overview of the landscapes and allows users to select and query a range of data layers. Using CARPE Mapper does however require reasonable Internet access and user feedback has shown that when internet access is intermittent or bandwidth is low, the performance of CARPE Mapper can be prohibitively slow. CARPE Mapper was developed approximately four years ago using ESRI ArcIMS software. Since it was developed there have been a number of advances in internet mapping software; alternative mapping services are being considered but noticeable improvements in performance are unlikely without improving bandwidth in the region.

Figure 6. A poster for the Maringa/Lopori-Wamba Landscape which incorporates a Landsat composite and forest cover change map from the DFCM along with information provided by the landscape partner

Box 4. Land-use planning in the Maringa/Lopori-Wamba (MLW) Landscape

As a pilot project for the CARPE Landscapes, UMD, in partnership with the African Wildlife Foundation (AWF), UCL, the US Forest Service (USFS) and others, are using GIS and products derived from remote sensing to build a suite of spatially-explicit land-use models for the MLW landscape, located in northern Democratic Republic of Congo. Modelled outputs include human population distribution and human accessibility in the landscape, as well as identification of biodiversity hotspots and important wildlife corridors connecting existing protected areas. The DFCM satellite-derived forest change products have been used to predict land cover change in the landscape over the course of the next 50 years. To contribute directly to land-use zoning initiatives, the team will use a spatially-explicit site selection modelling tool to identify areas most suitable for future human expansion, taking into account conservation and human needs.

of the spatial variability of forest cover change helps to understand drivers of land cover change such as human population distribution, land-use practices, resource management policies, and socio-economic factors.

One of the most useful outputs from GIS are maps that integrate satellite imagery, forest change and local feature data to provide users with a bird's-eye view of the landscape. These maps have proved to be a powerful tool for interpreting land cover and land-use dynamics, as images reveal detail that cannot possibly be represented by strictly cartographic elements. The maps have been used for field work, engaging local communities and have provided focal points for discussion. An example of such a map produced for CARPE is shown in Figure 6.

Spatial modelling with GIS is also making significant contributions to CARPE. Simulating how natural resources (such as wildlife population distributions or socio-economic impacts on forest resources) would be affected under different land-use scenarios is useful for guiding land-use planning. An example of spatial modelling used in land-use planning for a CBFP landscape is presented in Box 4.

Regional activities: establishing the capacity and infrastructure to use geospatial data in forest management and monitoring in the Congo Basin

Prior to the implementation of CARPE Phase II, it was widely acknowledged that there was a paucity of reliable and updated information on forest cover and forest cover change. National institutions recognized that accurate mapping and remotely sensed data, in conjunction with *in-situ* data, were essential to producing this information efficiently and on a regular basis, but no critical mass of experts in this field

existed in the Congo Basin. Capacity was limited to several individuals and site-specific projects scattered across the region and no appropriate infrastructure existed to support a regional initiative on forest mapping.

In 2000, stakeholders concerned with using spatial data in forest management met in Libreville, Gabon for a GOFC-GOLD Central Africa regional workshop, co-sponsored by TREES, NASA (through the Global Change SysTem for Analysis, Research and Training initiative, START), and USAID-CARPE. A panel of the Global Terrestrial Observing System, GOFC-GOLD works at the global and regional scale to improve the quality and availability of forest observations and produce functional products for users of this data. The main agenda of the 2000 GOFC-GOLD workshop was to create a Central African GOFC-GOLD chapter that would link national agencies and the user community with producers of this information.

Participants of the workshop agreed that the network would be coordinated from Kinshasa, and that it would operate under the French acronym OSFAC (*Observatoire Satellital des Forêts d'Afrique Centrale*). As a regional GOFC-GOLD network, OSFAC's unique long-term objective is to build regional capacity to use remotely sensed data and mapping techniques to produce reliable information on forest cover and forest cover change across Central Africa. Simultaneously, OSFAC works to tackle some of the obstacles to establishing and maintaining operational forest mapping in the region. These primary constraints have been identified by national agencies as: a lack of human and financial resources, poor access to data (imagery) and information, poor internet access, and a lack of local expertise.

In order to operate efficiently within the DRC and across Central Africa, OSFAC sought recognition as a Congolese NGO concerned with facilitating access to satellite data, building capacity and forest cover monitoring. On 17 September 2005, OSFAC was granted authorization to function in the DRC by the Ministry of Justice and on 6 February 2006, OSFAC established a technical agreement with the Ministry of the Environment. Currently, OSFAC operates as a legally recognized NGO under the direction of a seven-member Board of Advisors. It supports six full-time professionals, including three high-level GIS programme officers and trainers. Day-to-day management is overseen by a small group of advisors. In addition to its technical and administrative departments in Kinshasa, OSFAC also works to reinforce their regional network through voluntary points of contact in countries across the Congo Basin.

When OSFAC began, the capacity to develop and implement a methodology for monitoring forest cover using remotely sensed data did not exist in Central Africa; however, the need to establish baseline information was critical. The decision was made to develop a methodology for monitoring forest cover within a scientific institution outside of the region while simultaneously building capacity within Central Africa to analyze and use the information generated. This approach made it possible for OSFAC to receive continued technical and financial support from UMD under the "resource monitoring institutionalized" objective of CARPE. Within CARPE, OSFAC provides technical support to implementing partners and is seen as the primary channel through which capacity to monitor forests using remotely sensed data can be transferred to the region.

As part of CARPE, OSFAC receives technical support from both South Dakota State University (SDSU) and UMD. UMD has maintained a full-time technical consultant for OSFAC in the DRC since 2005. OSFAC has also established a close relationship with the national university system in the DRC and since 2005, OSFAC has maintained and managed a GIS/RS lab within the School of Agronomy at the University of Kinshasa (UNIKIN).

Building capacity

To build capacity for GIS and RS in Central Africa, the OSFAC network predicted the need for two levels of training: (1) periodic basic training courses across the region and (2) more specialized and higher-level training courses and exchange programmes to develop scientific expertise and introduce new satellite and information technology to OSFAC staff.

In 2005, OSFAC began offering basic and more advanced training courses to outside agencies (see Box 5). Over 400 individuals (see Table 3) have participated in technical courses in GIS and RS at the OSFAC lab and *ex-situ* sites in the DRC, Gabon and the Republic of Congo. Courses typically last 1–4 weeks and are designed to increase capacity in GIS software such as ArcView, ArcGIS and/or the RS image-processing software, ENVI. Each course is adapted to its participants in order to prepare trainees to use spatial data in their area of implementation. OSFAC also provides a limited number of individuals the opportunity to participate in an internship programme.

Table 3. Total number of individuals trained by OSFAC (June 2005–February 2008)

	Men	Women	Total
Total	402	69	471

* includes both academic and professional interns
** 16 were university students who worked with OSFAC to incorporate spatial data into their theses

Box 5. Institutions and protected areas that have received technical training from OSFAC

- **AWF**
- **Bombo Lumene Hunting Zone,** DRC
- **BCI** (Bonobo Conservation Initiative)
- **BEAU** (Bureau d'études et d'aménagement urbain)
- **CAMI** (Cadastre minier)
- **CENAREST** (Centre national de recherche scientifique et technologique)
- **CIB** (Congolaise industrielle des bois)
- **CICOS** (La commission internationale du bassin du Congo-Oubangui-Sangha)
- **CNIE** (Cadre national de l'information environnementale)
- **CNPN** (Conseil national des parcs nationaux, Gabon)
- **COHYDRO** (Congolaise des hydrocarbures)
- **Conkouati-Douli National Park,** Republic of Congo
- **CRGM** (Centre de recherche géologique et minière)
- **CTB** (Coopération technique belge)
- **CTCPM** (La Cellule Technique de Coordination et de Planification Minière)
- **DGF** (Direction de gestion forestière)
- **ECODED** (Economie et développement durable)
- **ERAIFT** (Ecole régionale d'aménagement intègre des forêts tropicales)
- **FACAGRO** (Faculté d'agronomie)
- **Garamba National Park,** DRC
- **ICCN** (Institut Congolaise pour la conservation de la nature)
- **IPS** (Inspection provincial de la santé)
- **IRM** (Innovative Resource Management)
- **ITTO** (International Tropical Timber Organization)
- **Kahuzi-Biega National Park,** DRC
- **Lac Télé Community Reserve,** Republic of Congo
- **Lopé Reserve,** Gabon
- **MECNEF** (Ministère de l'environnement, conservation de la nature, eaux et forêts)
- **SNR/MECNEF** (Service national de reboisement)
- **MECNT** (Ministère de l'environnement, conservation de la nature et tourisme)
- **MEFE** (Ministère de l'économie forestière et l'environnement, République du Congo)
- **MINEF** (Ministère de l'économie forestière, Gabon)
- **Mikébé National Park,** Gabon
- **Nouabalé-Ndoki National Park,** Republic of Congo
- **OCHA/UN** (Office for the Coordination of Human Affairs)
- **Okapi Faunal Reserve,** DRC
- **PAIDECO** (Programmes d'appui aux initiatives de développement communautaire)
- **PARCAFRIQUE**
- **PNLTHA** (Programme nationale de lutte contre la trypanosomiase humaine africaine)
- **PROGEPP** (Projet de gestion des écosystèmes périphériques du parc national de Nouabalé-Ndoki)
- **Salonga National Park,** DRC
- **SPIAF** (Service permanant d'inventaire forestier)
- **SYGIAP** (Système de gestion des aires protégées)
- **TRIDOM** (Dja-Odzala-Minkébé Tri-National)
- **UNICEF** (United Nations Children's Fund)
- **UNIKIN** (University of Kinshasa)
- **UNILU** (University of Lubumbashi)
- **Virunga National Park,** DRC
- **WCS**
- **WRI**
- **WWF**

This programme incorporates both professional and academic degree-seeking interns who work with the OSFAC staff for up to 12 months.

OSFAC's programme to build higher-level capacity continues to evolve. Remote sensing to monitor forest cover is a highly technical and scientific exercise. Long-term exchanges and partnerships with scientific institutions are the only means to develop the level of expertise necessary to develop original forest cover change datasets. Since 2005, OSFAC has successfully promoted the studies of three students from the region in doctoral programmes in the US and Europe. OSFAC is also working to establish a pool of regional experts capable of generating functional products for decision makers and managers, using methodologies developed by top-level scientists. To meet this goal, OSFAC, UMD and SDSU plan to transfer capacity for these activities to OSFAC through an extensive training programme in the DRC.

Currently OSFAC's capacity for GIS is high and it maintains a reputation for delivering quality support and products. OSFAC engages in a wide variety of GIS and basic RS projects as part of its efforts to strengthen conservation and sustainable development initiatives by incorporating the use of spatial datasets. These initiatives build mapping capacity, provide OSFAC trainees with practical experience and contribute to OSFAC's long-term sustainability. Among the projects in which OSFAC has participated are:

- A 2007 workshop co-hosted by WWF, the Minister of the Environment, ICCN, and OSFAC to prioritize conservation areas in the DRC. Throughout the workshop, OSFAC provided technical support to create maps of priority areas.
- An initiative by the United Nations Educational, Scientific and Cultural Organization (UNESCO) to establish a permanent GIS lab at ERAIFT.
- Developing a methodology for monitoring land cover change as part of an environmental impact assessment for the World Bank PRO-ROUTES project.

- Partnering with WWF and WCS for a month-long field and lab-based GIS training centred on inventorying and mapping the Bombo Lumene Hunting Zone.
- A project to produce posters of all the RAPAC (*Réseau des Aires Protégées d'Afrique Centrale*) sites.
- Projects to map the Kisantu and Kinshasa Botanical Gardens.
- An inter-university project to map erosion in Kinshasa.
- A CTB project to map numerous communes in Kinshasa.

Data accessibility

Since its inception, OSFAC has been committed to working with regional partners to assess and improve the state of spatial datasets in Central Africa as well as facilitate regional access to satellite data. OSFAC served as the sub-regional partner on the Mapping Africa for Africa (MAFA) initiative led by the Human Science Research Council and EIS (Environmental Information Systems)-Africa. The initiative aims to create a catalogue of available fundamental geospatial datasets and do a country gap analysis. Within the DRC, OSFAC is an active member of the GIS working group established by the UN Joint Logistic Committee. The working group provides a platform for stakeholders collecting and using GIS data in the DRC (including government institutions, UN agencies and NGOs), to harmonize data.

Through its affiliation with UMD, OSFAC has obtained hundreds of satellite images and maintains a database cataloguing all distributable imagery. OSFAC disseminates these data free of charge upon request. Poor internet access in the region means that having data available locally greatly facilitates access for many users. In addition to physically distributing data and providing technical assistance to individuals or organizations interested in using satellite images, OSFAC also maintains a website that provides users with information on different types of satellite imagery, remotely sensed products and details on data coverage across the region.

Future objectives

Building on its current capacity and on-going activities, OSFAC remains focused on establishing its own sustainability and developing regional capacity to use satellite data in routine forest cover monitoring of the Congo Basin. OSFAC will be the primary conduit by which capacity for using the UMD/SDSU methodology is transferred to the region and hopes to establish itself as an independent organization with the capacity to monitor changes in forest cover. Once the capacity is established, OSFAC will work with local agencies to determine the accuracy of estimates and combine remotely sensed data with *in-situ* datasets. These data and derived products will be provided to forest managers and decision makers directly.

Lessons learned in the use of satellite mapping and GIS

Regional initiatives such as topic-specific networks and technical bodies are fundamental mechanisms for creating rigorous forest monitoring systems

Reaching a consensus on rates of forest cover change across the Congo Basin amongst different practitioners requires good communication. Regional networks provide practitioners a means to communicate and compare different monitoring methodologies to achieve a general consensus on estimates of change.

An independent technical body is necessary to assess the veracity of national forest change estimates. To be effective, the body will need to have the scientific capacity to develop accurate estimates as well as be officially recognized across the region as an independent assessor of forest change. In the Congo Basin one could imagine the Central African Forest Commission[4] establishing an independent body to carry out forest change assessments in close collaboration with a university.

Satellite remote sensing provides a comprehensive means for regional monitoring of forest cover. The convergence of change estimates derived from different RS methodologies demonstrates that a reliable representation of forest extent and forest change can be produced from satellite data. The wall-to-wall explicit mapping of forest cover change is more useful for CARPE's purposes than results obtained from a sampling methodology. However, it is useful to have simultaneous, overlapping monitoring activities to corroborate regional results.

Remote sensing provides a relatively low-cost solution for monitoring forest cover, but ultimately the derived products must be validated with ground-truth data. Implementation of a statistically valid Basin-wide field data collection campaign would be logistically and financially infeasible, since much of the Congo Basin remains relatively inaccessible. Plans are underway to collect field data for the validation of the DFCM products in at least one landscape. This will provide an opportunity to test and refine a field data collection protocol which can be disseminated to landscape partners to implement along with their other field activities. Establishing a mechanism whereby field and forest plot data can be shared, such as through a regional network, would benefit the development of reliable forest monitoring programmes.

4 The *Commission des Forêts d'Afrique Centrale* (COMIFAC), which consists of the forestry ministers of participating Central African countries, coordinates decisions, actions and initiatives pertaining to the conservation and sustainable management of the Congo Basin forests.

There is an urgent need in the Congo Basin to transfer forest monitoring methods developed in the research domain into the operational domain

The institutionalization of methods such as the DFCM is a current CARPE objective. Transferring these tools will require intensive long-term training to develop in-region technical capabilities. With increased capacity in the region, this method could be the foundation of an operational regional monitoring programme.

One of OSFAC's primary goals is to work with national forest monitoring agencies to use monitoring methods developed in the research domain to create useful products for forest management and decision making. This will require continuing to build the OSFAC network across the region and significantly increasing efforts to work with government agencies to understand their needs and communicate potential implications and possible applications of monitoring data.

Improved acquisition and free and open access to data would increase use of satellite data and support the development of sustainable forest monitoring systems in the Congo Basin Region

Long-term forest cover monitoring requires institutional support and access to a continuous data stream. While governments continue to support global and regional monitoring by developing and launching satellite-borne sensors, data are still under-used due to prohibitive data costs. Even when individual scenes are relatively inexpensive, cumulative costs can be high when data needs are intensive. Progressive data policies are required so that operational mapping organizations need not worry about problematic data cost or access policies.[5]

The greatest return on investment in earth-observing satellite assets comes as information derived from sensor data in the form of value-added products. Limited data access limits the development and improvement of methods to derive useful products, limits the capacity for monitoring, and limits the information available for making sound resource management decisions. An international strategy should coordinate data acquisition from different sensors to maximize the potential for obtaining useful data (e.g., cloud-free in the case of optical sensors) over the Congo Basin, and this data should be made freely available.

In the current limited satellite data access scenario, researchers use the data they can afford, not the data they truly need. For example, the DFCM method is robust, repeatable and could be modified to work with data inputs other than Landsat, if the data were readily available. Significant gaps remain in the products largely due to a lack of cloud-free Landsat data. While it is not possible to overcome historical failures of data acquisition and archiving, other data sources exist today that can compensate for Landsat limitations, either by increasing the available pool of cloud-free optical data or by providing data from other modes, such as radar.

The dissemination of geospatial data and products, as well as the results of geospatial analyses, must continue to be fostered and improved

The geospatial and RS data, and the derived products compiled and created under CARPE, are a significant contribution to forest management and planning for the Congo Basin, to the CBFP and to the State of the Forest reports in particular. The data, products and results need to be made available to CARPE partners, and to the wider community, in a timely manner.

The regional dissemination of RS data and derived products is problematic due to the large data volumes involved and limited internet capacity in the Congo Basin; therefore, OSFAC will continue to be an important regional node for data distribution. Internet dissemination of geospatial feature data is less of a problem, but for both feature and RS data, there is a need to ensure that geospatial data is shared among CARPE partners. There should be a routine transfer of satellite data to OSFAC and a systematic review of RS data available to CARPE partners. The ability to review, access and update geospatial datasets could be improved, perhaps by implementing an open-source geoportal.

The geospatial and RS data compiled and produced by CARPE are filling a regional data deficit and will have applications beyond their contribution to CARPE Strategic Objectives. The availability of these datasets should be brought to the attention of international environmental monitoring programmes, such as the UNFCCC's REDD initiative.

Map products in poster form are an effective means of communicating CARPE objectives and results. In particular, the maps based on RS image composites are useful for informing stakeholders, engaging local communities and for public education. Integrating the basic DFCM products with other geospatial datasets, such as national, landscape and protected area boundaries, conveys at a glance the forest cover and change dynamic within the Congo Basin. Maps of this type tailored to specific regional needs should be produced by OSFAC.

5 The NASA/USGS Landsat data distribution policy ensures that data products are available at no more than the cost of fulfilling user requests (COSUR), meaning that there is no effort to recover costs of satellites, ground systems or other capital assets. This COFUR policy could be a model for other satellite data distribution programmes.

Partnerships with academic institutions are essential to develop technical expertise and establish centres of excellence to meet the demand for high technical skills

One of the keys to OSFAC's success has been its close relationship with academic institutions both within and outside Central Africa. Through CARPE, OSFAC has developed and maintained an active relationship with both UMD and SDSU in the USA. Both universities are highly scientific institutions with long-term commitments to using remote sensing to monitor forest cover and working with OSFAC to create a critical mass of RS experts in Central Africa. These partnerships have provided OSFAC with the day-to-day technical and financial support necessary to establish itself as a respected NGO concerned with mapping resources in the Congo Basin and have provided the best opportunity for OSFAC to continue to develop its capacity through a combination of higher-level training courses in the region and in academic exchange programmes. Simultaneously, OSFAC has benefited by maintaining a close relationship with UNIKIN and its School of Agronomy. This partnership is critical to assure that capacity building in remote sensing and GIS will be institutionalized within the region and has put OSFAC in contact with a continuous pool of motivated and skilled candidates for training. Working through the local university system has allowed OSFAC the opportunity to partner with supplementary initiatives to establish more permanent training institutions such as ERAIFT. Additional centres of excellence are necessary to meet the demand for high technical skills.

OSFAC will only succeed if it can attain a measure of sustainability, including establishing secure funding mechanisms and building management capacity

Since its inception, OSFAC has benefited technically and financially from the support of USAID and partnering academic institutions. This support is critical in these initial stages; however, in its aim to establish itself as a local organization, it is imperative that OSFAC continues to develop its own management capacity and financial sustainability. OSFAC supplements its USAID funding by engaging in short-term income-generating mapping projects, but this income covers less than 25 percent of OSFAC's operating costs. The aim is to increase this percentage but it is acknowledged that if OSFAC is to have a role in regional forest monitoring, it will continue to require additional sources of support, either through donor agencies or through a commitment from national agencies. '

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Appendix I

Acronyms

ALOS	Advanced Land Observing Satellite
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
AVHRR	Advanced Very High Resolution Radiometer
CAMP	ESA/EC Central Africa Mosaic Project
CBERS	China Brazil Earth Resources Satellite
CTB	*Coopération Technique Belge*
DFCM	Decadal Forest Change Mapping
EEA	European Environment Agency
ERAIFT	*Ecole Régionale post-universitaire d'Aménagement et de gestion Intégrés des Forêts et Territoires tropicaux*
ERS	European Remote Sensing satellites
ESA	European Space Agency
ESRI	Environmental Systems Research Institute
ETM	Enhanced Thematic Mapper
FRA	FAO Forest Resource Assessment
GIS	Geographical Information System
GLC	Global Land Cover
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics
GRFM	Global Rain Forest Mapping
HRVIR	High Resolution Visible and Infrared
IGBP	International Geosphere-Biosphere Programme
IRS	Indian Remote Sensing Resource-1 Satellite
JRC	European Commission Joint Research Centre
MDGLS	NASA/USGS Mid-Decadal Global Land Survey
MERIS	Medium Resolution Imaging Spectrometer
MODIS	Moderate Resolution Imaging Spectrometer
NASA	National Aeronautics and Space Administration
NDVI	Normalized Difference Vegetation Index
NOAA	National Oceanic and Atmospheric Administration (USA)
OSFAC	*Observatoire Satellital des Forêts d'Afrique Centrale*
PALSAR	Phased Array type L-band Synthetic Aperture Radar
SAR	Synthetic Aperture Radar
SLC	Scan Line Corrector
SPOT	*Satellites Pour l'Observation de la Terre* satellite series
TREES	Tropical REsources and Environment monitoring by Satellite

Earth Observing Satellites with Vegetation Mapping Applications

Satellite	Sensor(s)	Spatial resolution	Revisit frequency	Application[1]
Optical				
NOAA	AVHRR[2]	1 km	daily	Global NDVI
SPOT	VEGETATION	1 km	daily	Global
Terra/Aqua	MODIS	250 m–1 km	daily	Global, regional
Envisat	MERIS	300 m–1 km	3 days	Global, regional
CBERS-2	CCD, IRMSS, WFI [3]	20–260 m	5/26 days	Regional, local
IRS-P6	LISS, AWiFS[4]	5.8–56 m	5/24 days	Regional, local
Landsat 5/7	TM/ETM+[5]	15–60 m	16 days	Regional, local
SPOT-4/5	HRVIR/HRG [6]	10–20 m	26 days	Regional, local
Terra	ASTER	15–90 m	On demand	Local
EO-1	ALI [7]	10–30 m	16 days	Local
Radar			Orbit overpass[8]	
ERS-2	SAR (C-band)	30 m	35 days	Regional
Envisat	ASAR[9] (C-band)	30 m	35 days	Regional
ALOS	PALSAR	7–88 m	46 days	Regional
RADARSAT	SAR (C and X-band)	25 m	24 days	Regional

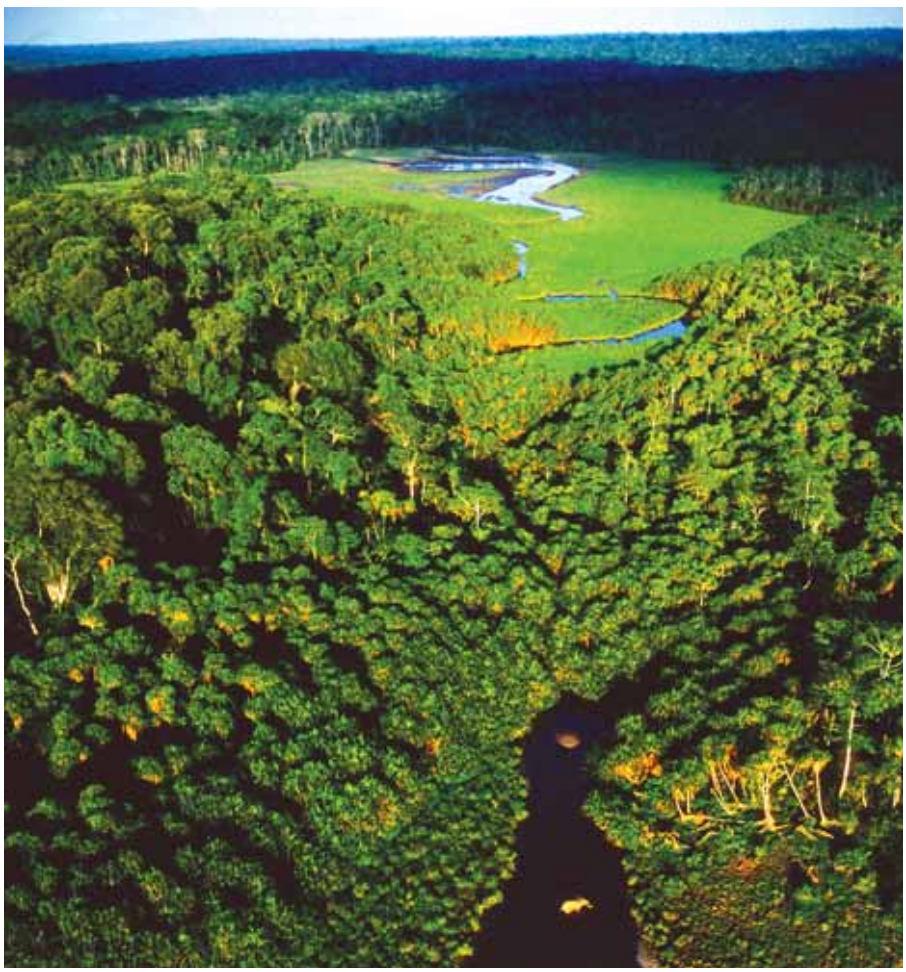
1 For CARPE purposes, regional corresponds to the entire Congo Basin and local corresponds to the CBFP Landscape level
2 The primary purpose for this sensor is meteorological
3 High Resolution Charge-coupled Device (CCD) camera, Infrared Multi-Spectral Scanner, Wide Field Imager
4 Linear Imaging Self Scanner, Advanced Wide Field Sensor
5 Thematic Mapper/Enhanced Thematic Mapper
6 High Resolution Geometric
7 Advanced Land Imager
8 Revisit frequency depends on mode and incidence angle
9 Advanced Synthetic Aperture Radar

Case Study 4
Monitoring of Wildlife Populations: Lessons Learned

Fiona Maisels

Introduction: The need for standardized wildlife monitoring

The biodiversity within the humid tropical forests of the world is typically about 50 percent of the global total, although they cover only 15 percent of the earth's surface. The Central African block is the second largest of these forests after Amazonia, and much of it is still unlogged, closed canopy tracts with continuous cover. These forests contain important populations of large, endangered mammal species such as forest elephant, gorilla, Bonobo and chimpanzees, plus medium-sized mammal species including monkeys, forest antelopes, pigs and buffalo. In addition, the individual trees within these forests are often many hundreds of years old, and maintain a myriad of smaller species of fauna and flora, often endemic to small areas within the main forest block (although the degree of endemicity varies tremendously over the area). There have been long cycles of forest retreat and regrowth, caused by climatic cycles; at present the cycle is approaching its maximum for forest cover and would eventually take over the savannah islands within the block if not held back, up to a point, by burning.



Archaeological record

People have lived in these forests for many thousands of years. The archaeological evidence suggests that the vegetation was not always simply affected by the climatic cycles, but was also greatly changed by people's activities. There seems to have been extensive habitation, clearing and cultivation in the Congo Basin between about 1000 BC to about 400 AD, followed by a human population crash. In the Gabon area (the Ogooué basin), a similar human population crash seems to have occurred in about 500 AD, after an intensive period of 800 years of iron working, which would have required a great deal of forest cover removal (Mbida *et al*., 2000; Oslisly, 2001; Willis *et al*., 2004; White, 2001). The forests then recovered, at least for a while. In the last few hundred years, and especially over the last hundred years, the rate of harvest of many species of wild plants and animals has far outstripped the rate at which they are replaced leading to a net decline in populations. This accelerated harvesting of wild species has been caused by three main factors: (i) great improvements in the technology of extraction (firearms, metal cables, chainsaws); (ii) rapidly growing human populations in the region (about 3 percent per year: UNDP (2006), resulting in a doubling of the population every 20 years); and (iii) growing international

markets for exotic goods such as ivory, tropical hardwoods, and even bushmeat. China is now the world's most important importer of ivory, tropical logs and sawn wood (ITTO, 2006; Milliken *et al*., 2007) and most of their ivory and much of their timber comes from the Central African forests.

Vulnerability

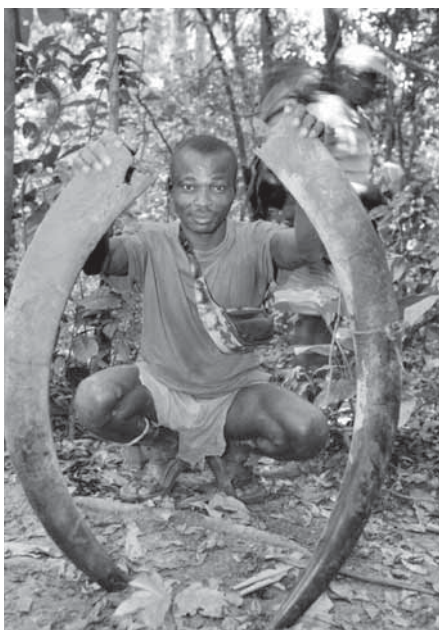
The vulnerability of any given species is a function of both its intrinsic rate of reproduction, and of its value to humans as a resource. General rules of thumb are that, for any given taxonomic group, the larger the individual, the slower it reproduces. For example, hardwood timber trees can take many decades to reach maturity and to set seed, and even then some species only fruit once every few years. Small herbs, by contrast, are often annuals. The same is true for animals – the slowest to reproduce are the apes and elephants, which can take up to 15–20 years to reach maturity, and even then only give birth to one young every four years. Contrast this with rodents, many of which reach maturity in a matter of months and can produce litters of several animals more than once a

year. Likewise, the commonest small antelope in these forests, Blue duikers, can reproduce after one year and give birth to one offspring annually.

The value of certain products also leads to overharvesting. Overexploitation of most of the valuable hardwood species currently on the international tropical timber market has led to most of them being placed on the IUCN Red List – for example most of the central African mahogany species (all the Entandrophragmas, Afrormosia, Wenge, African mahogany, Bossé), plus Okoumé, Moabi, Azobe, Bahia and a great many others are all now either considered Endangered or Vulnerable (IUCN Red List, 2006). The value of ivory has led to a sharp decline in elephant numbers across the world, and most recently in Central Africa (Blake *et al*., 2007). Wild meat is considered a traditional luxury in modern Central African cities and it is often served on important occasions (marriages, funerals, etc.). Although it is more expensive than domestic meat in cities, people are prepared to pay the higher prices if they can afford to (Wilkie *et al.*, 2005).

Relevance to management

What does this mean for the more vulnerable plants and animals of the Congo Basin? Outside protected areas (i.e., national parks and reserves), it is likely that most of the large mammals will be hunted out of the forests within the next few decades, unless rapid and effective wildlife management strategies are undertaken immediately. Indeed, in many areas, especially those in countries with high human population density, this has already happened, especially around towns and larger villages. Even some protected



areas in the region have effectively no real protection and exist only on paper. For the vulnerable plant species (mostly the hardwood trees), only truly sustainable logging will result in the long-term survival of their populations. By "sustainable" we mean harvesting at or below the rate of recruitment of young trees into the reproductive population, implying protection of seed trees, maintaining long felling rotations, and maintaining the seed disperser agents, most of which (80 percent) are mammals and large birds in this region.

Monitoring and evaluation

In order to verify whether the chosen management strategies are actually having the desired effect on maintaining the vulnerable, slow-reproducing, large species (elephants, apes, large trees) plus the smaller but targeted species such as forest antelopes, pigs and monkeys, monitoring programmes are essential. Over the last two decades, many different bodies including governments, professional researchers and conservation organizations have realized that a continuous, permanent monitoring programme across the whole Congo Basin is necessary to follow changes in the extent and quality of the forest itself, the species living within it, the distribution and abundance of its fauna, and the distribution, abundance and activities of its human populations. Forest cover monitoring is generally most cost-effective using remote sensing, and this has been and continues to be successfully carried out in the Congo Basin (see Chapter 9, CBFP: *State of the Forest 2006* and other case studies in this chapter). By contrast, there remains an important need for monitoring of wildlife and human population distribution and abundance within the forest itself. In order to be able to detect change over such a wide area and over long periods of time, the methods of data collection and reporting have become standardized, and the indicators for animal and human populations are basically the same throughout not only the Congo Basin, but in all tropical humid forests worldwide.

Methodology of wildlife monitoring

Monitoring of elephants and large ungulates in the grasslands of Africa has been carried out for decades using direct counts of individuals or herds during foot surveys, counts from off-road vehicles or from small aircraft. All these methods assume that most of the animals can actually be seen! In the savannahs this is mostly true and methods have improved over the last 20 years to calculate the numbers of animals likely to have been missed during the surveys. However, animals living in a closed canopy forest are not so easily counted. Firstly, they cannot be counted from an aircraft, because of the tree cover. Secondly, counts cannot be made from vehicles, as the distance one can see into a forest is a few metres, and animals move away from the sound of an approaching car and are hidden by vegetation. Finally, even people walking through the forest can see only a short distance, and animals usually detect their presence and move away before they can be recorded. This has led to the development of methods that do not require that the animals themselves are detected, but rather that the signs they leave behind are the units of census.

Since biologists began working in the region, we have been producing maps of where the different species occur. Population size estimates for some species such as elephants and apes followed. These estimates ranged from "best guesses" based on interviews with local hunters or foresters at remote sites, through sample-based methods aimed at estimating a mean density across a large area, to, in the case of some populations, fairly accurate head counts which assumed that most of the animals in an area of interest were known individually. This latter approach was really only possible with small ape or elephant populations which were the subject of intensive study and where individuals are distinctive. However, it is neither feasible nor cost-effective to monitor multiple groups over a large landscape. Sampling methods had to be developed which work under the forest canopy. Over the last 20 years,

the methods for monitoring large mammal abundance and distribution in lowland tropical forests have become standardized. The methods are based on calculating the density and/or abundance of the animals themselves, or certain signs (such as nests or dung) which are produced at a fairly uniform rate by each individual animal, and which are visible no matter what the substrate (unlike footprints). Surveys carried out using these methods between about 1983 and up to the present day have caused alarm bells to be rung for the great apes in Central Africa (Walsh *et al*., 2003) where it was realized that half of all apes had died over a twenty-year period due to a combination of Ebola and hunting. Similarly, the international elephant monitoring programme of IUCN/CITES (MIKE, or Monitoring the Illegal Killing of Elephants) showed that even in what had been believed to be the stronghold of forest elephants in central Congo, there were a mere handful remaining (MIKE, 2005; Blake *et al*., 2007). These types of surveys were also used to inform the *Regional Action Plan for the Conservation of Chimpanzees and Gorillas in Western Equatorial Africa* (Tutin *et al*., 2005) and the revision of the status of the western lowland gorilla from Endangered to Critically Endangered (Walsh *et al*., 2007).

Lessons learned

Avoid bias

Much of this work has been spearheaded by groups of wildlife mathematicians, who have examined the sources of bias caused by pitfalls into which one can easily fall (Buckland *et al*., 2001, 2004; Hedley and Buckland, 2004; Sanz *et al*., 2007; Sutherland, 1996; Walsh and White, 1999; Walsh *et al*., 2000, 2001; and many others). One of these pitfalls was that people would often walk along existing roads to collect animal or human data. It was much easier, much faster, and avoided wetlands and other habitats difficult to traverse. Of course this resulted in an overestimation of human signs and an underestimation of animal signs, as hunting and trapping was usually more intensive near roads. Another bias was to carry out an intensive survey of one small area and then extrapolate to a much larger area without good knowledge of different habitats or hunting pressures that might be present in the areas not surveyed. For these reasons, modern surveys now try to cover the entire area of interest, using an evenly spaced sampling plan, so that the sampling is representative of the whole site (whether it is a protected area, a logging concession, a community forest, or a combination of these and other land-use types).

Don't jump in and do an intensive survey right away

In general, any wildlife monitoring programme goes through a series of steps. A short site visit is made to assess logistics, contact local communities, and hear peoples' perceptions of wildlife in their forests. This is often followed by a pilot study consisting of walking for a week or so in the forest, and if wildlife seems to be relatively abundant, by a few pilot transects distributed evenly throughout the area of interest (straight lines along which wildlife signs and human activities are recorded and georeferenced). The results of the pilot transect are used to decide whether to do a survey where the objective is to estimate animal density or whether simply to map relative abundance of the target species (and of human activity). For estimating density, a comprehensive survey design is set up over the whole area, which will have enough samples and enough overall effort to estimate animal density with an acceptable degree of precision (a measure of the intrinsic variability of the data across the area). The results provide an estimation of animal (or sign) density, plus the data is set to create distribution maps.

In the cases where wildlife has been intensively hunted over a number of years, we simply cannot do enough transects to assess animal abundance without spending huge amounts of time (and thus money) which could otherwise be spent on activities which would reduce the hunting pressure. In these cases a survey design is drawn up which consists of lines across the area of interest, which are walked by field teams, but along which they collect a smaller set of data than on transects, and along which they move about four times as fast as on transects (so the cost of these surveys is about a quarter of that of those designed to assess density). The results of this type of survey, known as reconnaissance surveys, are expressed as the number of animals or animal signs (or human signs) per kilometre walked, and serve as the basis for maps of animal and human distribution and relative abundance over a landscape.

Training people takes time and has to be done well

Over time, we have realized a great deal of training is necessary for the survey teams to bring back meaningful data. In the early stages of work in the region (in the early 1990s), training courses of a week or two were given, after which teams carried out work for

months without supervision. However subsequent examination of the results showed that they often made mistakes, got lost, or lost data. Since then training courses have been longer, with a great deal of practical work involved, and repetition of field tasks so that people get used to the different aspects of the field work.

Back up data and reports in several places!

The Central African region is a volatile one, to say the least. Most of the countries in the forest block have undergone either one or more full-blown civil wars or some kind of regionally restricted civil unrest in the last two decades. Apart from the loss of life, the long-term results are a general lowering of the standard of living for urban dwellers (food restrictions, loss of access to medical supplies and services, cuts in electricity and water supplies (very isolated rural populations are sometimes not so much affected)), and the deterioration of national infrastructure (railway lines, roads, public buildings such as schools, etc.). Importantly, the national documentary storage and/or scientific services are often pillaged during civil war. National herbaria, museums, ministries, and all offices that might contain computers have been broken into and all useful objects removed, including the paper on which herbarium specimens were mounted. This has important implications for long-term monitoring. All data and reports should be recorded electronically, copied, backed up, and kept in several places: at the site of origin, plus in the appropriate national ministry, plus (if they were produced by another body) at the local and offshore offices of the scientific or conservation institution which produced them. At present (2008), a monitoring database for Central Africa is being constructed (the FORAF project) which will be web-based and thus not subject to local unrest which has destroyed so much of the documentary evidence of past surveys.

Finally, as part of these “Lessons Learned”, we present a Decision Tree which was originally designed as part of the IUCN *Best Practice Guidelines for Surveys and Monitoring of Great Ape Populations* (Kuehl *et al*., 2008). The book will be mainly online and contains chapters on survey design, field practicalities, and training. It was written using a great deal of the experience gained in carrying out surveys and monitoring programmes in the Central African forests from 1990–2007. The Decision Tree is laid out like a botanical key, where successive questions lead the reader to a series of decisions as to how to carry out the survey.

What to do when: A decision tree for wildlife surveys in forested environments

I. First let us assume you need to know how many animals are present in the population

Question 1. Are all animals in the population known individually and can they be found within a few weeks AND/OR are they relatively few in number, and found within a small area?
This is the case with very few animals. The Rwanda tourist gorillas come close!

a. Yes: carry out full count of known individuals, OR use a sweep sample to cover the whole of the area of interest.
b. No: go to **Question 2**.

Question 2. Is the rough encounter rate of nest groups or other signs that will be used to estimate density already known?

c. No: conduct pilot study consisting of a few transects throughout the area of interest in order to obtain a rough idea of encounter rate (this should only take a couple of weeks). Then go to **Question 3.**
d. Yes: go to **Question 3.**

Question 3. Decide on the target coefficient of variation you require for the survey. If the survey or series of surveys is to be used for monitoring purposes, then a power analysis should be conducted to estimate the probability of being able to detect a trend given the potential variability in the data and the given monitoring design (same can be said for methods based on mark-recapture, etc.). Using the encounter rate derived from the pilot study, calculate how many kilometres of transect you would need to estimate density of nest groups (use the formula found in Chapter 7, section 7.2.2.1. of Buckland *et al*., 2001). Is the number of kilometres feasible considering the time and resources that you have available?

e. Yes: design a transect-based survey using a combination of ArcView or ArcGIS and the DISTANCE program, and implement it using trained teams in the field; use the results to estimate the population of apes in the area surveyed.
f. No: go to **Question 4**.

Question 4. You cannot calculate density without enormous cost. Therefore you cannot estimate numbers of animals using transect methods. Would you be able to use genetic methods?

g. Yes: if you have access to trained staff and a partner laboratory to process the information, consider designing a survey using genetic markers and implement it. (*NB: A pilot study is advised – this may or may not be more costly than transect methods*).
h. No: consider index methods (go to **Question 5**).

II. Either you cannot estimate how many animals are present in the population and/or you do not need to know at this point. However you can calculate area of occupancy (distribution maps) and relative abundance.

Question 5. Are there sufficient resources to cover the whole area using recce walks?

i. Yes: create a recce sampling design using a combination of ArcView or ArcGIS and the DISTANCE program and implement it using trained teams in the field. Results will provide a distribution map and relative abundance over the area.
j. No: consider interview-only surveys.

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