



Learning our Lessons

A Review of Alternative Livelihood Projects
in Central Africa

S. Wicander and L. Coad



Environmental Change Institute



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2 Summary

As threats to the world's ecosystems continue to escalate, the demand for evidence-based conservation approaches from conservation scientists, practitioners, policy-makers and donors is growing. Bushmeat hunting represents one of the biggest threats to tropical forest ecosystems and a number of different conservation strategies have been employed with the aim of reducing the bushmeat trade. In addition to the use of top-down approaches (such as the enforcement of national hunting laws), alternative livelihood projects have been implemented at the community level with the aim of reducing hunting through the provision of protein and income substitutes to wild meat. However, evidence of the impact of these projects on hunting practices and species populations has yet to be collated and reviewed.

This study takes the first step towards filling this gap with a focus on alternative livelihood projects in Central Africa. A total of 64 projects were identified using a systematic survey of literature and information obtained from key contacts, of which 15 were analyzed more closely through key informant interviews. A comparative framework (focusing on the structure, design, implementation and impact of alternative livelihood projects) was used to compare and evaluate studies, using information gained from semi-structured interviews with project managers.

The study found that a range of different livelihood alternatives (for both protein and income) is currently being offered. A high proportion of projects are being run by national NGOs, and the majority of projects show a desire to involve communities in the design, implementation and management of these projects. Both suggest a high level of localism in project management and design, which may have a positive effect on project sustainability. However, many projects are funded through small, short-term grants, and are struggling to meet their objectives with the available time, funding and capacity. In addition, only a handful of projects are monitoring their impacts, making adaptive management almost impossible. Few projects implement conditionalities and sanctions, which may lead to the alternatives offered becoming *additional* activities rather than *substitutional* activities. Projects tend to be small-scale in nature, and, in some cases, external threats to target ecosystems/species (e.g., commercial hunting activity conducted by people from outside the community) dwarf internal threats (hunting within the community), minimizing the potential overall impacts of community-based projects.

The results of this study suggest that there is a need to obtain further information on the success and failures of different projects in order to better inform future projects. Best-practice guidelines for Integrated Conservation and Development Project (ICDP) design and implementation must be followed in order for alternative livelihood projects to have a fair chance at success. As part of this, monitoring programs need to be made a requirement of project funding, and such should be allocated with their own funding. Donors need to provide training and support to local NGOs in the design of conservation interventions (including Theory of Change) and the implementation of low-cost, practical project monitoring. Small-grant structures should be revisited to allow for longer-term funding opportunities, potentially through follow-on funding schemes.

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5 Introduction

The hunting of bushmeat (or wild meat) has been recognized as one of the largest threats to tropical forest biodiversity worldwide (Wilkie et al., 2011; Leverington et al., 2010; Harrison, 2011; Abernethy et al., 2013), representing a major threat to even remote forest areas (Fa et al., 2002; Abernethy et al., 2013). Bushmeat has been used by African communities for centuries (Fa and Brown, 2009; Milner-Gulland et al., 2003). Today it is the primary source of animal protein as well as an important source of income for rural forest dwellers (Wilkie and Carpenter, 1999) who supply the increasing demand for wild meat from growing urban populations, which often consider wild meat a luxury commodity (Van Vliet and Mbazza, 2011), despite gaining the majority of their protein requirements from farmed meats.

The provision of alternative protein and income-generating sources is one of the most widely used strategies at the community level to reduce bushmeat consumption and trade while aiming to improve (or have no negative impact on) local livelihoods (van Vliet, 2011). The aim of these projects is to introduce or strengthen existing low-cost, easily implementable, low-environmental-impact livelihood activities, supplying communities with either an alternative source of meat protein or an alternative form of income generation, thus decreasing people's dependency on bushmeat and reducing pressures on wildlife (Féron, 1995).

While many such alternative livelihood projects have been implemented across West and Central Africa at various scales, there has been little analysis of the characteristics, successes and failures of these projects, and little synthesis of 'lessons learned'. Alternative livelihood projects remain a major focus of governments (e.g., the Central African Forest Commission (COMIFAC) *Plan de Convergence*), donors (e.g., Central Africa Regional Program for the Environment (CARPE), Darwin Initiative, French Global Environment Facility (FFEM) and Congo Basin Ecosystems Conservation Programme (PACEBCo)) and NGOs alike.

This lack of evidence is not exclusive to bushmeat research and interventions: it has been recognized as a serious obstacle to effective conservation by a growing number of scholars and practitioners (Knight et al., 2006; Sutherland et al., 2004; Pullin and Knight, 2001) who have suggested that 'current conservation practice is based upon anecdote and myth rather than upon the systematic appraisal of the evidence' (Sutherland et al., 2004). Establishing an evidence base can inform current and future project design, improve cost-effectiveness and ensure that funding is allocated to projects with the highest impact potential (Ferraro and Pattanayak, 2006). Furthermore, since the conservation movement has evolved into being a major actor with increasing political influence and funds, there is a greater call for accountability from donors and civil society (Margoluis et al., 2009; Jepson, 2005). Conservation researchers and practitioners have highlighted in particular the importance of acknowledging and sharing project failures in addition to successes in order to obtain a realistic understanding of conservation impacts and to make consequent improvements (Knight, 2006; Redford and Taber, 2000).

Despite efforts being in place to help centralize the evidence-based movement (e.g., Collaboration for Environmental Evidence, Conservation Evidence),¹ a systematic review process, such as the one used in the medical sciences, is not yet engrained in conservation practice. A review of conservation monitoring and evaluation (M&E) approaches by Stem et al. (2005) reveals that most tools for measuring conservation effectiveness have been developed in the last 20 years. Kapos et al. (2008) highlight that in many cases, project M&E focuses on implementation and outputs (the activities completed), rather than on project outcomes (how it

¹ Respectively, www.environmentalevidence.org and www.conservationevidence.com.

affects the conservation problem of interest). Despite the proliferation of rapid assessment M&E tools for conservation, Integrated Conservation and Development Projects (ICDP) that have implemented M&E tools to assess their effectiveness and adaptively manage their projects are in the minority (O'Neil, 2007).

In the meantime, the call for conservation action to tackle the bushmeat crisis is increasing. The Convention on Biological Diversity (CBD) recognized the importance of livelihood alternatives at COP10 and requested the Executive Secretary to develop, through the CBD Liaison Group on bushmeat, options for small-scale food and income alternatives in tropical and subtropical countries, based on the sustainable use of biodiversity:

In order to support current and future livelihood needs and to reduce unsustainable use of bushmeat, develop, through the Liaison Group on Bushmeat and in cooperation with the Food and Agriculture Organization of the United Nations, the United Nations Development Program, the Center for International Forestry Research and other relevant organizations and based on available case-studies, options for small-scale food and income alternatives in tropical and sub tropical countries based on the sustainable use of biodiversity, and submit a report for the consideration by the Subsidiary Body on Scientific, Technical and Technological Advice at a meeting prior to the eleventh meeting of the Conference of the Parties, and to submit to that meeting a revised version of the recommendations of the Liaison Group on Bushmeat. (CBD COP10 Decision X/32, section 4(a))

The resulting report (van Vliet, 2011) provided the first review of the different types of small-scale alternative livelihood projects currently in use worldwide. Van Vliet interviewed experts on alternative livelihoods with experience in project implementation to identify the pros and cons of each type of alternative livelihood activity and provide general recommendations for project managers. However, the principal aim of van Vliet's report was to identify possible alternative livelihood strategies (i.e. income alternatives vs. protein alternatives vs. ecotourism vs. community hunting zones) and to provide general recommendations rather than to identify at a project level the successes, failures and lessons learned by project managers.

This study therefore aims to build on the work of van Vliet (2011) by:

- Conducting a review of the number and distribution of current alternative livelihood projects in Central Africa
- Using semi-structured interviews with project managers to:
- Identify the extent to which current projects are performing, against agreed best-practice guidelines for conservation projects
- Identify project successes and failures, and from this, create a set of recommendations for future implementation of alternative livelihoods projects

Based on this work, the report summarizes the main lessons drawn from a set of case studies, providing key recommendations for policy makers and practitioners, and identifying key areas for future research.

6 Methods

6.1 Locating and collecting alternative livelihood project data

Project aims and preliminary methods were presented at both the UK Bushmeat Working Group meeting (21 March 2012) and the Alternative Livelihoods Workshop (28 May 2012) at the Zoological Society of London (ZSL). These meetings were attended by many key bushmeat researchers and practitioners and thus were the ideal venue in which to promote the project and start receiving suggestions on people and organizations to contact.

In collaboration with various conservation organizations, programs and donors (CARPE, Great Apes Survival Partnership (GRASP), International Union for Conservation of Nature (IUCN), Wildlife Conservation Society (WCS), Imperial College London) that agreed to assist the project in its outreach phase, an e-mail was drafted describing the project and its aims and requesting information on past and present alternative livelihood projects, as well as contacts associated with these (Appendix I). This e-mail was then sent out to relevant e-mail listservs (CARPE, Biodiversity L, International Institute for Environment and Development Poverty and Conservation Learning Group (IIED PCLG), GRASP, WCS, IUCN, ZSL) in order to reach a high number of people with relevant conservation and/or development experience in developing or implementing alternative livelihood projects, thus increasing the likelihood of locating as many projects as possible. A 'snowball technique' (Noy, 2008) was then applied to the responses received whereby the initial e-mail respondents were used to identify additional contacts, therefore increasing the project sample size.

In addition to locating projects through contacts, a review of the grey and academic literature, as well as of project information found through a web search, was undertaken in order to locate further projects. Combined with the information gathered from the project documents received from contacts, the findings were compiled in a project database (Appendix II), which was sent to 4 bushmeat experts for review. The bushmeat experts checked the list for gaps, representativeness and bias as well as provided suggestions on additional contacts.

Throughout this process, projects to be included in the database were selected based on the following set of criteria:

- Projects needed to be located in countries within the regional focus of the study, namely the CARPE and/or COMIFAC countries²
- Projects had to have an alternative livelihood component
- The alternative livelihood component needed to have been designed with the aim, or within the context, of either directly reducing bushmeat hunting or more generally reducing human pressure on wild fauna or protecting wildlife

As the format and quality of sources varied greatly, a mention of all of the above in the problem statement, project aims or project objectives was used to determine inclusion. Additionally, if the destruction or degradation of ecosystems, forests and forest resources had clearly been defined as being at least partially caused by hunting, the project was also included. Alternative livelihood projects merely referencing the reduction of human pressures on forests or flora in general were not included in order to ensure that bushmeat hunting remained the focus of this study.

² Burundi; Cameroon; Central African Republic (CAR); Democratic Republic of the Congo (DRC); Equatorial Guinea; Gabon; Republic of Congo (ROC); Rwanda; and São Tomé and Príncipe.

Projects were then mapped and simple characteristics recorded in order to establish more general trends across the study region. Project locations retrieved from the literature received from contacts, or found in the web search, were used to generate approximate longitudinal and latitudinal coordinates which were then entered in ArcGIS to generate a map showing project locations. The type of implementing institutions, projects per country and information pertaining to the choice of alternative livelihoods was also described.

6.2 Designing a comparative framework

In order to evaluate and compare a subset of projects from those gathered in the data collection phase, a comparative framework was designed (Appendix III). A comparative framework is a tool that allows diverse projects to be categorized in a qualitative but systematic way, thereby facilitating comparison. In this study, the comparative framework was used to describe, compare and evaluate the structure, design, implementation, outputs and outcomes of alternative livelihood projects.

In order to design this framework, existing literature on conservation project evaluation, effectiveness and means of improving management was first reviewed to identify components important to good conservation design and practice. Elements from the conceptual frameworks developed by Salafsky et al. (2001), Kapos et al. (2008), McDermott et al. (2011), Stolton et al. (2007) and Pimbert and Pretty (1997) were adapted to fit this study:

Salafsky et al. (2001) defined seven stages required for effective adaptive management and developed a framework to enable conservation practitioners to apply adaptive management techniques more effectively. The comparative framework for this study adapted a number of the sections of Salafsky and colleagues' framework that focus on project management, such as establishing a clear and common purpose, developing a monitoring plan to maximize results and testing assumptions.

The evaluative framework developed by the Cambridge Conservation Forum (CCF) (Kapos et al., 2008), which seeks to complement the evidence-based conservation movement by introducing a systematic evaluative tool, was used to identify further areas of importance in the systematic evaluation of conservation projects in areas not touched on by Salafsky et al. (2001). Sections and questions developed by the CCF pertaining to alternative livelihood projects were particularly relevant to this study.

The Management Effectiveness Tracking Tool developed for the assessment of protected area (PA) effectiveness (Stolton et al., 2007) was consulted in order to determine elements important to good management, such as considering project context, inputs, outputs and outcomes.

The equity framework developed by McDermott et al. (2011), as well as the levels of community participation identified by Pimbert and Pretty (1997), were used to help design the comparative framework components investigating the role of community involvement in alternative livelihood projects.

A draft framework, including elements from these published frameworks, was then created during a two-day workshop (21 – 22 June 2012, University of Oxford), with three participants: the authors and an MSc student (Amy Preston) from Imperial College London. The framework aimed to address many aspects concerning the general themes of project context, aims, design, implementation, output, outcomes and dissemination. Upon completion, the framework was sent to 2 additional conservation practitioners active in bushmeat project management for

review. The framework was also presented at a ZSL meeting to a ZSL bushmeat expert and a development specialist from the Overseas Development Institute (ODI) for additional comments. Obtaining feedback from researchers and practitioners helped ensure the framework's 'real-world' applicability and its potential to be used beyond the context of this study. Based on the feedback received, the comparative framework was adjusted and completed (Appendix III). Table 1 outlines the main components of the comparative framework, and the following sub-sections outline their potential impacts on project success, with reference to the ICDP best-practice literature.

Table 1: Main components of the comparative framework

Component	Description (example questions)
Project aims and objectives	What was the aim of the project? Did it remain the same throughout the project?
Project funding	What was the overall funding for the project? Was it part of a larger project? How many years was it funded for? Was the funding adequate?
Project organizations and partners	Who were the project implementers? Who were the project funders? Did the project work with local/national government, and in which way?
Community involvement in project initiation, design and implementation	Who decided on project aims? Who chose project activities? How were potential participants contacted?
Project Theory of Change	How did the project aim to reduce hunting?
Project participant selection	Did the project work with a specific section of the community? Were there any criteria for participation?
Project conditionality and sanctions	What did participants have to do to be involved in the project (were there any project rules)? Were there any sanctions if participants did not change behavior? Has anyone been ejected from the project, if so what happened?
Project monitoring	What were the indicators of project success? Was there a monitoring program? What data was collected? How often was it collected?
Project sustainability	Has there been handover of the project to local stakeholders? Is the project ongoing? How was sustainability factored into the project design?

6.2.1 Project aims and objectives

Salafsky et al. (2001) outline the need for defined project aims in their adaptive management tool for conservation practitioners:

The starting point for adaptive management involves clearly defining what it is you are trying to achieve with your project. If you don't know where you want to go, chances are you won't get there. Once you are clear about what the purpose of your project is, you can then determine how you are going to get there – what intermediate steps along the way you must take. Establishing a clear purpose enables you to develop a benchmark for measuring success. Establishing a common purpose enables you to develop effective collaboration among the different members of your project team. (Salafsky et al., 2001)

6.2.2 Project funding

Project budget size, and budget security (the length of project funding), will influence both project scope and sustainability. Different types of projects will have different funding requirements, but ultimately, short-term, small-scale funding opportunities may only provide start-up funding and may not be adequate to ensure project continuation. As Blom et al. (2010) note:

ICDPs have been routinely criticized for being based on short funding cycles that do not reflect the length of commitment required to make their projects work (Chan et al., 2007; Fisher et al., 2005; Sayer and Wells, 2004). In one example from Nepal, ICDP outcomes were improved as the duration of the project increased, reflecting the time commitment needed to change community perceptions and attitudes towards conservation. (Baral et al., 2007)

6.2.3 Project organizations and partners

ICDP projects have been critiqued for being formulated by non-national NGOs and applied in a top-down manner (Blom et al., 2010). Involvement of local (national or sub-national) NGOs in project management can bring a better appreciation of local context in project design and planning, and may also increase project sustainability due to a higher, and more sustained, level of on-the-ground presence by NGO representatives.

Government support and involvement can also be crucial for project success. Where national policies support decentralization of natural-resource management, ICDPs can exist within and be supported by a legal framework, including the legal recognition of community groups. In countries where land tenure and management are centralized, and legislation for local management does not exist, ICDPs can find themselves existing outside national policy frameworks, which can severely impact their sustainability (Roe et al., 2009). Conservation projects are unlikely to succeed in the long-term in isolation (i.e. within a 'governance bubble'), and increased government support at both the project- and law-enforcement levels is crucial in order to more effectively tackle bushmeat hunting as well as create a greater cohesion of efforts on a landscape level.

6.2.4 Community involvement in project initiation, design and implementation

Community participation in project management is linked to more successful project implementation and outcomes (see, for example, Travers et al., 2011; Dressler et al., 2010; Blom et al., 2010; Waylen et al., 2010; Larson and Soto, 2008). Furthermore, community involvement allows for the development of interventions that are sensitive to the local cultural context (Waylen et al., 2010; Ostrom, 2009). Community consultation and participation also speaks to the equity (or fairness) of project design: *procedural equity* refers to fairness in the political processes that allocate resources and resolve disputes. It involves representation, recognition/inclusion, voice and participation in decision-making (McDermott et al., 2012). According to Pimbert and Pretty (1997):

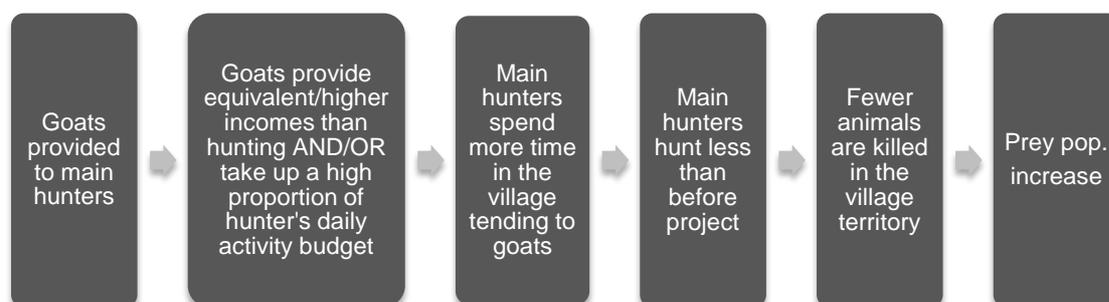
If the objective of conservation is to achieve sustainable and effective management of biological resources, then nothing less than functional participation [people participate by forming groups to meet predetermined objectives related to the project] will suffice.

6.2.5 Project Theory of Change (ToC)

Theory of Change (ToC) can be described simply as: ‘The description of a sequence of events that is expected to lead to a particular desired outcome’ (Davies, 2012). In the context of alternative livelihood projects, it describes the process by which project designers believe that the livelihood alternative (the project input) will result in populations of hunted species reaching/staying at a certain level (the desired outcome).

Salafsky et al. (2001) describe this sequence of events as a simple ‘cause and effect assumption chain’ and Figure 1 provides an example of what this chain might look like for an alternative livelihoods project.

Figure 1: A hypothetical cause and effect assumption chain for a goat-rearing project



In this hypothetical case, the ToC for the project is that by providing goats to local hunters, income and protein provided by goat rearing will replace that of hunting, and hunters occupied with goat rearing will no longer have time to go hunting.

At each stage along the cause-and-effect assumption chain, assumptions are made by both project managers and participants. For instance, in this case, one project manager assumption is that the primary hunters will spend more time in the village tending to their goats – an alternative possibility, however, might be that these hunters give the goats to their wives to tend to and continue to hunt, in which case the project would not achieve its desired outcome. Similarly, this scenario assumes that significantly fewer animals will be killed in the village territory if the main targeted hunters hunt less, whereas another possibility is that other hunters

may increase their effort and overall hunting levels remain the same. Throughout the project, these project assumptions must therefore be tested in order to make sure that the ToC adopted by the project will work in practice.

6.2.6 Project participant selection

Participant selection can have a significant influence on whether a project achieves its intended outcomes, and it will also influence which community members receive the benefits (and costs) of a project. Projects setting out to conserve prey populations aim to change hunting behaviors, and while the most obvious group to target might be hunters, projects may also target village traders and consumers (who can often employ hunters and therefore have large impacts on hunting behaviors). As with the ToC, the selection of project participants must be based on a good understanding of the resource users (e.g., who are the biggest users of wildlife, and what drives their behavior?) so that the project involves those community members who will have the largest impact on the resources that the project aims to conserve.

6.2.7 Project conditionality and sanctions

The use of conditionality and appropriate sanctions are recognized as important enabling conditions in ICDPs (Blom et al., 2010). The term ‘conditionality’ stands for certain conditions attached to project participation (e.g., hunters are asked to reduce or halt their hunting activity if involved in the project). Appropriate sanctions are then applied if the project participant fails to meet these conditions (e.g., hunters are fined if they hunt certain species, or, in cases of the repeated breaking of conditions, can be ejected from the project). The rationale for applying conditions and sanctions is that participants are entering into a *quid pro quo* agreement with project organizers: in exchange for entry into the alternative livelihoods project they must agree to modify their hunting behavior. Adherence to this agreement is enforced with sanctions. However, not all alternative livelihood activities are set up as *quid pro quo* agreements, and the use of conditions and sanctions can therefore vary depending on the project aims.

6.2.8 Project monitoring

Project monitoring and evaluation (M&E) is crucial if project managers are to adaptively manage their projects: learning from the impacts of past actions and adapting projects accordingly (Salafsky et al., 2001). Project monitoring can occur at different stages of a project and capture different aspects of project function as well as success.

Baseline monitoring

Collecting socio-economic and ecological information in the target settlement/area prior to project implementation provides a baseline against which project impacts can be evaluated. With this information, project managers can determine how their project has impacted the local community (e.g., has the project brought benefits to some or all of the community? Has the project negatively impacted anyone?), the behavior of the target group (e.g., have hunters reduced their hunting activity, compared with the baseline?) and whether the project is achieving its aims (e.g., have the populations of target species increased from the baseline population?). Baseline monitoring should also be employed to determine why the target species for conservation is currently used by the community and therefore which interventions/alternatives might be suitable (e.g., is the species an important source of income, or of protein, or both?)

Does it provide a safety net between agricultural yields? Does the species have an important traditional role?). Project organizers must have a clear understanding of the motivations driving hunting in order to successfully tailor interventions.

Project implementation and outputs

Monitoring project implementation and measuring outputs can allow project managers, when supplemented with further data on baselines and project outcomes, to evaluate the effectiveness of specific project actions. In addition, collecting information on the recipients of project funding can allow the equity elements of a project to be measured (i.e. are project beneficiaries the richer/poorer members of a community?) and to evaluate whether the target groups within the village (e.g., hunters) are getting involved in the project.

Changes in hunting behavior

Projects aiming to conserve prey populations need to change hunting behavior by, for instance, either reducing the overall amount of hunting offtake, reducing the amount of hunting of the target species, or reducing the amount of hunting in a target area. To test whether project activities are having significant impacts (and whether the assumptions made by the project's ToC hold true), projects should monitor changes in hunting behavior.

Socio-economic and ecological outcomes

In order to measure changes in local livelihoods (e.g., whether wealth has increased for project participants) and target species populations, baseline socio-economic/ecological information can be compared with repeat socio-economic/ecological surveys at different stages of project implementation. Without this data, only a limited understanding of project success or failure can be achieved.

6.2.9 Project sustainability

Considering project sustainability in project design is particularly important for ICDPs. Alternative livelihood activities can take several years to become profitable (e.g., due to the time it takes to breed livestock) and to be accepted by local communities. Conservation funding sources, however, can often be very short-term. In addition to building sustainability through financial means or mechanisms, the level of sustainability achieved by a project has been shown to be closely related to the level of community participation and empowerment within a project (Persha et al., 2011; Ostrom, 1990; Matose and Watts, 2010; Murphree, 2009).

6.3 Project manager interviews

Interviews were conducted with project managers based on a set of questions generated from the comparative framework (Appendix III). The key informant interviews were conducted via Skype or telephone in a semi-structured fashion, allowing for flexibility in the conversation and for interviewees to raise issues previously unknown to the researcher while the interviewer ensured that all questions were answered by the end of the interview. These interviews generally lasted between 50 and 90 minutes. Interviewees were all either project managers, project or regional coordinators, or the equivalent thereof in any given organizational structure.

Interviewing practitioners at this level enabled a discussion of all aspects addressed by the comparative framework – from project conception to outcomes – as most interviewees had not

only developed and overseen the projects but had been highly involved in project design and implementation throughout the duration of the project. Interviewees were predominantly selected from the identified projects by their willingness to be interviewed, paying attention to creating a representative regional sample of project types. Interviews were recorded, transcribed and then analyzed qualitatively along the main themes described in the comparative framework, as outlined above. Project summaries, created from interviewee responses and project documents, can be found in Appendix IV.

6.4 Limitations

Throughout the recording and interpretation of the results of this study, a number of methodological limitations needed to be kept in mind. Overall, the project was designed to provide a first descriptive analysis, using case-studies to identify the major lessons to be drawn from alternative livelihood projects. Furthermore, the general project data collected in the first phase of this study relied fully on the information provided in project documents and websites with no means of verifying information with other parties. As the quality and thoroughness of such information varied greatly, the categorization of data was not always clear. Not all project reports stated explicitly, for example, whether an alternative livelihood activity that theoretically could be used as both a protein and an income substitute was designed to be used specifically for either one purpose. In such cases, a decision was based on the authors' interpretation given the information available, thus creating a margin for error.

As this was a remotely conducted *post-hoc* project evaluation, information received in key informant interviews could not be cross-verified through a process of informant triangulation (Baxter and Eyles, 1997) in order to eliminate potential interviewee biases (Kumar, 1986). Ideally, with greater resources and time available, this study should have involved speaking with project participants, community members and other project staff in order to verify that key informants accurately described the project design and implementation, and did not over- or understate the level of project effectiveness or community involvement. The latter, in particular, is an area where biases are likely to be larger, as even if project managers gave an accurate account of their perceptions of the level of community involvement, these views might differ from participants' experiences. Overall, however, considering key informants did not uniformly report project success, which would have raised suspicion, and indeed elaborated on project difficulties and openly discussed project outcomes (or the lack thereof) as well as other project shortfalls, we believe interviewee testimonies represent an honest account of their experiences.

7 Results

7.1 General project characteristics

7.1.1 Distribution of alternative livelihood projects

A total of 64 alternative livelihood projects met the criteria for inclusion in this study. These projects include ongoing interventions and those that are no longer active, the earliest projects dating back to the 1990s.

The highest number of alternative livelihood projects has been implemented in the DRC (n=18), Cameroon (n=17) and the ROC (n=14) respectively (Figure 2 and Figure 3).

Figure 2: Alternative livelihood projects identified within Central Africa

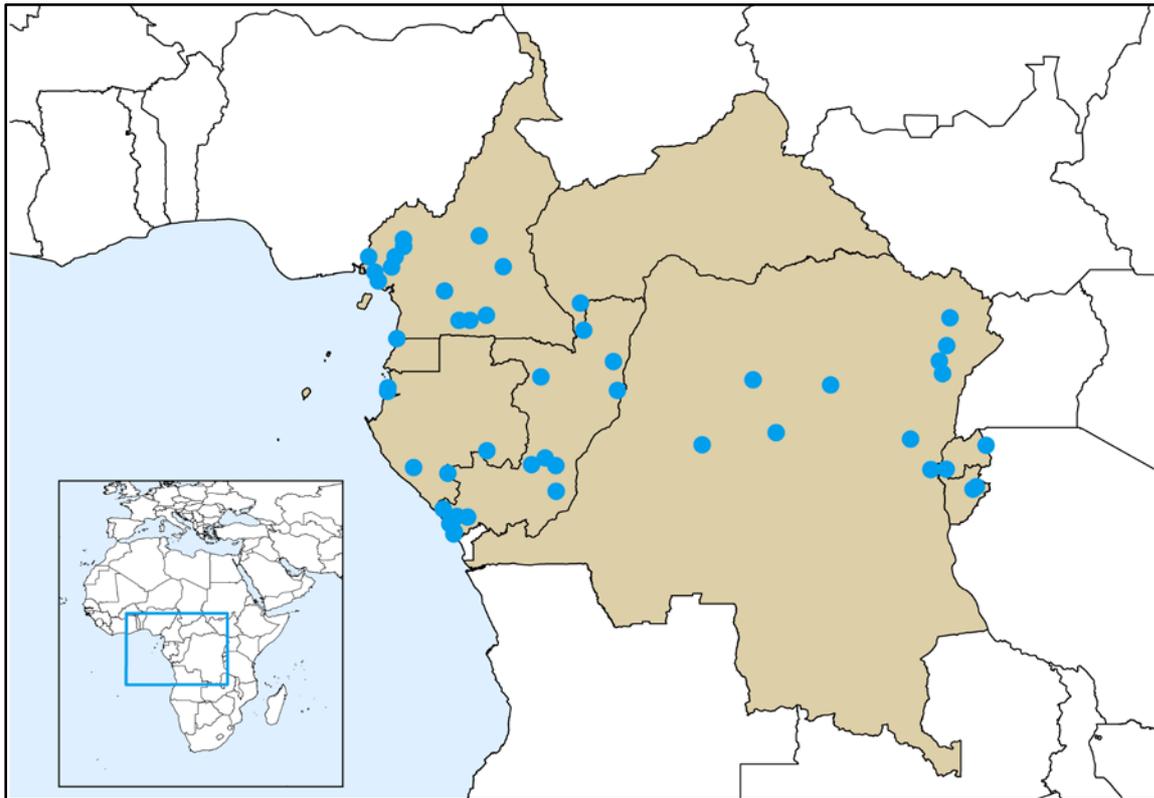
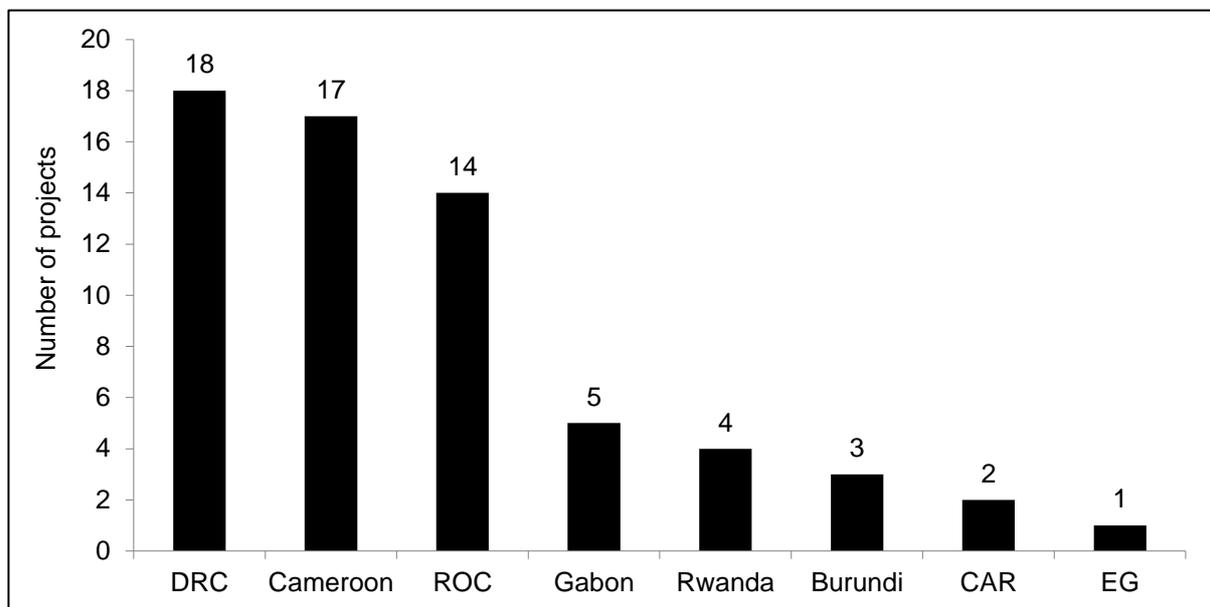


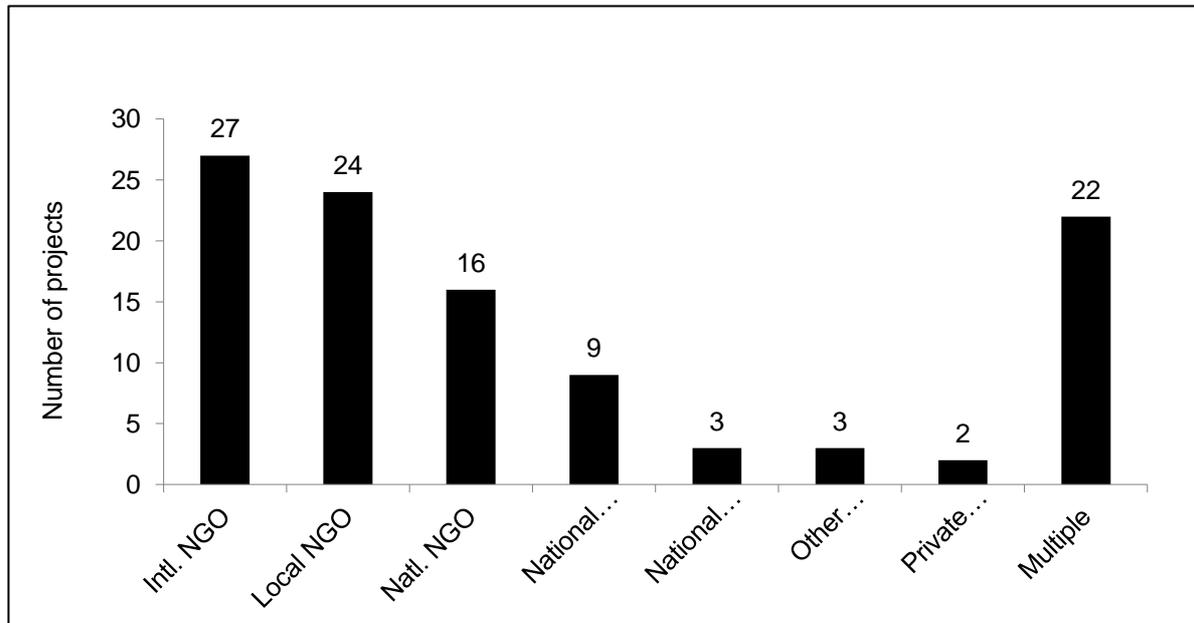
Figure 3: Project country distribution



7.1.2 Type of implementing organization

Amongst the primary implementing bodies of alternative livelihood projects, international NGOs appear the most frequently (Figure 4). International NGOs have acted as one of the main implementers of a project the most frequently (27 occurrences), followed by local NGOs (n=24) and national NGOs (n=16).

Figure 4: Implementing organization type for projects

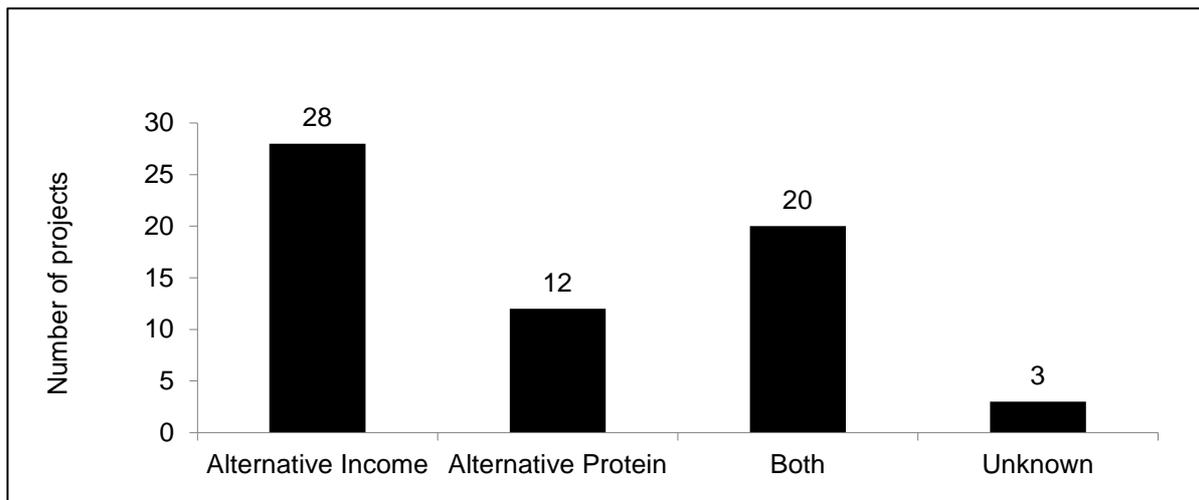


Note: The number of implementing organizations (n=106) is higher than the total number of projects (n=64) as 22 projects had multiple implementers.

7.1.3 Types of alternative livelihoods used

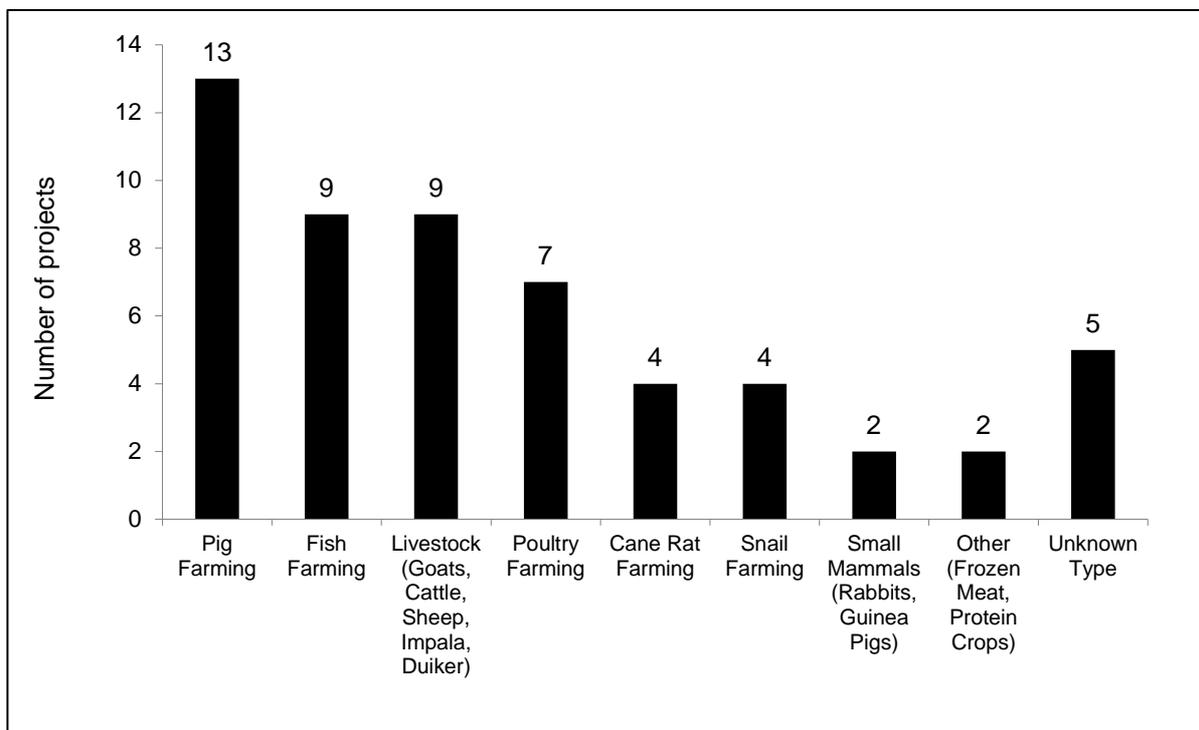
Of the total number of projects (n=64), available project documentation suggested that 28 focused primarily on providing alternative income-generating activities (e.g., beekeeping, ecotourism) (Figure 5). 12 projects were implemented providing only alternative protein substitutes (e.g., pig farming), while 20 aimed to reduce hunting pressures on wildlife through a combination of both alternative income and protein activities.

Figure 5: Alternative livelihood types implemented by projects



The types of alternative protein activities used across all projects are numerous and are represented in Figure 6. The most frequently mentioned sources of alternative proteins to wild meat were domesticated animals such as pigs (n=13), fish (n=9), livestock (n=9) and poultry (n=7).

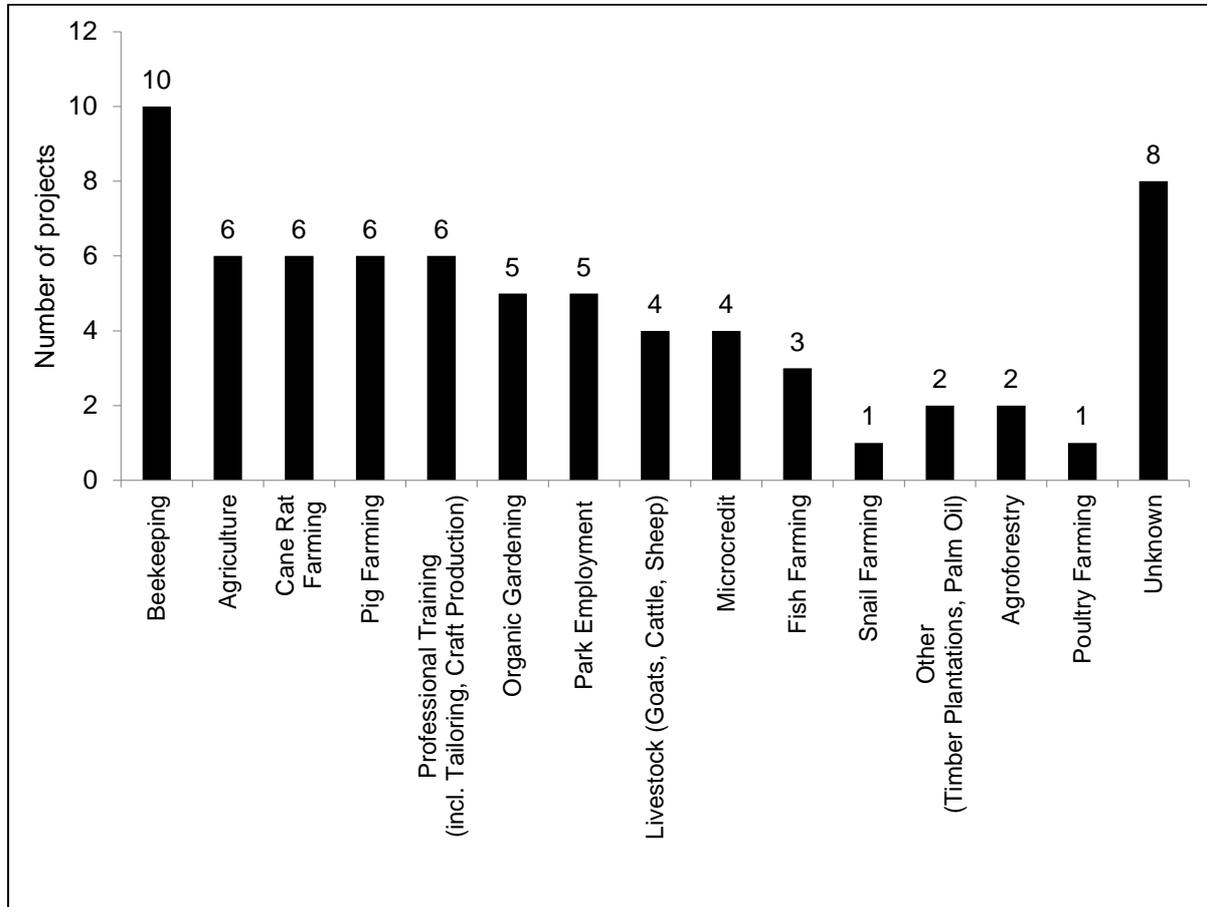
Figure 6: Alternative protein activities implemented



Note: From the total number of alternative protein activities (n=55) implemented by projects, 10 used multiple types of alternative income activities.

A wide variety of alternative income-generating activities has also been implemented (Figure 7). Beekeeping (n=10), agricultural activities (n=6) and cane rat farming (n=10) ranked highest amongst alternative income sources offered.

Figure 7: Alternative income activities implemented



Note: From the total number of alternative income activities (n=69) implemented by projects, 11 used multiple types of alternative income activities.

Table 2 provides a list of the alternative protein- and income activities implemented in each country.

Table 2: Alternative livelihood activities implemented by country

Country	Number of projects	Alternative activities implemented
Burundi	3	Livestock Rearing (Goats, Cattle), Beekeeping, Agro-pastoralism
Cameroon	17	Snail Farming, Livestock Rearing, Fish Farming, Cane Rat Farming, Poultry Farming, Pig Farming, Park Employment, Microcredit, Beekeeping, Organic Vegetable Gardens, Professional Training (Crafts), Palm Oil
Central African Republic	2	Fish Farming
DRC	18	Agriculture, Fish Farming, Pig Farming, Poultry Farming, Livestock Rearing (Goats, Sheep, Cattle, Duiker), Cane Rat Farming, Small Mammal Rearing (Rabbits, Guinea Pigs), Protein Producing Crops, Microcredit, Professional Training (Sewing and Tailoring, Crafts), Park Employment
Equatorial Guinea	1	Unknown
Gabon	5	Organic Vegetable Gardening, Cane Rat Farming, Fish Farming, Livestock Rearing (Impala), Park Employment,
ROC	14	Fish Farming, Poultry Farming, Frozen Meats, Livestock (Cattle), Snail Farming, Small Mammal Rearing (Rabbits), Organic Vegetable Gardening, Pig Farming, Cane Rat Farming, Professional Training, Agroforestry, Beekeeping, Park Employment, Agriculture
Rwanda	4	Beekeeping

7.2 Project manager interviews

The 13 project-manager interviews conducted covered a total of 15 projects (2 interviews provided information on 2 projects) in 6 different countries within the Central Africa region (Table 3).

Table 3: List of projects interviewed

ID	Project title	Project dates (funding)	Country	Implementing organization
1 (1) & (2)	(1) Projet de délimitation physique d'une ceinture verte de 10km pour la conservation et la protection de la biodiversité des alentours et des marécages de la rivière Ruvubu (2) Projet de préservation de la Biodiversité du parc de la Ruvubu	(1) 2010-11 ^a (2) 2010-11 ^a	Burundi	(1) Local NGO, National Gov. (Local Gov.) (2) Local NGO, National Gov. (Local Gov.)
2	Community-Based Management and Conservation of Great Apes in South West Cameroon	2010-15 ^a	Cameroon	National NGO
3	Tackling the Bushmeat Crisis through Wildlife Conservation Education	2008-11 ^a	Cameroon	National NGO
4	The Lebialem Hunters' Beekeeping Initiative	2008-11 ^b	Cameroon	Independent conservation biologist, National NGO
5	Maringa-Lopori-Wamba Landscape - Alternative Livelihoods in Conservation	2004-11 ^a	DRC	International NGO, national support
6	Action participative de lutte contre le braconnage et la surexploitation des ressources animales dans le paysage de l'Ituri-Aru	2006; 2009-11 ^a	DRC	National NGO (x2)
7	Projet d'élevage de chèvres comme alternative à la chasse et à la commercialisation de la viande de brousse à Djolu, Landscape MLW (Maringa – Lopori/Wamba)	2009-10 (10 months) ^a	DRC	Local NGO
8	DABAC Project (Développement d'Alternatives au Braconnage en Afrique Centrale)	2002-2004 ^c	Gabon Cameroon ROC	International NGO with Local NGO partners
9	Projet Pilote d'Elevage de Petit Gibier au Gabon (PEPG) (pre-DABAC cane rat pilot project)	1997-2002	Gabon	International NGO
10	Alternatives à la Chasse dans la Zone de l'aire Conservée des Communautés d'Ibolo-Koudoumou et les Villages Périphériques, Département de la Likouala	2008-9 ^d	ROC	National NGO

11 (1) & (2)	(1) Projet d'élevage Porcin au Village Impini, District De Lekana (2) Projet d'élevage Porcin au Village Okiéné, District De Ngo	(1) 2009-11 ^a (2) 2010 (funding delays) ^a	ROC	(1) Local NGO (2) Local NGO
12	Contribution à la conservation de la faune sauvage par le développement de l'élevage des bovins	2011-12 ^a	ROC	Local NGO
13	Promotion de l'apiculture moderne pour la réduction de la pauvreté et protection durable de l'environnement à la lisière du Parc National de Nyungwe et réserve naturelle de Cyamudongo	2011-12 ^a	Rwanda	Local NGO

Notes: a) Projects still ongoing after end of funding; b) has now been incorporated into the project activities of Project ID 2; c) only Cameroon projects still ongoing d) project status unknown.

7.2.1 Project aims and objectives

All the projects examined here were designed with defined aims (Table 4). In 7 of the 15 projects, alternatives to hunting were the only activity provided while in the 8 remaining projects, alternative livelihood activities were one of several project sub-components, such as educational measures to prevent forest degradation and general PA planning. Of the latter projects, alternatives were still considered to be the cornerstone of the overall project in 5 cases, whereas the bushmeat alternatives had equal weighting to other sub-components in the remaining 3 projects.

Table 4: Project aims

ID	Project aim
1 (1)	Protect fauna and flora in and around the park by providing people with training and education, creating a 10 km buffer zone around the park and improving livelihoods.
1 (2)	Correct destructive behavior to fauna and flora through (i) raising awareness; (ii) reforestation of areas outside and inside the park; (iii) introduction of efficient fuel-burning stoves to reduce household wood consumption; and (iv) provision of alternative income opportunities.
2	Conservation of the region's Great Ape populations. To tackle the two main threats to apes (hunting and habitat conversion for agriculture): 1) landscape management; 2) provision of sustainable livelihoods to communities within the project area; and 3) improvement of education quality and quantity.
3	To reduce pressure on wildlife resources through education, campaigns and non-consumptive use of biodiversity. The objectives were to: 1) campaign against unsustainable hunting practices and methods in the project area; 2) explain the

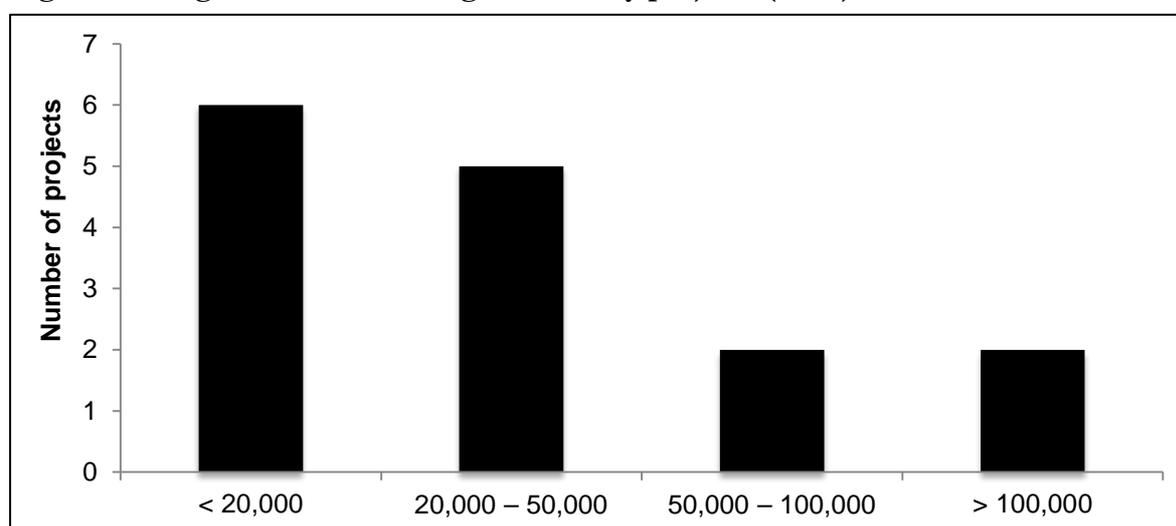
	wildlife law to local communities; 3) gather bushmeat marketing information in the project area; and 4) introduce and promote alternative activities to hunting of bushmeat to local communities.
4	<p>To reduce financial dependence on bushmeat and the volume of species harvested by providing hunters with an alternative income through beekeeping.</p> <p>The sub-aims were to:</p> <ol style="list-style-type: none"> 1) Train bushmeat hunters in beekeeping and supply them with the necessary equipment and technical support 2) Establish Common Initiative Groups (CIGS) in each community involved with the project and a beekeeping association in Lebialem 3) Evaluate the effectiveness of beekeeping as a bushmeat mitigation strategy and monitor the impacts on standards of living 4) Implement a conservation education program
5	The alternative livelihoods component was one tool within a larger land-use zoning project, which aimed to zone the CARPE Landscape into different types of land use (protection, agriculture, buffers etc.). The AWF used the Heartland landscape-level planning process in this landscape, which aims to identify threats to conservation targets and to design reduction activities. Agricultural land conversion (slash and burn) and commercial hunting were identified as key threats in the HCP workshop in Kinshasa.
6	The overall aim was to reduce the amount of hunting pressure in the Ituri forest. The project aimed to reintroduce the idea of animal husbandry, which had been decimated after the war.
7	To reduce human pressure on faunal resources in the Djou territory.
8	To continue to spread the idea of small animal/wildlife husbandry from Benin (where husbandry had seen high uptake) to Central African countries. The project's ecological focus (the reduction of hunting) came about due to the environmental focus of the European Fund For Development funding stream (the 'tropical forests' stream) which the project applied for.
9	A feasibility study. Cane rat farming experiences in Benin, funded by the German Cooperation Office, had been working on developing a technical framework for farming cane rats. The PGEG project aimed to see if it was possible to develop a similar project in Gabon, and demonstrate whether it would work technically.
10	<p>Help reduce pressure on wildlife and increase the value of biological diversity in the community reserve of Lac Tele, in particular the communities of Ibolo-Koundoumou.</p> <p>The alternative livelihoods project came about as part of this land use planning – to add to the conservation actions of the protected areas. The aim of the project was to get hunters to reduce their hunting in exchange for other animal proteins and incomes.</p>
11 (1&2)	<p>The project had the following set of overall objectives:</p> <ul style="list-style-type: none"> - produce domestic animal proteins - entice rural populations to engage in agro-pastoral activities - encourage creative initiatives to improved local livelihoods - enforce economic capacities of implementing NGOs and increase villages food autonomy - fight against the loss of biodiversity (hunting mentioned as one of the drivers of

	biodiversity loss in interview)
12	Being a geographically enclosed area, the district of Bouanela offers very few possibilities of income generation – hunting and fishing are therefore the main sources of revenue. In order to create more income-generating opportunities and improve livelihoods through the sale of milk, cows and the use of dung as a fertilizer, a group of local hunters decided to abandon hunting and start rearing cattle. This group set up the project independently, deciding upon its aims and objectives, and only later approached WCS for additional technical assistance.
13	The objectives of the project were to: <ul style="list-style-type: none"> - Conduct a commodity chain analysis - Conduct training and raise one unit of queen bees, with technical support from an external expert - Provide support for modern beekeeping techniques - Technically support cooperatives on quality standards and certification - Organize training on entrepreneurship in beekeeping (business plan, pricing, marketing, and development of small income-generating projects)

7.2.2 Project Funding

All projects received funding from at least one international donor. Projects ID 6 and 7 received a small amount of (token) co-funding from the community groups. The median annual project budget was 26,000 USD, with a median funding time of 1.5 years. Six projects received less than 20,000 USD per annum (Figure 8) with a mean funding time of 2.3 years, while only 2 projects (ID 5; 8) had over 100,000 USD per annum at their disposal with a mean funding time of 5.5 years. The approximate annual rates of funding were calculated in this study by dividing the total amount of funding by the number of years implemented and the funding ranges are represented in USD (currency conversion rate June 2013). Figure 8. This figure provides the overall budget of projects, rather than the amount that was allocated to the alternative livelihood sub-components (where applicable), as this detailed information was not available for all projects. Larger projects in which the alternative livelihood activities were only a sub-component (ID 1 (1) and (2), 2, 3, 5, 6, 13), were reported to have allocated various amounts of their total budget to the alternatives (for example 32% and 35% in Project ID 1 (1) and (2), respectively, and around 50% in Project ID 6).

Figure 8: Range of annual funding received by projects (USD)



The majority of interviewees (n=8) felt that the available budget was inadequate for basic management needs and presented a serious constraint to the management capacity of the project. Two respondents said that the available budget was somewhat acceptable in that it allowed the organization to implement activities, but it could have been further improved to fully achieve effective management. Only 3 key informants (ID 1 (1) and (2); 8; 9) judged the available budget sufficient to meet the full management needs of the project.

The inadequacy of project funding was an issue that many project managers flagged as a severe constraint to project implementation and performance multiple times throughout interviews in order to stress its importance. Not only was the amount of funding considered insufficient, but the mean length of project funding cycles was highlighted as ill-suited for alternative livelihood projects as it takes several years to provide people with adequate technical training, construct facilities, successfully breed animals, as well as develop a market in which products can be sold. As one respondent observed:

The financing is so short lived in such a way that it cannot support the project for longer periods, and this affects the overall impact that a project is supposed to achieve. (Project ID 3, 30 July 2012)

The manager of Project ID 3 also highlighted that most small grants funding limit support to core project activities without taking into account the costs of institutional support:

This weakens rather than strengthens the capacity of small NGOs to monitor projects during and after funding ends and sometimes leads to frustrations during project implementation. Small grants funding programmes need to put some funds aside (about 10% of total project cost) for institutional support to enable these small NGOs and CBOs to effectively run projects and ensure the successes of alternative livelihood activities in the field. Most at times staff time and basic training and field equipment are never supported. (Project ID 3, 24 December 2013 (project follow-up questions)).

Some project managers also reported finding it difficult to adhere to the strict timeframes given by donors, especially when working in remote areas under difficult external conditions. Therefore, projects struggled not only to implement activities on a very limited budget, but also to implement activities within often unrealistic timeframes and donor expectations.

Given these constraints, it is not surprising that projects do not have enough money or time to perform organized monitoring of activities in order to be able to evaluate their impacts (see section 7.2.8). Many key informants acknowledged that they would have liked to monitor activities, but simply did not have the means to do so:

When you look at the Ituri forest area, you will see that, with the slice of money that we have, you cannot perform monitoring of an activity as complex as bushmeat hunting, which involves people who are both in the army or who are in government. You just can't do it. (Project ID 6, 25 July 2012, translated from French)

7.2.3 Project organizations and partners

Organizations and partners involved in aiding or implementing projects were often national or local. In 5 instances, local NGOs or groups were the primary assisting bodies, 4 projects were aided by national NGOs and 5 projects involved multi-level partnerships manifested in various combinations of local, national and international collaborations. Only project ID 9 was solely run by an international organization.

Eight projects employed only local staff (ID 1 (1) and (2); 3; 6; 11 (1) and (2); 12; 13). The remaining projects hired a mix of local and national staff, with at most 1 expat joining the team. Indeed, several interviewees highlighted that the project wanted to contribute to the local economy by involving as few external people as possible. Overall, projects did not tend to have many staff members, be it due to a lack of resources or due to the fact that local communities were implementing activities. Furthermore, these employees were often not hired full-time, and, depending on the project, would visit projects on a needs-basis after the initial project start up. Of the 10 projects to have reported some form of fixed or fluid body of staff aiding the alternative livelihood component, 5 projects (ID 2; 3; 4; 10; 12) had fewer than 5 staff to assist, 3 projects (ID 5; 8; 9) had between 5-10 people at their disposal, and only 2 (ID 6; 7) were assisted by around 15 people, although these also consisted of volunteers and other interested individuals. Independent consultants, such as veterinarians or business advisors, who were hired as supporting services for shorter periods of time, were either nationals of the implementing country or of other African states.

Nearly all projects (n=13) had some form of interaction with the government. In some cases (n=2), such interaction was a mere political formality occurring at the beginning of the project with no follow-up or resulting actions. Other projects (n=2) simply kept the government informed of activities, receiving no form of support or involvement. Six projects (ID 1 (1) and (2); 3; 9; 11 (1) and (2)) were run with greater government consultation and received some type of logistical support, ranging from the sharing of office space and equipment to benefitting from government veterinarians, nurses, agronomists and other technical advisors. 2 projects (ID 2; 8) were reported to have had a very high level of collaboration with the government, receiving legal and administrative support as well as government staff to help implement activities.

7.2.4 Community involvement in project initiation, design and implementation

For the majority of projects (n=12), project managers reported community involvement in project initiation, design and implementation. Four projects (ID 1 (1) and (2); 4; 12) were self-initiated by local communities. In these instances, communities, or members thereof, independently decided to address certain conservation and livelihood concerns through the introduction of alternative livelihood activities. Lacking the financial means and/or technical expertise to implement such projects on their own, they approached the local administration as well as international donors and/or NGOs for assistance. For these projects, external partner organizations therefore only acted as project facilitators, providing the necessary means to implement activities, while the local community was responsible for determining project aims and activities, as well as project management and implementation. External project managers (the interviewees) noted that they paid special attention to only act as facilitators in order to not appear as wanting to intrude on project management. In one of these projects (ID 12), the local group, which was started by former hunters, had already acquired cattle and begun implementing project activities before approaching the international NGO, WCS, for additional technical assistance.

A further 2 projects (ID 11 (1) and (2)) were also initiated by local associations that wanted to launch alternative livelihood projects in the area, but it was the funders who subsequently steered the direction of the project. The communities originally only intended to introduce agricultural alternatives, whereas the funders proposed adding a focus on hunting by introducing pig farming as the livelihood activity.

While not initiated by community members themselves, the project managers of 6 other projects felt that they had achieved a high level of active community involvement when establishing

project objectives and choosing livelihood activities. Projects often engaged community members during socio-economic baseline studies and subsequently through the holding of community meetings and workshops. During these meetings, community members were asked to express their views on the problem (e.g., loss of forest access through PA establishment, overhunting, forest degradation) and to choose livelihood activities. From the interviews, however, it remains unclear at which point NGOs first approached the communities (e.g., before or after having available funding for a project) and to what degree communities were truly able to influence the direction of the project in its very initial design phase.

In 3 of the NGO-initiated projects (ID 3; 6; 7), communities were reported to be responsible for managing and implementing daily project activities from early on. Two projects (ID 2; 5) are currently organizing a handover of management to local communities. Project ID 10 differed somewhat in that the project manager had worked in the project area for an extensive period of time and felt he understood the needs for such a project as well as the locals' interests. The community was therefore not heavily involved in setting up the project, but was said to have been consulted when choosing activities. After the design phase of the project, however, community members were reported to have been responsible for project implementation, with the overseeing organization merely acting as a consultant.

Many of the projects evaluated here worked within only a few communities (Table 6), and therefore project meetings could be held in these communities, reducing the potential barriers to attendance such as travel costs and time. Projects covering larger landscapes reported constraints to participation, as provided by the example of the AWF heartlands project in DRC (ID 5):

In August 2006, a field mission comprised of [project] staff was organized to Basankusu, Bongandanga, Djolu, Lingunda and back to Basankusu. More than 1,000 km was covered on motorbikes and in canoes. In each location AWF led stakeholder discussions ... However, we did not fully succeed in our attempt due to the difficulties of communication with most program sites in the landscape, which are extremely isolated. No matter how often we organised meetings, the majority of the local people were not able to participate. This leads us to the conclusion that a formal Public Participation Strategy (PPS) is an essential complementary mechanism to the process of wide consultation ... Through the PPS we aim for real ownership of the project by the local communities. (Extracts from Dupain, 2008)

Only 2 projects (ID 8; 9) did not involve communities in designing the project or in choosing the alternative. These projects worked in peri-urban areas and sought to train individuals in cane rat farming practices, rather than working with specific communities. Cane rat farming was chosen due to its success (in terms of uptake) in Benin and donor desire to replicate these results in other regions:

There were cane rat farming experiences in West Africa, in Benin. The German Co-operation Office, FTZ, had been working on developing a technical framework for farming cane rats; they put quite a lot of money ... into experimental farming. They managed to domesticate cane rats and they had a lot of technical and scientific information about it and it was working quite well, and it's still working quite well – it was a major activity in Benin and it had spread to other countries in West Africa. So there was a demand from the French Coopération Office to do something similar in Gabon and experiment to see if it would work in Central Africa as it was in West Africa. (Project ID 9, 21 January 2013)

The structures that projects used to engage with communities in order to organize and implement activities varied slightly throughout. Only 2 projects worked with individuals (ID 8; 9), while all other projects engaged with community groups. Although these groups had different titles, such as committees, associations or '*groupements*', they seemed to have similar basic

hierarchical structures (e.g., projects ID 1 (1) and (2) had a President, Vice-President, Treasurer, Secretary). Some of these community groups were pre-existing, such as in Project ID 12 where local hunters had grouped together before requesting external support, or Project ID 11 (1) where artisanal network groups initiated contact with NGOs; other projects established new groups, such as in Project ID 6 where hunting committees were formed. The groups were comprised of either a specific target audience or were open to any community members (see section 7.2.6 on participant selection).

As the majority of projects did not conduct organized monitoring and evaluation of their projects (see section 7.2.8), it is difficult to say whether or not a certain form of engagement – individuals, groups, networks – is more effective in terms of achieving greater impacts. Furthermore, the time constraints of these interviews (kept to under 1.5 hours) made it difficult to ascertain how exactly groups and committees were structured on the ground, how they functioned on a daily basis, what their internal rulings were, how roles were distributed and to whom. To better understand the organizational structures of these projects, as well as the strengths and weaknesses of different approaches, follow-up interviews with project participants are strongly recommended.

7.2.5 Project Theory of Change

Table 5 details how, for each of the 15 projects, the alternative livelihood/intervention was designed to reduce hunting. In the majority of projects (n=8), livelihood alternatives were chosen based on the hypothesis that the activities would (i) provide the same level of (or more) income/protein as hunting, which would mean that hunters would no longer need to go hunting; and (ii) would require hunters to spend more time on the alternative, leaving them less time to go hunting, thereby reducing their impact on prey species. The projects therefore aimed to act as direct substitutions for income/protein provision as well as for time. The Theory of Change for these projects follows that set out by the hypothetical example given in Figure 1.

A further 2 projects in the DRC (ID 6; 7) aimed to ‘reset’ past behaviors rather than introducing new ones. In both cases, animal husbandry had been a prominent livelihood activity before the civil war. During the war, militia from both sides stole community livestock, leaving herds depleted or non-existent. In the absence of income and protein normally provided by their livestock, communities increased their hunting activity. The hypothesis guiding these projects was therefore that if herds were restored, communities would leave the ‘safety-net’ behavior of hunting and return to animal husbandry, resulting in a reduction in hunting pressure.

In 2 other projects (ID 8; 9), the aim was not to change the behavior of participants, but of bushmeat consumers. The VCF and DABAC projects sought to increase the amount of cane rats (farmed ‘wild meat’) entering the bushmeat markets, therefore capturing a significant part of the market and reducing the demand for hunted wild meat. In these cases, the underlying hypothesis was that cane rats could be produced and sold at a competitive price (and make a profit for producers) and that consumers would change their preferences to farmed meat if the availability and price of the goods were favorable.

‘Theory of Change’ (ToC) was mentioned by the key informant reporting on project ID 5, as the project had spent a year on performing baseline studies in order to determine which alternatives might affect the change in hunting behaviors that the project sought to achieve. Their findings demonstrated that drivers of hunting behavior were not always obvious:

People [in the target villages] they were living in their village. They had some animals and practiced agriculture; they sell [the agricultural produce] on the boats; it goes to the market, then they get money for it that pays school, yes?

Now, if the crops of those fields, they end up rotten [when there is no market access] ... if somebody was a bit courageous, he would take his wife and his children 15-20 km in the forest, and open a small field there; he'd put traps all around, and they live there as a family. And the father ... fills his basket full with dried bushmeat, walks to the market, a week's walk, or a week in a canoe, sells the bushmeat and comes back with the money, or buys soap or sugar or whatever.

So if you just create access to the market for those crops that were rotten, a number of those families, then, they will leave the forest, and come back to the village, where they prefer to live. The guy in the village, we don't mind if he goes to the forest with some traps, gets some porcupine, or some monkeys, and eats it for subsistence, but he's not going to the market anymore to sell volumes of bushmeat. (Interview ID 5, 20 July 2012)

In this case, the main driver of hunting was a loss of agricultural revenue, which resulted in whole families relocating to forest camps to recover lost revenues by selling dried meat, which is more easily transported to market. The ToC for this project was therefore that, by providing access to market for agricultural crops, and by increasing agricultural production, the need for families to relocate to hunting camps would be reduced.

Alternative activities: new or existing?

Many of the chosen livelihood activities were already in existence at the beginning of the project. Projects that introduced animal husbandry (goat, cow, pig or chicken rearing) often reported that villagers frequently already kept livestock, but that such was left free-ranging, comprised only a few animals and was not often sold to provide income. Beekeeping projects reported that communities already collected honey, but used methods that resulted in ecological degradation (e.g., felling of trees). Projects therefore mainly aimed to augment existing practices by using 'modern' methods rather than by introducing new livelihoods to the community. A number of project managers suggested this strategy was more likely to be successful:

If you take issues like livestock and organic gardening, these are activities that the local people have started doing in the past ... so this means that already they knew the value of what those activities will have to them. We had to build on what they were already doing ... When you visit our project area, you will find people have started growing vegetables, starting here and there, and that means that it is an idea that they have had, and they need to just build on it. It will be more successful than if you have to ask them to do what they don't know. (Project ID 3, 30 July 2012).

Another key informant explained:

Gabon wasn't a very favorable environment for [cane rat farming], in the sense that the Gabonese are not naturally livestock rearers, and even less rearers of wildlife. So already it is not an obvious autonomous economic activity for the Gabonese This is also a difficulty for Congo ... And its for that reason that it worked very well in Cameroon, its because the are already livestock rearers. They know already about chickens and rabbits, and in this respect the cane rat is just a small modification on something that already exists. In Gabon you have to do everything. So, in the end, it wasn't very successful. (Project ID 8, 23 July 2012, translated from French).

Access to markets

While access to markets was not the focus of any of our project manager questions, the importance of the existence of markets for alternative livelihood products, and project access to these markets, was highlighted by number of interviewees. Project ID 5, for instance, undertook such a market analysis as part of its baseline studies. Results indicated that local people were most likely to go hunting if agricultural incomes were low and that these incomes tended to be low due to transport difficulties. The project therefore bought a barge to transport goods in order to improve access to markets and increase the potential success of the livelihood activities.

The choice of alternative livelihood activity in Project ID 4 (beekeeping) was based on, amongst other considerations, an assessment of the level of demand for honey and bee products at the regional and national level. Market research was conducted by Erasmus et al (2006) in Cameroon's four main honey producing regions and within its two main cities, Yaoundé and Douala. This research identified the Southwest Region, where the project is located, as an area with a honey deficit, i.e. where demand for honey is significantly greater than supply. To highlight the level of demand and the viability of existing markets to the participants, the project invited participants to visit the honey production warehouse and offices of a beekeeping cooperative in Adamaoua Region that had successfully started exporting honey to neighbouring countries as well as organic certified honey and beeswax to Europe:

when you're in Lebialem and that market is not on your doorstep, then people aren't necessarily aware that [the market for beekeeping products] exists. So that was the whole point of this exchange visit: [to show participants the extent of the market and infrastructure in place] we went to Yaoundé and went to the offices and [...] all the way up to the north and saw where production [...] because production there is on a huge scale [...] People were suddenly, like, 'wow, you know, this is international activity'. (Project ID 4, 31 January 2013)

Similarly, Project ID 1 (2) implemented beekeeping as one of its alternative activities in part because due to the nation-wide reputation of the region for producing high-quality honey, which offered a selling point and markets for project products. Furthermore, the interviewee reporting on Project ID 11 (2) said that he had high hopes that the easy market access to bigger cities available to the project site would make the alternative livelihood activity (pig farming) profitable. Project ID 9 decided to implement activities in peri-urban areas because of their proximity to the large-scale urban market for wild meat. The project reasoned that, in remote areas, project profitability would be reduced because of the transport costs involved in getting products to the primary urban markets, and because in local markets in rural areas buyers could get wild cane rats at the market for a cheaper price than reared cane rats.

Table 5: Project ‘Theory of Change’ and choice of alternatives.

Project ID	Type of alternative	New to area?	Theory of change
1 ^a	Goat and cattle rearing, beekeeping	Goats were newly introduced. A traditional form of cattle rearing and beekeeping had previously existed in the region; the project introduced modern husbandry and beekeeping methods.	Goat and cattle rearing and beekeeping provided as compensation for the creation of a PA; hypothesized to reduce hunting by providing an alternative source of protein and income so that hunters will no longer need to go into the PA. PA enforcement is hypothesized to reduce hunting impact through the risk of being fined.
2	Beekeeping, agroforestry, palm oil refining, improved farm production, Village Forest Protection Fund scheme	Activities already existed in the villages (excluding the community fund); new techniques to improve yields were introduced.	A range of alternatives provided as compensation for the creation of a PA; also hypothesized to reduce hunting by providing an alternative source of protein and income so that hunters will no longer need to go into the PA. PA enforcement is hypothesized to reduce hunting impact through the risk of being fined.
3	Pig farming, snail farming, beekeeping, poultry, market gardening	Pig and poultry farming already existed and the project brought in new techniques to increase yields; beekeeping and snail farming were new (bee "hunting" – the collection of wild honey – already existed).	A range of alternatives introduced to provide an alternative source of income and food for local hunters with the hypothesis that this will replace the need for hunting income and protein, and that the time spent on alternative activities will reduce the time available for hunting.
4	Beekeeping	Beekeeping already existed in the area, but the project encouraged hunters to take up beekeeping as an activity.	Baseline studies found that hunting to be mainly an income-generating activity. Beekeeping was provided as an alternative income-generating activity under the hypothesis that hunters will stop hunting focal species if they have another activity that provides similar/higher incomes. Hunters signed a pledge not to hunt 5 focal primate species, and the project aimed to compensate for the losses incurred by avoiding these species but it did not aim to replace hunting income per se.
5	Improvement of agricultural practices, pig and	The activities previously existed and the project aimed to increase the efficiency of	Alternatives provided were based on a Theory of Change. Baseline studies were employed to look at the drivers of hunting in the region. These indicated that local people were most likely to go hunting if agricultural

	chicken rearing, post-harvesting fishing techniques	these activities.	incomes were low to make up for this income gap. Agricultural incomes tended to be low due to transport difficulties. The project therefore bought a barge to transport agricultural goods to market and implemented a project to help farmers increase their agricultural yields in return for participants agreeing not to farm or hunt in the permanent forest zone. The Theory of Change is that with high agricultural incomes, farmers will not need to supplement their incomes with hunting.
6	Duiker rearing, fish farms, chicken rearing	Animal rearing has always existed, but the project introduced modern methods. Duiker rearing (in captivity) was new.	The communities had a history of animal husbandry, but during the civil war in the DRC the troops from both sides 'ate off the backs' of the local communities, destroying livestock populations. The project aim was to reintroduce and rebuild the idea of keeping domestic meat and therefore shift behaviors back from hunting wild meat (which increased during the war) to raising livestock. The Theory of Change is that the natural behavior of people was actually to raise livestock, so given the opportunity participants will naturally shift back from hunting to livestock rearing.
7	Goat rearing	In rare cases people kept goats, but they were free roaming.	Goat rearing to provide an alternative source of protein and income. Theory of change for the project is that: a) hunters who have taken up goat rearing will have less time for hunting; and b) as above, before the civil war in DRC communities were much more involved in livestock rearing, so if provided with livestock participants will switch back to their old livelihoods.
8	Cane-rat farming	New to all countries.	Participants were taught how to breed cane rats, providing them with an alternative source of income. If cane rat breeding became popular, the volume of meat produced from cane rat farming would capture a significant part of the market for bushmeat, reducing hunting and poaching by reducing urban demand.
9	Cane-rat farming	New activity to Gabon.	Pilot study for DABAC: aim was to test the potential for cane-rat breeding and therefore no Theory of Change applied

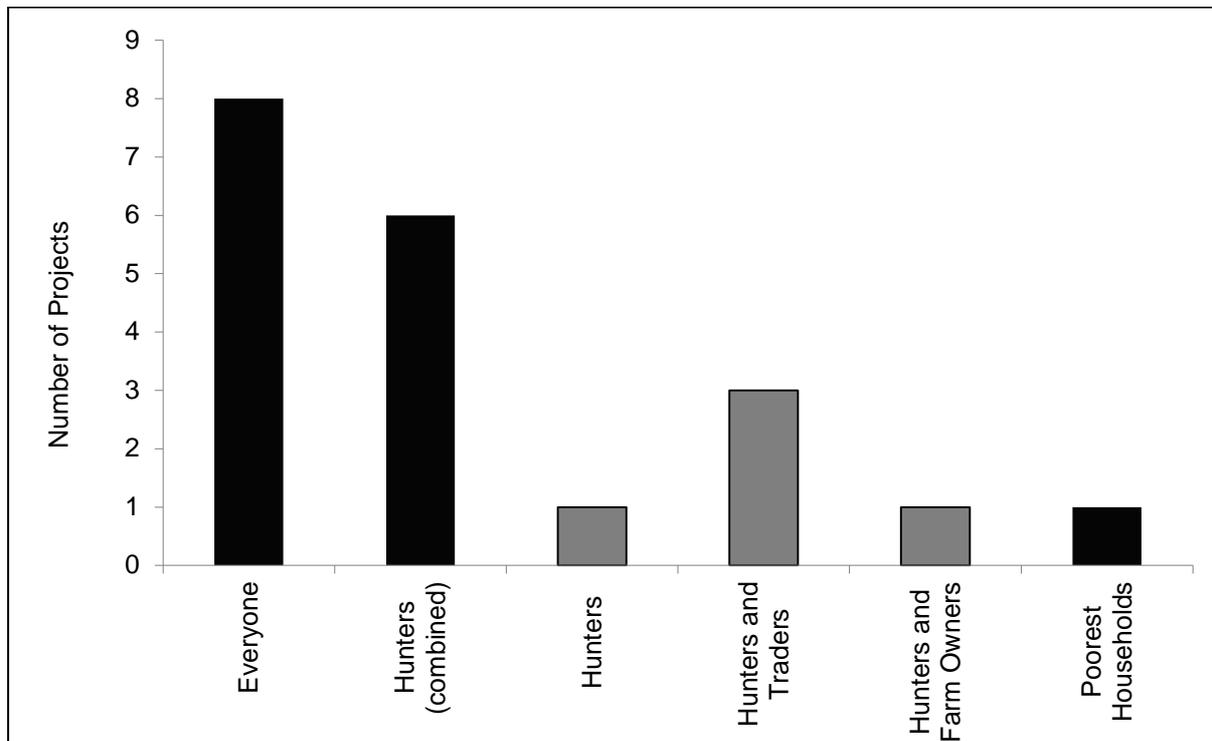
10	Aquaculture, crocodile farms, livestock and beekeeping	Some livestock rearing, but generally only a few goats, which were not sold.	Large bushmeat markets were created during the war in ROC due to military demand and, therefore, bushmeat has become an important source of income for local communities. The project aimed to create an alternative source of protein and income through the provision of alternatives (aquaculture, crocodile farming, livestock and beekeeping) after the creation of a community reserve in order to reduce hunting in the reserve.
11 ^a	Pig farming	Livestock rearing is used as an additional source of income, after crops. There is a local breed of pig.	For both projects, agriculture is the primary activity and hunting is an additional source of income. The project aimed to provide local people with pigs. The theory is that, with pigs, people can earn enough additional income so that they will no longer need to hunt. In Impini, in particular, people resort to hunting only when other activities are not available as hunting is a very difficult task in the area and people have to travel far to reach forest areas.
12	Cattle rearing	Cattle rearing is a new activity, though sheep and chicken rearing are practiced throughout the region.	Hunting and fishing are the main sources of revenue in Bouanela. To create more income-generating opportunities and improve livelihoods through the sale of milk, cows and the use of dung as a fertilizer, a group of local hunters decided to abandon hunting and start rearing cattle. This group set up the project independently, deciding upon its aims and objectives, and only later approached WCS for additional technical assistance. The activity is designed to provide hunters with more income than hunting, therefore making cattle rearing a desirable alternative.
13	Beekeeping	Traditional beekeeping existed, but the project introduced modern methods.	Beekeeping provided as compensation for the recent gazettement of Nyungwe National Park; this beekeeping project therefore aimed to compensate local communities for reduced forest access, and provide alternative ways of raising income. The hypothesis is that if alternative income source are available then this will reduce the need of people to go into the PA; PA enforcement is hypothesized to reduce hunting impact through the risk of being fined.

Note a): These IDs comprise 2 projects.

7.2.6 Project participant selection

Figure 9 describes the selection criteria for participants of the 15 projects. 6 projects (ID 2; 3; 4; 6; 7; 12) selected hunters as project participants. Of these, 1 selected hunters only (ID 12), 1 allowed some other community members, particularly existing beekeepers, to join the project but gave equipment (beehives) preferentially to major hunters (ID 4), 3 of the projects (ID 3; 6; 7) specifically targeted female bushmeat traders in addition to male hunters, and 1 project (ID 2) focused on farm owners as well as hunters. This project was formed in part to provide alternative livelihoods for communities living in the buffer zones of newly created PAs, and in part to reduce future illegal hunting/farming within the PA boundaries. Local farmers and hunters were identified as those most likely to be affected by PA creation and therefore the project focused on these 2 groups. Similarly, Project ID 13 aimed to compensate villages for the creation of a national park and thus focused on the poorest households since these were most likely to have been affected by the loss of forest access. As this project did not focus solely on reducing hunting, it is not surprising that it did not chose hunters as its target group.

Figure 9: Participant selection criteria



Note: Bar describing ‘hunters (combined)’ represents all projects where hunters were selected preferentially for the project; bars in light grey represent a breakdown of the ‘hunters (combined)’ column.

Eight projects did not have a target group, allowing all members of the community to join the project. A non-targeted approach can have disadvantages for projects aiming to reduce hunting behavior. Target members (i.e. hunters) may, for various reasons, not decide to become involved in the project while non-target members (i.e. non-hunters) may, in these cases, become the main recipients of project benefits. An example of this problem is provided by Project ID 4, where the interviewee noted that many of the men involved in the beekeeping project were older men

towards the end of their hunting career who had already been looking for alternative activities. The project was therefore not targeting those people most likely to affect hunting pressures.

Target audience may not always be self evident. For instance, in Project ID 5, baseline surveys showed that the driver of hunting was low farming incomes, as a result of poor market access, with farmers switching to selling dried bushmeat (more portable and with a higher price per kg than crops) when market access for crops was poor. In this case, targeting famers during certain seasons might be the most effective strategy. Baseline studies into the drivers behind hunting behaviors are therefore key (see 7.2.5 on ‘Theory of Change’).

Participant numbers

Projects tended to focus on a relatively small number of participants (Table 6). The number of reported participants ranged from approximately 1,000 (ID 2) to 15 (ID 7; 10), with a median of 80 project participants.

Table 6: Participant numbers for each project

Project ID	Participants	Villages	Other
1a	300		
1b	80		
2	Approx.: 1000	20	
3	76	5	
4	139	7	
5		27	
6	Approx.: 110		
7			5 goatfolds in 3 village groupements
8	Approx.: 100 in Gabon 15 in ROC 500 in Cameroon	n/a	
9	Approx.: 15	n/a	
10	Unknown (project abandoned)		
11a	19		
11b	16		
12	15		
13	Not reported		

A number of interviewees mentioned that the ability of projects to achieve their ecological aims was limited by the number of participants that the project could reach. For instance, the project manager of Project ID 3 (which works with 76 hunters) explained the limitations in reaching the communities around the Bakundu forest reserve:

Yes, certainly the people we are working with directly [have hunted less]. However there are many people that we are not working with, and these people are still doing a lot of hunting. The people that we are working directly, with these livelihood activities, these people we think we are already spending less time hunting, but there are a lot more people, many more people, hundreds of thousands that are hunting. (Project ID 3, 30 July 2012)

7.2.7 Project conditionality and sanctions

Table 7 outlines the levels of conditionality, as well as subsequent sanctions, for each of the 15 projects and

Figure 10 describes the number of projects by the level of conditionality/sanctions applied.

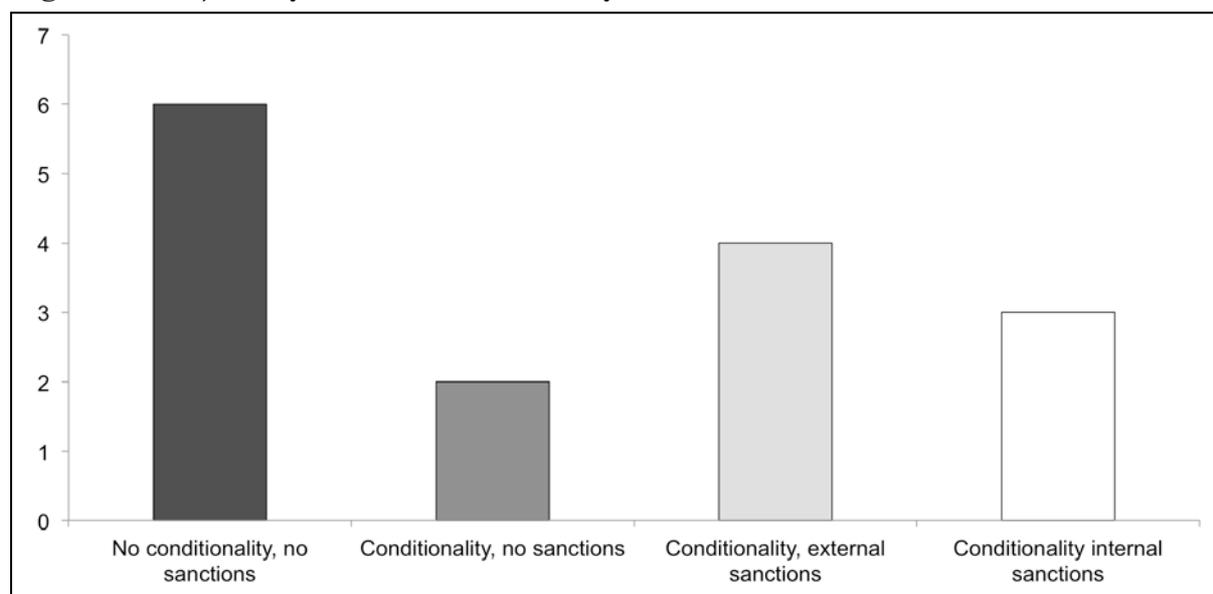
Table 7: Descriptions of conditionality and sanctions for the 15 projects

ID	Conditionality and sanctions
1*	In both projects, members must comply with project rules (these rules are, among others, to register as a member of the recipient association, regularly attend association meetings, pay contributions to the association and show good behavior in the village). There is a local committee may decide on sanctions, but to date, no cases of violation has been recorded and no penalty was therefore applied.
2	The project works with communities surrounding a PA. There is no explicit conditionality for the project but hunting/farming inside the PA will be fined under the law.
3	The aim of the project is to create behavior change through the provision of alternatives so there is no conditionality and no sanctions.
4	Participants sign a pledge promising that they will no longer hunt 5 focal primate species. There are no sanctions; this is a voluntary agreement.
5	Representatives of each village have signed a Memorandum of Understanding (MOU) with the project to respect the permanent and non-permanent forest boundaries and zones as defined in joint mapping and consultation, in exchange for support for agricultural development. Communities no longer wishing to be part of the project (i.e. keep to the conditions) can leave; it is a two-way contract.
6	Project participants must abide by national hunting regulations: no killing of protected species and no hunting in the closed season. Hunting laws are enforced by the state and not the project.
7	Project participants must abide by national hunting regulations; it is against the law to hunt protected species. In reality, the interviewee said, that it is unfair to impose sanctions on the community as the communities are very poor and the project has not provided that much benefit. No one has been sanctioned from the project as yet.
8	No conditions and no sanctions: the aim of the project is to create a farmed meat product that can compete with wild meat in city markets.

9	No conditions, no sanctions: the aim of the project was to test the practical possibilities of cane rat farming.
10	No conditions and no sanctions. The interviewee said that the project was created to help the populations to accept the ideas of conservation and not to tell them what they can and cannot do.
11*	No conditions and no sanctions.
12	The group has drawn up set of rules and regulations that require members to (i) renounce hunting, (ii) adhere to the group's objectives and (iii) actively engage in their work, providing the necessary labor to maintain activities. If these rules are broken, members get excluded from the group, but there have been no such instances thus far.
13	The project works with communities surrounding a PA to compensate them for loss of forest access. There are no conditions or internal sanctions, but communities hunting or farming illegally inside the PA will be fined under the law.

Note: Greyscale/patterns respond to the categories shown in Figure 14 bargraph.

Figure 10: Projects by levels of conditionality and sanctions



Projects without conditionality

Six of the 15 projects had no conditions attached to project entry as well as no sanctions. In some cases, projects aimed to displace the target activity (e.g., providing pigs for rearing could result in hunters spending a larger proportion of their time looking after the pigs and therefore less of their time hunting). In these cases, the projects aimed to change behavior without conditions rather than provide a *quid pro quo* agreement (with conditions). An example is given by Project ID 3, where a range of alternative livelihood options (pigs, snails, poultry, beekeeping and market gardening) was offered to local communities living close to the Bakundu Forest Reserve. The alternatives were provided with the aim of reducing the time available for local hunting activities and no conditions or sanctions were applied. Project ID 11 (1) and (2) also chose not to have any project conditions or sanctions: in both project areas (Impini and Okiene,

ROC), agriculture was the primary livelihood activity and hunting was an additional income activity. The project therefore aimed to provide enough additional income through pig farming that hunters (who in Impini had to travel long distances to get to the forest) would no longer have to hunt.

In comparison, both cane-rat raising projects (DABAC and PEPG; ID 8 and 9) aimed to increase the amount of farmed meat reaching city markets at prices that could compete with wild meat and reduce the demand of wild meat. The aim was therefore not to change the behavior of the project participants *per se*, but rather to alter the behavior of bushmeat consumers and reduce their demand for bushmeat. Therefore attaching conditionality to participation in this case may have hindered, rather than helped, achievement of project aims.

Projects with conditionality

Nine projects had some form of conditionality for project participation. 2 projects had conditions but no sanctions: hunters joining the Lebialem Hunters' Beekeeping Initiative (ID 4), for example, signed pledges promising not to hunt 5 primate species. The project did monitor whether hunters were indeed changing their behaviour but did not enforce sanctions in a bid to maintain good relations with the communities and build trust. Similarly, communities joining the MLW project in ROC (ID 5) were asked to sign an MOU agreeing to respect PA forest boundaries in return for help on improving agricultural yields and incomes. Communities not wanting to abide by the sanctions could leave the project, but there were no graduated sanctions for breaking the MOU.

Four projects had external sanctions (ID 3; 6; 7; 13). Alternative livelihood activities were sometimes implemented to provide compensation for the recent creation of PAs close to the communities, which affected local livelihoods through reduced forest access (ID 3; 13). In these instances, conditions and sanctions (fines for illegal hunting in the PA) could often precede project benefits (alternative livelihoods), and access to the livelihood alternative was without conditions. In comparison, project ID 6 (Ituri forest, DRC) explicitly used compliance to national hunting laws as the condition of project entry, accompanied by national sanctions enforced by the state.

Of the 15 projects, 3 created their own conditions and sanctions: Project ID 12 (cattle rearing in Bouanela, ROC), stipulated that project participants must renounce hunting and that breaking these conditions would result in being ejected from the group. These conditions and sanctions were decided by the local community that had initiated the project, however, and no sanctions have been applied thus far. Similarly, Project ID 1 (livestock and beekeeping in Ruvubu, Burundi) had internal rules (not provided by the interviewee) and fines imposed for breaking these rules were in theory decided by a local committee, however, to date no sanctions have been applied.

7.2.8 Project monitoring

Table 8 and Figure 11 provide a summary of the monitoring activities of each of the 15 projects.

Figure 11: Number of projects conducting different types of monitoring activities

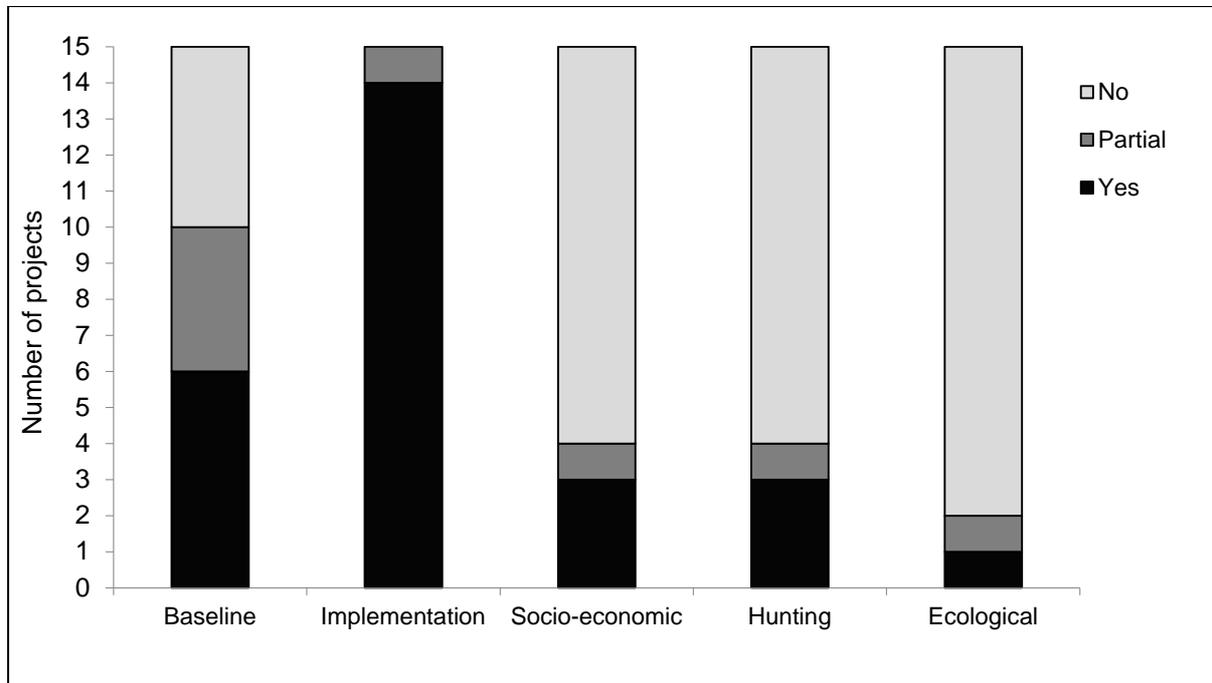


Table 8: Number of projects carrying out different types of monitoring activities

Interview ID	1 ^a	2	3	4	5	6	7	8	9	10	11 ^a	12	13	Total (yes and partial)
Baseline monitoring	yes	yes	no	yes	yes	no	no	no	no	partial	partial	partial	yes	10
Project implementation and outputs	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	partial	yes	15
Changes in hunting behavior	yes ^b	yes ^b	no	partial	no	no	no	no	no	no	no	no	no	4
Socio-economic outcomes	yes	yes ^b	no	partial	no	no	no	no	no	no	no	no	no	4
Ecological outcomes	no	yes ^b	no	no	partial	no	no	no	no	no	no	no	no	2

Notes: a) Two projects evaluated during the interview; b) Data collected but not yet analyzed.

Baseline monitoring

Of the 15 projects evaluated, two-thirds (n=10) had some form of baseline information available – either collected as part of the study or collected by previous studies. The majority of projects (n=7) had collected baseline socio-economic information as part of the project design, and 5 projects (ID 1 (1) and (2); 2; 4; 5) specifically mentioned collecting data on levels of hunting and the reasons for hunting. In a number of cases, these baseline studies were used to design project interventions based on the drivers of hunting identified in the project site. For instance, in the case of Project ID 5 (landscape planning, DRC), baseline surveys had discovered that when agricultural profits were low, people went hunting in order to make up for lost agricultural incomes. Interventions were therefore tailored to increase agricultural profits rather than to target hunting directly. In the case of Project ID 4 (beekeeping in Lebialem, Cameroon), baseline data on hunting drivers highlighted that people hunted mainly for income rather than for protein. Income alternatives rather than protein alternatives were therefore chosen.

Two of the projects had carried out some baseline ecological surveys: Project ID 2, for example, used camera trapping to determine species composition and relative densities of mammal and human hunting sign. The results of this study were then published in a peer-reviewed journal (Nkeymnyi, 2011). Project ID 5, in collaboration with the University of Maryland, used satellite images to measure the amount of agricultural encroachment in the area (results not yet available). In the case of 2 other projects, socio-economic and ecological data had been collected at the study site, but up to 10 years previously as part of the creation of a PA (ID 10) and as a separate NGO project (ID 12).

Project implementation and outputs

All projects collected some data on project implementation and outputs. Data collected tended to focus on simple measures, such as the number of project participants, the number of training events/participants of training events and the number of livestock/beekeeping etc. distributed. Data collection over the time of the project measured changes in project participant numbers and the growth or decline of livestock/beekeeping numbers. Some projects also recorded observed difficulties in the project uptake and implementation, which could then be used to modify project methods (adaptive management). One CARPE funded project (ID 6) mentioned specifically that they were using the CARPE small-project reporting format to measure project implementation.

Changes in hunting behavior

Of the 15 projects surveyed here, only 4 projects (ID 1 (1) and (2); 2; 4) monitored the impacts of project implementation on hunting behavior. The first two (ID (1) and (2)) were alternative projects that formed part of a larger GEF-funded project aimed at reducing threats to the Ruvubu National Park. Other elements of the project included the creation of a buffer zone and increased enforcement capacity within the PA. As part of this wider project, levels of hunting within the national park and levels of wildlife trade in the nearby towns were documented, and preliminary findings suggest a decrease in hunting during the lifetime of the project. However, as the livelihoods project formed one part of a more comprehensive project, it is difficult to determine the extent to which the livelihoods component of the project affected this change. Project ID 2 was established after the creation of a conservation area, the Lebialem Highlands Conservation Complex, and alternative livelihoods projects were created in order to protect the great ape populations within the complex of PAs and as a form of compensation for local people's loss of access to the PAs. Questionnaires in study villages suggest that hunting of target

species has reduced significantly – however, again it is difficult to disentangle the impact of PA creation from the impact of the alternative livelihoods projects. Project ID 4, within the Lebiale Highlands Conservation Complex, conducted semi-structured interviews with participants once each year to see how their hunting effort had changed, and also used informal interviews with community members to gauge how the hunting of key primate species was changing. Their findings also suggest that hunting of target primate species has reduced.

Socio-economic outcomes

The same 4 projects that measured changes in hunting behavior also conducted repeated socio-economic surveys to identify whether alternative livelihood projects had benefitted project participants. The first 2 projects (ID 1 (1) and (2)) have shown that beekeeping has increased participant's income and that school attendance has increased for participant families. The goat-rearing component has increased incomes slightly, but the production time for new kids means that goat rearing may have more long-term benefits. Similarly, the impact of cow rearing could not be properly evaluated in the 3 years since the project began, and may show more long-term benefits. The second project (ID 2) has not yet analysed its socio-economic data. A further project (ID 4) collected socio-economic data from participants on a yearly basis during implementation, which still needs to be analysed in full, but the interviewee felt that the project needed more time to develop before the real impacts could be measured and that it would now be interesting to conduct a follow-up socio-economic study to compare data directly with the baseline.

Ecological outcomes

Only 2 studies (ID 2; 5) measured ecological outcomes. The first project collected data on target species populations (great apes) within the Lebiale Highlands Conservation Complex (ID 2) using camera-trapping techniques. Preliminary analyses suggest an increase in the target populations. However, it is difficult to disentangle the impact of the alternative livelihoods offered by this project from the impact of the PA creation and any other enforcement efforts. The alternative livelihoods element of the second project (ID 5) forms part of a larger land-use planning project, which includes the development of a network of PAs. This project, which has been discussed briefly above, focuses on reducing both hunting and agricultural encroachment and is monitoring changes in land-use through remote sensing techniques (results not yet available). Within the PAs, populations of target species are being monitored, but again, the impact of the alternative livelihoods projects (in isolation from the impacts of PA enforcement) cannot be measured easily using these data.

Overall, few projects measured project outcomes. Of the 15 projects, only 1 (ID 2) measured changes in hunting behavior as well as the socio-economic and ecological outcomes of the project, and the methods used and results from this project are yet to be published. The projects collecting data on outcomes tended to be part of larger projects within a landscape containing PAs (ID 1 (2); 2; 5) or were associated with an academic study (ID 4). Many project managers highlighted the lack of monitoring as a constraint to management and suggested that limited funds over short time periods precluded any organized monitoring of outcomes (as described in section 7.2.2, many of the projects had low levels of funding over short (1 – 2 year) time periods). In addition, after receiving only a few years of funding, many projects were not at the stage where outcomes monitoring would have captured their long-term benefits. Project managers highlighted that although grants generally lasted for 1 – 2 years, outcomes might not be seen until year 4 or 5, at which point project funding would have come to an end.

7.2.9 Project sustainability

Many factors can feed into long-term project sustainability, and the projects interviewed have implemented various strategies in hope of increasing their lifespan. As reported in section 7.2.4, most of the projects were either self-initiated or set up to be managed by community groups. Of the 14 projects that are no longer receiving funding, 12 were reported by project managers as still continuing to varying degrees (mostly at a much reduced scale); 1 project has closed entirely (ID 9); and in another (DABAC, ID 8), of the Gabon, Congo and Cameroon branches, only the Cameroon branch seems to have continued without external support. One project manager was unsure about the status of their project (ID 10).

Project managers were generally positive about the future continuation of projects, even at a reduced scale, and some were seeking out additional funding to extend the project in time as well as geographically. Project sustainability has been shown to be related to the level of community participation and empowerment within a project (Persha et al., 2011; Ostrom, 1990), and the local level at which many of these projects have been conceived and managed might partially explain the endurance of these alternative livelihood projects despite their often inadequate budgets. However, at the time of interview, many of the projects had only just run out of funding (in the last year to 6 months), and more time will be required to fully determine project sustainability. Furthermore, this study's selection of interviewees is likely to be biased towards those who are still engaged to some extent in these projects, and are therefore more easily located, and more predisposed to, interview.

Various other measures have been taken by projects in the hope of increasing sustainability. In order to improve financial sustainability, for example, project ID 2 has been developing a Forest Protection Fund, in which the community would have 70% control of the fund, and the overseeing NGO, ERuDeF, 30%. This revolving fund aims to (1) support village conservation committees, which have been set up by the government to allow people to support government conservation efforts; and (2) provide micro-credit loans or support for any villagers in need economic assistance. As the fund's membership grows, therefore increasing its financial resources, the fund should be able to expand, support additional members and continue to grow.

Projects ID 3 and 7 have developed schemes for extending project benefits to new participants, using piglets and goats. In Project ID 3, a 'pass the piglet' scheme is used, where those farmers who have been given pigs will pass 1 piglet from their litter onto a new participant, thereby expanding the scheme. Project 7 has taken a similar approach using goats instead of piglets. Unfortunately, however, the success of such schemes has been limited in part either by members not willing to share the animals' offspring, or, in some cases, due to high mortality in their stock through diseases such as swine fever.

Another factor widely perceived as positively affecting project sustainability was the previous existence of the alternative livelihood activity as well as the presence of a market for the given product. If communities were already familiar with animal husbandry, they were thought to be more likely to be able to better carry on the activity after project-end as they were more familiar with the required techniques as well as had the necessary mind set to accept such activities. Market access was also believed to increase sustainability because the more participants can sell, the more income the activities can generate. Project ID 11 (2), for example, has high hopes for the easy market access to bigger cities quickly making pig farming profitable in the village.

Project ID 11 (2) also noted that the presence of diversified activities within the project region could help increase project sustainability:

Okiéné, I think, is something that will go far ... in addition to [pig] rearing, [the people] also have agricultural activities, and so, there will be a point at which they will be able to diversify their sources of income even more. (Project ID 11, 11 February 2013, translated from French)

When people have many small job opportunities, it is less detrimental economically should one fail, therefore not encouraging them to immediately revert back to hunting. Project ID 1 also pointed out that a diversification of activities in terms of the time it takes for their results to become tangible can be an effective sustainability strategy. By providing participants with both a quickly reproducing species, such as pigs, as well as a slowly reproducing species, such as cows, they can benefit from the former more immediately while waiting for the latter to become better established and reap the greater benefits it holds at a later point in time.

Factors frequently thought to have a negative impact on project sustainability were primarily related to funding and project timeframes linked to funds and donors. The small amounts of money and short periods of time allocated to projects were not considered to realistically support the long-term sustainability of an alternative livelihood project that may truly have a more important impact. The geographical remoteness of an area was also seen as potentially shortening the durability of a project. Not only is it difficult to set up projects in such areas as the transportation of materials and staff is both challenging and costly, but remote areas also often lack access to markets, which is crucial in order to make a project sustainable in the future. Livelihood activities that require too much technical expertise and external support (for example, veterinarians) might also make long-term sustainability more difficult to achieve, especially in remote areas.

8 Discussion

8.1 General characteristics of alternative livelihood projects in the Central African region

Since the early efforts of curbing bushmeat hunting through alternative livelihood projects in the 1990s, such interventions have multiplied across Central Africa. This study has located over 60 projects within the region and there are likely to be many more. Due to the data collection methods used in this study, it is probable that government and private sector projects are underrepresented. Such bodies were less likely to be recipients of the listserves contacted by this study as well as potentially less inclined to respond to the study's request for information. The projects and implementing organizations identified by this study might therefore be somewhat biased towards NGOs. Nonetheless, the projects located here provide countless valuable insights into alternative livelihood projects and allow for many important lessons to be learned.

This study has revealed, for example, that a number of different bodies have been responsible for implementing a wide range of projects. While international NGOs were most prominent among project implementers (n=27), they were closely followed by local NGOs (n=24). This suggests a high degree of localism in projects, especially when taking into account that 22 of the projects had multiple implementers, meaning that many of the international NGOs probably had more of a supporting role to local or national NGOs.

Across these many projects, a great variety of alternative livelihood activities have been used, ranging from beekeeping to cane rat farming to vegetable gardening and livestock farming. As demonstrated by the sub-set of key interviews, however, until formal and organized M&E is implemented consistently throughout projects, it will be nearly impossible to determine which alternatives have the greatest potential for success as well as under which conditions.

The highest concentration of projects was found in the DRC (n=18), Cameroon (n=17) and the ROC (n=14). This may be linked to these countries having the legal structures in place that allow for decentralized land management and the creation of legal community groups (Roe et al., 2009), and further investigation of the impact of decentralization on alternative livelihood proliferation and project impacts is warranted.

8.2 Project funding

Of the 15 projects considered more closely through key informant interviews, the majority was fairly small-scale, with small budgets and short periods of funding. Insufficient funding, as well as the mean length of project funding cycles of often only 1-2 years, were highlighted as the major constraining factors on project implementation and potential outcomes. Unfortunately, low project budgets and short funding cycles seem to be key constraints often mentioned by conservation practitioners across the board (Balmford and Whitten, 2003). When not enough funding is available to initially be able to hire enough staff, acquire the necessary project materials and include a large number of people in activities, then the impact a project can create is bound to be restricted regardless of whether all the correct managerial principles are in place and whether communities have been fully empowered.

While 12 projects still manage to continue to varying degrees post-funding, these do so mostly at a greatly reduced scale. Given that most of these projects already struggled to establish themselves fully while receiving funding, the probability of many of them simply 'fading out' over time is unfortunately high. Designing funding packages that provide realistic levels of support and are dispersed over longer timeframes is therefore crucial in order to give alternative livelihood projects a sincere shot at success.

8.3 Project organizations and partners

Nearly all of the 15 projects were implemented by local groups and organizations or by national NGOs, which points to a high degree of localism. This can be seen as positive since local organizations are more likely to be familiar with the concerns of local communities, therefore increasing the likelihood that projects represent local priorities and can best serve their interests rather than imposing external values upon them. Furthermore, barriers to access might be reduced in projects run by local organizations as decisions are made and meetings are held in the project area. Such enhanced sensitivity to local conditions can potentially lead to greater project sustainability not only because communities may feel more empowered, but also because projects might rely less on outside staff and other resources.

While most projects did interact with the government at some point, this interaction never involved financial support and only rarely a degree of logistical support that could truly be deemed as having major impacts on project implementation. Although increased financial and logistical support from Central African governments would greatly improve the chances of project success, many governments in the region simply do not have the capacity to provide this support. In addition, many countries in Central Africa lack the appropriate legislation to devolve land management to local community groups (Roe et al., 2010), two notable exceptions being Cameroon and the DRC.

Furthermore, governments have similarly low capacity for wildlife law enforcement, and enforcement activity in many areas is non-existent. Government capacity for enforcement must be greatly increased in many of the CARPE countries if it is to reduce levels of commercial hunting (which is often performed or organized by 'external' commercial hunters with no ties to local villages):

It is not the [little community members] who wake up in the morning with their spears to go out and hunt the elephant. No. It is the large resources that are made available, especially in the context of our region, by the military authorities, the generals and the army colonels, who send out people to do this work ... Therefore, the problem of hunting and overexploitation in our area is a problem that needs to be addressed not only at the community level, but above all, at the state level. (Project ID 6, 25 July 2012, translated from French)

If the enforcement of external commercial hunting is not addressed, the impact that community-based alternative livelihood projects hope to have will remain very limited and wildlife populations in the surrounding areas will continue to decline.

8.4 Community involvement in project initiation, design and implementation

The interviews conducted for this study suggest that the majority of project managers understand, and are taking into consideration, the need for community consultation and community involvement in project management. Interpretation of project manager interviews might suggest that for some projects a level of 'Interactive Participation' has been reached (Pimbert and Pretty, 1997), whereby:

People participate in joint analysis, which leads to action plans and the formation of new local groups or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.

Through such participatory community engagement, projects not only empower local people but also allow for the development of an intervention that is sensitive to the local cultural context. Understanding and responding to local institutions and cultures is said to be closely linked to more successful CBRNM projects (Waylen et al., 2010; Ostrom, 2009).

However, the use of project manager interviews alone to determine the levels of community consultation is highly problematic and participant interviews are needed to obtain a true gauge of levels of participation as well as to get a more detailed picture of the structure and use of community groups and committees. We would suggest that *in-situ*, semi-structured interviews with project participants and non-participants are the best available tools for understanding community involvement, and we strongly recommend following up these project manager interviews with participant interviews in order to more fully understand levels of community involvement.

8.5 Project Theory of Change (ToC)

The majority of projects in this study thought about the drivers of hunting and about how the proposed alternative livelihood could change hunting behaviors. Project managers were in many cases from the project region/area (see section 7.2.3) and may have therefore been aware of the major drivers of hunting despite a lack of formal baseline data collection.

However, although projects were designed to change certain hunting behaviors, the majority of studies stopped at hypothesis building (i.e. the provision of alternative incomes will reduce the amount that hunters go into the forest) and did not go on to test these hypotheses by monitoring changes in hunting behaviors. Many of the projects focused on activities that had the potential to provide the same amount of protein/income as hunting and assumed that participants would switch from hunting to the alternative (*substitution*) rather than simply adding the new activity to existing activities such as hunting (*addition*). In the case of alternatives such as livestock rearing or beekeeping, this may be a false assumption as both these activities leave adequate time for hunting and/or may be carried out by non-hunters where participation is open-access. Projects may have failed to test their assumptions (through monitoring of hunting behaviors) due to tight funding deadlines (with reporting focused on project outputs rather than outcomes) and small budgets focused effort on ensuring that livelihood activities were provided to the communities, rather than on measuring whether this provision was having any impact.

The aims and objectives of an alternative livelihoods project are likely to be interpreted differently by managers and community participants. The 'Theory of Change' (ToC) for these two groups as a result may differ significantly. For example, in the hypothetical case of the goat-rearing project (Figure 1), project managers view the aim of the project as reducing hunting pressure on prey populations. The ToC is that by providing goats, hunters will spend more time goat-rearing and goats will provide a substitute for the protein and/or income provided by bushmeat. The reduction in available hunting time, combined with the alternative source of protein/income, will reduce the amount of hunting. However, in comparison, the community may see the aim of the project as increasing the standard of living for community households. In this case, the ToC might be that goat-rearing, carried out alongside hunting activities (and maybe by different members of the community), will provide an additional source of protein and/or income to local households, therefore increasing their available food and income sources and raising the standard of living of the household. Understanding, and bringing together, different viewpoints on project aims and Theory of Change are therefore crucial for project success.

Access to markets

Market access is one of the critical aspects to developing successful alternative livelihood projects, as highlighted by many of the project managers interviewed by this study. Distance from markets will affect the price of commodities (Lambin, 1994) as, even though transport costs in developed countries are low, they can still be high in developing countries (Megevand and World Bank, 2013; Africa Infrastructure Country Diagnostic, 2013; Pourtier, 1984). Transportation costs can therefore have a major impact on the price at which a product can be sold on a market. These costs have been studied by economists since the 1800s when von Thünen published his models on 'Isolated States' (Hall, 1966),³ which, simply put, consider how land-use changes (as a function of distance from markets and transport access) and transport costs increase due to the distance from markets.

In remote, rural, forested areas in Central Africa, transport systems have a major impact on the price of commodities. Costs may vary seasonally, such as during the rainy season when roads become virtually impassable, or in function of who carries out road maintenance (e.g., timber companies). Timber companies often provide critical road maintenance in remote areas where states do not maintain roads. However, if a road-maintaining timber company leaves a zone where an alternative livelihood project depends on the related transport, costs of market access would likely increase and transport might even cease. For this reason, a cost-benefit analysis should include not only the price at which the commodity is sold but also the transport costs of getting the commodity to markets at different times of the year.

While NGOs often prioritize environmental or social goals when creating projects with commercial aspects, the commercial success of the project will likely be secondary (Elson, 2012). In many cases, alternative livelihood project support consists of purchasing start-up equipment or providing expert advice (e.g., veterinarian services), but when the project support ends, it is not clear if the project will continue or how commercial success will be attained. In discussing the challenges of making locally controlled forestry projects succeed, it has been noted that: 'Gifts of equipment or soft loans without conditions suppress the underlying viability of the business' (Elson, 2012: 26). Working with partners more knowledgeable about business, commerce or development will likely enhance the success of an alternative livelihood project in the long-term, especially by assisting in the development of simplified business plans, conducting market analyses, factoring in market access, and assuring an exit strategy. In this study, a number of interviewees (Project ID 1 (2); 4; 5; 11 (2)) mentioned the importance of taking existing markets as well as the distance to such into consideration and discussed how such thinking was integrated into projects. More in-depth and structured market analyses are generally needed in the feasibility-assessment stage of alternative livelihood projects, and supporting business and entrepreneurial services should be provided throughout the project in order to strengthen long-term sustainability.

8.6 Project participant selection

Participant selection is an important element of project design. In the hypothetical example of goat-rearing (Figure 1), the project aims to change hunter behavior in part through reducing available hunting time. In this case therefore, it would be important to target hunters as participants. In the case of the AWF project in the DRC (ID 5), the ToC set out that farmers who gained adequate income from selling crops would not have to resort to setting up forest

³ This model continues to be used in standard textbooks (Mäki, 2011).

hunting camps. In this case, the participants selected should therefore be farmers that are known to hunt when incomes are low.

Failure to properly identify target participants can jeopardize project success. Many of the projects evaluated here used a non-targeted approach, allowing all community members to engage in project activities. This may lead to a situation where members of the community choosing to engage in the project activities are not those engaging in the behavior that the project aims to change (e.g., hunting).

Cultural norms and individual motivations will influence which community members participate in an activity. In many cultures in Central Africa, rearing mini-livestock, such as chickens or cane rats, is seen as an activity for women and therefore the introduction of such activities, while potentially providing additional incomes and protein for hunting households, may provide only an additional activity for the women of the household and have little impact on hunting behavior of household men. The Lebialem Beekeeping Initiative (ID 4) found that within their target group of hunters, older hunters (who are likely to have less impact on the forest) were looking for ways of diversifying their income as they began to ‘retire’ from forest work. They were therefore more likely to get involved in the project than the more commercial hunters, with higher hunting offtakes. As a result the project, even though it targeted hunters, may not have reached the participants most likely to affect change on prey populations.

Baseline studies that identify the groups and individuals having the highest impact on prey populations, understand their motivations for hunting and estimate the costs and benefits of their involvement in the project (i.e. what levels of income might the project need to provide to offset the current hunting incomes of the target audience), are required to properly attract and select participants.

8.7 Project conditionality and sanctions

A number of the projects in this study aimed to reduce hunting pressure without conditions and sanctions by providing an alternative livelihood that would provide the incomes/protein previously provided by hunting as well as taking up available time needed for hunting. However, as mentioned above, there is a risk that, without the implications of sanctions, hunters or hunting households may view the *alternative* livelihood provided as *additional* rather than *substitutional*. Blom et al. (2010) have created a list of 15 best practices for ICDPs, identified from a literature review of the successes and failures of such (see Recommendations Section for more details). Among these, they highlight the importance of enforcement (sanctions):

Enforcement is always needed. It would be convenient if effective project design precluded the need for project enforcement. However, this is hardly ever the case. In Indonesia, enforcement of laws and regulations has had a large impact on the eventual success of ICDPs (Wells et al., 1999). Even with community engagement in projects ... the need for enforcement will always exist.

The coordinator of the Lebialem Hunters’ Beekeeping Initiative pilot project (ID 4) described how even if beekeeping was meant to provide useful incomes for local hunters, this may not lead to a reduction in hunting without project monitoring and application of conditions:

Even if you do as much as possible to get the level of income comparable with bushmeat hunting, there’s always that possibility that they’re [hunters] going to do both ... It’s never going to happen [reduction in hunting] without compliance ... It was based on goodwill since we didn’t have a law enforcement component at the time. Until you have

that [enforcement] there's always a tenuous link between goodwill and action. (Project ID 4, 31 January 2013)

Some projects provided alternative livelihoods as a compensation for reduced forest access (creation of a PA), or as a compensation for the application of existing hunting regulations, instead of setting up a *quid pro quo* agreement. In this case, conditions and sanctions are external to the project. All countries covered in this review have hunting regulations stipulating the species that can be hunted legally, the methods which can be used, the times of the open and closed seasons for hunting and the conditions for subsistence hunting in village territories. In theory, alternative livelihood projects could be designed to make it easier for local communities to abide by these laws (and reduce the livelihood impacts thereof) and therefore external conditions and sanctions (obeying the existing law and national penalties for illegal hunting) could be applied. In practice, however, many countries in the Central African region have extremely low capacity for enforcement of forestry and wildlife laws (Roe et al., 2009) and an understanding of the (often overly-complex) hunting laws among the rural population can be low (Coad, pers. obs.). Under these conditions, national enforcement of hunting laws become toothless conditionalities for a project and, with low risk of being penalized, project participants may well continue to hunt.

As one project manager explained (ID 7), applying national laws as conditions can also have unintended negative consequences where projects are too small to provide livelihood benefits to all villagers as national laws are applied over the entire population:

We can't be too hard on people, because we haven't been able to equip everybody [with alternatives]. We didn't give the benefits, we didn't give the goats, to everybody. If we penalize them, it's as if we are sending them to die. We can't penalize them, but we can give them an awareness-raising course. If we see someone that we gave goats to hunting, then you can give sanctions, but for those who are waiting for goats, we can't punish them. (Project ID 7, 29 July 2012, translated from French)

Three of the 15 projects in this review applied conditions with internal sanctions but neither project had ever applied these sanctions. In these cases, it may be because all project participants kept to the project conditions. However, projects may also suffer from low levels of compliance monitoring, and if conditions are broken while non-compliance is routinely not discovered/ignored, there will be an increase in non-compliance (Blom et al., 2010).

For all of these projects, measuring compliance, or change in hunting behavior, is crucial in order to determine whether projects are achieving their aims as well as to allow for adaptive management. Are hunters who sign MOUs, but are not sanctioned for breaking the MOU, reducing their hunting? Is the threat of external sanctions (e.g., fines for illegal hunting), combined with the provision of alternatives in surrounding communities, reducing hunting in PAs? Is the application of national hunting regulations having negative impacts on non-participating villagers? Is the threat of being ejected from the project as a sanction effective in reducing hunting behavior? Without monitoring the change in hunting behavior, projects will not be able to gauge whether their conditions and sanctions (or lack thereof) are having the impact on hunting levels that the project aimed for and whether the conditions have been set at the right levels.

8.8 Project monitoring

Project monitoring is crucial if projects are to understand their impacts and learn from their successes and failures. Baseline studies identify the main users of the resource that the project aims to conserve (in many cases, specific prey populations targeted by village hunters) as well as

understanding their motivations and cultural norms. In addition, baseline monitoring provides a 'before and after' control with which to measure project impact. Studies of hunting behavior can then determine whether the assumptions of the project 'Theory of Change' are being met. Combining baseline data on with data on ecological and socio-economic outcomes, as well as measures of project inputs, project managers can determine how project inputs have affected ecological and socio-economic change.

All projects evaluated here conducted some monitoring of basic project inputs (such as budgets, staff, equipment) and project outputs (such as the number of individuals trained, the number of participants, the number of livestock bought and distributed). This may be in part due to the reporting requirements of funders (data on implementation and uptake are often requested as part of project reporting for funders – e.g. CARPE small project reporting requirements – and can determine whether the next portion of funding is released to the project), and in part due to the low cost of recording this information.

However, for the majority of projects evaluated here, project monitoring was insufficient to evaluate project success. While most conducted some form of baseline survey, few had used the baseline as a control with against which to measure project impacts. Only 4 projects had available data on changes in hunting behavior and 2 on ecological outcomes. These data were collected by nearby PAs, not as part of the project, and therefore changes in hunting intensity and prey populations in the PA created by changes in PA management could not be disentangled from changes resulting from alternative livelihood projects.

It is not surprising that the few projects in which monitoring has been conducted are projects linked to a PA where other sources of long-term funding and expertise are available. Many projects are also based in areas of high conservation value, and ecological/socio-economic monitoring may already be underway in the vicinity, especially where projects are close to a PA. Identifying neighboring projects that are already conducting monitoring may provide useful datasets for some of these projects, although, as mentioned, changes in species populations within nearby PAs may be due to changes in PA management rather than as a result of the alternative livelihoods projects. However, for many PAs in Africa the same effort and cost barriers to monitoring apply and, as a result, there are relatively few PAs that have collected long-term ecological datasets (Craigie et al., 2011).

The cost, time and expertise required to conduct ecological monitoring will have been prohibitively high for many projects that are not situated near other better-funded conservation projects (such as PAs), which might be collecting this data. However, socio-economic monitoring (including some measures of hunter behavior change) does not have to be as time consuming, or expensive, as ecological monitoring (although for many projects budgets were so small that even low-cost socio-economic monitoring may have severely cut into the funds available for implementation).

In some cases, the perception of complexity combined with a lack of training may be a constraint to setting up a monitoring program. In these instances, providing simple monitoring tools to project managers might help to increase the number of projects monitoring their impacts on hunting behavior and socio-economic outputs. Existing rapid-assessment toolkits (such as the IUCN forest-poverty toolkit) may be easily adapted to monitor socio-economic change. Basic outcomes monitoring could be included as a compulsory component of grant reporting (although funding and the length thereof would have to be increased to account for this extra work). We would recommend undertaking follow-up questions with the project managers interviewed in this study concerning their perceived barriers to monitoring and their suggestions for improving monitoring.

As a conservation community, gathering experiences of success and failure from current and past projects is the only way to collectively begin to understand ‘what works and what doesn’t’ in different situations and environments, and adapt accordingly. This study was originally initiated to learn some of these lessons. However, the lack of project M&E to date means that many projects are unable to properly evaluate their impacts and therefore many of these crucial lessons are being lost.

8.9 Sustainability

Where funding is short-term, community-based projects must work quickly towards fully embedding activities into the community structure in order to strengthen sustainability, which has been shown to be related to the level of community participation and empowerment within a project (Persha et al., 2011; Ostrom, 1990). Indeed, nearly all projects were said to have included sustainability considerations in the initial project design, and the majority had fully handed over the responsibility of implementing activities to local stakeholders, often at the beginning of the project, thus giving communities full ownership from the start while the implementers merely acted as a supporting service.

The high level of community ownership might explain why 12 of the 15 projects still have ongoing activities (although often at a reduced scale). However, the majority of these projects only stopped receiving funding in 2011, which may make it too early to draw such conclusions for the long-term, especially for projects that have not set up other mechanisms to support sustainability (e.g., revolving livestock schemes – see section 7.2.9 for additional examples).

9 Recommendations

Our recommendations for future organizations aiming to establish alternative livelihoods projects mirror many previous publications that have provided ‘best-practice’ guidelines for ICDPs and other conservation projects. In terms of general guidelines for project management, and in the interests of not repeating what others have said more eloquently, we can recommend consulting the following publications:

SALAFSKY, N., MARGOLUIS, R. and REDFORD, K., 2001. Adaptive management: a tool for conservation practitioners. Biodiversity Support Program, Washington, D.C.

BLOM, B., SUNDERLAND, T. and MURDIYARSO, D. 2010. Getting REDD to work locally: lessons learned from integrated conservation and development projects. Environmental Science and Policy, doi:10.1016/j.envsci.2010.01.002.

In the following section we provide some preliminary recommendations, more specifically to alternative livelihood projects aiming to reduce hunting.

9.1 Project aims and objectives

Baseline data collection should precede the formulation of aims and objectives. Data collection should investigate which hunting behaviors are having the largest impact on the conservation target (e.g., gun hunting or trap hunting? Commercial or subsistence?), and identify the drivers of these behaviors. This information can then be used to target project aims and objectives.

Aims and objectives should be clearly defined. They should be:

Understandable: i.e. both project managers and communities have the same interpretation of the project aims.

Measurable: i.e. project managers should be able to measure whether aims have been achieved.

Realistic and feasible: i.e. ‘a reduction in commercial hunting of x species, in y villages’, rather than ‘the cessation of hunting’.

Projects should take into account the scale of the intervention compared with the scale of the threats (i.e. is the project likely to have a significant impact on the threat – providing alternatives for four hunters, in a landscape which has 100’s of hunters, will have little impact).

Projects need to be situated within (and aware of) the broader landscape: external threats (commercial hunting) may dwarf targeted internal threats (local hunting), rendering the project ineffective.

9.2 Project funding

Project funding needs to be provided over the longer-term in order to allow projects to properly develop (e.g., over 5 years, rather than 1-2 years). Project support needs to be long enough to allow for significant training, community uptake, livelihood activity development and handover.

Funders should take into account the limitations of ‘small-grant’ funding and encourage projects that are realistic in their aims, or projects which build on existing conservation efforts within a landscape.

Follow-on funding opportunities may be appropriate for small-grant funded alternative livelihood projects (i.e. ‘start up’ funds, followed by ‘continuation’ funds’, on provision of monitoring results).

Funding should be allocated specifically for project monitoring (see below).

9.3 Project organizations and partners

Where possible, projects should be situated within (and take advantage of) national decentralization/community management laws. Projects should aim to work closely with regional and national government structures, especially in project design and initiation phases.

Local NGO-grant recipients should be provided with management support and training from donor organizations (especially concerning the creation of a project ToC and subsequent project monitoring) as well as with an additional technical supporting services (e.g., veterinarians, nurses).

Local organizations can be supported technically by national and international NGOs working within the same landscape. Where possible, donors and organizations should aim to strategically ‘join up’ projects working in the same area, to share resources and experiences.

9.4 Community involvement in project initiation, design and implementation

Communities should be involved in project management during project initiation, design and implementation in a truly participatory and empowering manner.

Project equity (costs and benefits of the project for different groups, barriers to participation), should be considered during project design and monitoring. McDermott et al. (2011) provide a framework with which to consider project equity.

Donors should specifically allocate funding to cover the project handover phase/ensure that funding does not end before full handover is achieved.

9.5 Project Theory of Change

Project activities should be based on a ‘Theory of Change’ (ToC), designed using information on the drivers of hunting collected in baseline studies.

Project managers should ensure that managers and participants are working from the same ‘ToC’ (i.e. the assumptions of the project manager’s ToC hold true) by testing the ToC assumptions as part of project monitoring (see monitoring section), and developing the ToC in partnership with local communities.

Choice of alternatives: alternatives should be ‘*substitutional*’ rather than ‘*additional*’ to hunting. The degree to which an alternative becomes ‘*additional*’ will depend on the characteristics of the alternative, the choice of participants and the level to which sanctions are applied.

Projects that aim to provide an alternative income source must ensure that there is a market demand for the product, and that suitable markets exist, when choosing the product. Before deciding on whether or not a project should be implemented in a given area, a market analysis should be undertaken that assesses transport costs, transport frequency, production costs, start-up costs (materials, training) and potential profit. Available toolkits for assessing the potential market for a product include the USAID ‘Conservation Marketing Equation’ report (Travers et al, 2008).

9.6 Project participant selection

Participant selection should be determined as part of ToC development.

Projects should aim to work with those community members who will have the most impact on the target species/ecosystem. For example, if commercial hunting is the biggest threat to the target species/ecosystem, then community members who do the most commercial hunting should be identified, and the drivers or their behavior understood. Project ToC should be developed to change these behaviors.

The impacts of the project on non-participants (benefits and costs) should be clearly understood and mitigated for where required.

9.7 Project conditionality and sanctions

Most projects (and especially *quid pro quo* agreements) will require conditionalities and appropriate sanctions (either internal or external, such as national hunting laws).

Conditionalities and sanctions must be developed and agreed in partnership with local communities.

Adherence to agreements must be monitored and sanctions applied where appropriate, in partnership with local communities.

9.8 Project monitoring

A system of monitoring (and adaptive management) should be developed early on in project planning.

Project aims and ToC should be informed by baseline socio-economic studies, to:

- Identify the drivers of hunting behaviors that have the largest impact on the target ecosystem/species, and from this, determine project participants.
- Provide a baseline with which to measure project impact.

Hunter behavior (effort) should be monitored through the project to test the assumptions of the ToC as well as project impact.

Socio-economic studies should be conducted at specific stages of the project to measure project uptake and the impact of the project on the livelihoods (costs and benefits) of community members. Adequate project monitoring can be achieved with simple, rapid-assessment, low-cost tools, such as the IUCN poverty-forest toolkit.

Ecological surveys require higher levels of time, investment and training. However, where projects are situated in areas of high conservation value (e.g., close to a PA), monitoring may already be underway, and costs may be reduced where projects can link up.

Donors should provide training and specific funding support for monitoring activities. Evaluation of monitoring results should be a reporting requirement.

Donor support should allow for changes in project aims and activities. Without this flexibility, project managers are unable to react to the finding of their monitoring programme and adaptively manage their projects.

9.9 Project sustainability

A plan for long-term project sustainability should be factored into project design at an early stage.

Services supporting the technical aspects of alternative livelihood activities (e.g. veterinarians) as well as of business and markets (e.g., entrepreneurial consultants) should be provided in order to strengthen the project foundation as well as ensure long-term sustainability through training. Regarding the latter, participants should be assisted in designing simple business plans that can guide the production, marketing and sale of products to local and regional markets.

Short-term, small-grant funding opportunities are not currently conducive to project sustainability – continuation funding should be available where projects show potential.

9.10 Overall thoughts

With over 60 current alternative livelihoods projects operating in Central Africa, and continued donor support for small-scale alternative livelihood approaches, there is a desperate need to understand whether (and under what circumstances) these projects actually deliver conservation benefits. Building on this initial study, we would advise a more comprehensive review of current and past project success and lessons to include:

- A comparative assessment of a larger number of projects in Central and West Africa, using available project documents and project manager interviews.
- Rapid-assessment *in-situ* analysis of project impacts, for approximately 10 current projects in the region.

- In-depth *in-situ* assessment for a few (2-3) case-study projects (this could be achieved as a PhD study) using a range of monitoring tools

Furthermore, we would advise that CARPE increase the level of technical support available to the recipients of their small-grants programme, many of which are local NGOs who may have less experience with ToC analysis, business development, and designing a monitoring plan. As part of this, we suggest the creation of an easy-to-use project manager's toolkit (including tools for project design, community engagement, project monitoring and business development). Monitoring methods could be tested and adapted as part of the rapid and in-depth project assessments suggested above.

Given the uncertainty surrounding alternative livelihoods projects and the long time-scales they require, they should currently be regarded as a strategic intervention and in the short-term other measures, including enforcement of protected area hunting regulations, are required to maintain or stabilise animal populations.

10 References

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11 Appendix I: E-mail sent to conservation listservs, bushmeat researchers and conservation practitioners in West and Central Africa

How and when can alternative livelihood projects be most effective in improving the sustainability of bushmeat hunting in Africa?

Call for lessons learned

Across Africa, the hunting and sale of wildlife for food is both a major component of many people's livelihoods and a significant threat to wildlife. Over the past few decades, tremendous effort and funding has therefore gone into finding ways to improve both the social and ecological sustainability of the bushmeat trade. In particular, many projects have attempted to develop protein alternatives (e.g. small-scale wildlife rearing, such as cane-rat farming) or income alternatives (such as beekeeping, or market gardening). However, to date there has been no systematic evaluation of the effectiveness of such interventions, and as a result current projects run the risk of repeating the mistakes of past projects. Put simply – we are not learning our lessons.

To help fill this gap in our understanding, Oxford University and Imperial College London, in collaboration with GRASP, IUCN, WCS and others, are conducting an evaluation of the success of alternative livelihood projects aiming to increase the sustainability of bushmeat hunting in Africa. To do this, we are seeking information on as many case studies as possible, and we would appreciate your help.

Put simply, we want to know about ANY project or proposed project – whether ongoing, planned, abandoned or even that was considered but never got off the drawing board – that aims (or aimed) to increase the sustainability of bushmeat hunting through the provision of alternative food or alternative income.

Where possible, we are looking for reports, project documents and publications as well as contact details for project managers. However, even the name of a project that happened 15 years ago and has long-since been abandoned would be useful – we will chase it up.

Project timetable

We are creating an objective comparative review of projects, which ultimately be made available online through Oxford University's Forest Governance website (and other partner websites) as an online report. Following an initial review of case studies, we will develop a comparative framework and circulate it to partners for review (by end June 2012).

Data collection and analyses will then continue until 1st September 2012, and a draft report will be made available online in late 2012 for comments and feedback.

Any documents or information you send will be treated as confidential unless you specify otherwise. The online database will only include titles of documents and documents for which we have obtained permission to publish.

If you have any information on current or past projects that you think would be useful for this evaluation, can suggest project managers that we should talk to, or are interested in becoming involved in this project, please get in touch with lauren.coad@ouce.ox.ac.uk (Oxford).

12 Appendix II: Project database

The project database is provided as an excel document with the project folder. It is entitled:
'CARPE Alternative Livelihoods Project Database 010813'

Alternatively, to receive a copy of this database, please contact Lauren Coad at:
lauren.coad@ouce.ox.ac.uk

13 Appendix III: Comparative framework (questionnaire)

Section	General topic	Interview question (to be asked in interview)
1	PROJECT AIMS	
1.1		How did you get the idea for the project? Why was the project created?
1.2		What is the aim/are the aims of the project?
1.3		How did you come to decide on these aims? Who was involved in making these decisions? How were they involved in making these decisions?
2	DONORS AND ORGANISERS	
2.1	Project funding	What was the overall annual project budget?
2.2		Was this part of a larger project? Or was it a standalone project? If so, roughly what percentage of the budget did the alternative livelihood component receive?
2.3		How many years was/is the project funded for?
2.4		Who is/are the funder(s)
2.5		How would you consider the adequacy of the level of funding?
3	POLICY CONTEXT	
3.1	National institutions	Do you work with the local or national government? In which way? (<i>Which ministry/ department do they work with, if govt</i>)
3.2		What types and levels of government support does the project receive?
4	PROJECT CONTEXT	

4.1	Socio-economic complexity	Could you describe the diversity of the local population?
4.2		How would you describe the power structures in the village(s) the project works in?
4.3		Did the wider socio-economic situation change during the life of the project?
5	PROJECT DESIGN	
5.1	Project complexity	How important was the alternative livelihood component compared to other activities?
5.2		Was the alternative livelihood component part of the initial project design?
5.3	Alternative livelihood design	Was the project initiated to compensate for reduced access to resources that have come about due to a nearby conservation project (i.e. a protected area), or is it a standalone project?
5.4		Can you explain to me how you thought the project would reduce bushmeat hunting/consumption?
5.5		Was the alternative meant to be a protein or income substitute? Or both?
5.6		Was it an existing activity in the community, or a new activity?
5.7		What were the alternative activities provided? Were any "supporting" services provided in addition to the alternatives? (i.e. vets, business consultants, training in specific skills etc.)
5.8		For each activity, why was it chosen?
5.9		Who was involved in this choice? How?
6	PROJECT OUTPUTS	
6.1		What were the project outputs/activities established by the project?
6.2	Activities	How many (and which) community members were involved in project activities?
7	PROJECT DESIGN (cont)	

7.1	Target audience	Who did the project work with? Did the project aim to involve a specific section of the community? Why?
7.2		How were these people identified and contacted?
7.3		Were any criteria used to screen households before participation? What were they?
7.4		Did participants require any prior skills or tools to engage in the project? Did they need to purchase and equipment, or were they required to invest in anything else to become part of the project?
7.5		What were the benefits of the project? (were they just for the target group, or were there benefits for the whole village, such as a community fund etc)
7.6	Conditionality	What did households/invididuals have to do to become involved in the project?
7.7		If people did not change behaviour, were there any sanctions? If so, what were the sanctions?
7.8		Were there any instances of participants being ejected from the project? In what circumstances? Who decided?
7.9	Participating organisations and stakeholders	Were there any other active participants (organisations) in the project?
7.10	Baseline situation analysis	Did you collect any data/ do any studies in the area before you started the project?
7.11		Did the data you collected/study findings affect how you designed the project?
8	PROJECT IMPLEMENTATION	
8.1	Project timetable	What was the original project timetable? Were there specific deadlines or targets to meet?

8.2	Project staff (measure of both resources and of complexity)	How many core staff members worked on implementing the alternative livelihood component of the project?
8.3		Where were they from?
8.4		Do you think that the number of staff was adequate for the successful running of the project?
8.5	Project management	Who made the day-to-day management decisions concerning the project, and any changes that needed to be made to the project design or implementation? Can you provide an example of a decision that needed to be made, and how this was managed?
8.6		Can you describe the nature of the meetings? a) frequency (per month, per year etc) b) attendees c) non-attendees (and why) d) Compensation (travel money/benefits) Can you describe what happened in the last meeting (and are there meeting notes that we could look at)
8.7	Project monitoring	Was there a monitoring program for the project?
8.8		What indicators of project success/project progress towards achieving its aims were used?
8.9		How often was monitoring conducted?
8.10		What type of data was collected?
8.11		Do you think the monitoring was enough to be able to evaluate project impacts?
8.12		Did the monitoring results influence the course of the project in any way?
8.13	Project difficulties	Did the project encounter any difficulties? If so, what difficulties were encountered? How did this affect project implementation?
9	PROJECT	

	OUTCOMES	
9.1	Conservation aims	Was the project able to reduce hunting?
9.2		Did prey populations recover? Was a recovery of prey populations noticeable?
9.3	Livelihood aims	How were community members' livelihoods improved/influenced? Were there people who benefitted more or less than others?
9.4		If no monitoring, in your opinion were there benefits created?
9.5	Lessons learned	Why do you feel activities worked or did not work? What lessons did you learn about alternative activities?
9.6	Legitimacy	How did the community respond to the project? Did they seem positive/negative? Were there any sections of the community that were more positive or negative than others?
9.7		Do you think people's attitudes towards conservation have changed over the course of the project? Were there any sections of the community that were more positive or negative than others?
9.8	Project sustainability	Has there been handover of management to local stakeholders?
9.9		For closed projects: Are the activities still running? For both closed and ongoing projects: What are your thoughts on its future sustainability?
10		Which elements of the project do you think helped/ didn't help the project to continue after initial funding?
11	PROJECT DISSEMINATION	
11.1	Project Dissemination	What reports/publications were created at the end of the project?

14 Appendix IV: Project summaries

(1) Projet de Délimitation physique d'une ceinture verte de 10km pour la conservation et la protection de la biodiversité des alentours et des marécages de la rivière Ruvubu

(2) Projet de préservation de la Biodiversité du parc de la Ruvubu

Interview ID: 1

Country: Burundi

Start Date (1) April 2010 (2) April 2010 **End Date** (1) October 2011 (2) October 2011

Organisation: (1) Dukingiribidukikije (2) Réseau Burundi 2000 Plus

Collaborating organisations:

(1) Local community, local administration, DPAAE Musinga, Inspection Régionale des Forêts, INECN, Caritas Belgique, FAO and Croix Rouge Burundi

(2) DPAAE/Karusi, Agent of the INCEN in Mutumba, local administration, local police in charge of protection the environnement

Funder(s): GEF Small Grant Program

Budget:

(1) 49,983 USD (61,479,090 FBU) Part of a larger project – 35% of budget allocated to alternatives

(2) 49,305 USD (60,645,050 FBU) Part of a larger project – 32 % of budget allocated to alternatives

In both cases, the funding was judged to be sufficient for project implementation.

Staff: (1) and (2): No GEF SGP staff assigned to project – local NGOs run projects independently and occasionally hire trainers to perform various tasks.

Aim of the Project: After the creation of the Ruvubu National Park in 1980, the government forced the local population to displace outside park boundaries. Not having been compensated with land or resources, the population continued to extract resources from the park. In order to address this problem (as well as address some human-wildlife conflict), in both projects, the local population approached the two NGOs involved, which, in collaboration with local administration and the National Institute for the Environment and the Conservation of Nature in Burundi, aimed to:

Protect fauna and flora in and around the park by providing people with training and education, creating a 10 km buffer zone around the park and improving livelihoods.

Correct destructive behavior to fauna and flora through (i) raising awareness; (ii) reforestation of the park buffer zone; (iii) introduction of efficient wood-burning stoves to reduce household wood consumption; and (iv) provision of alternative income opportunities.

Alternative livelihood provided: (1) Goat rearing (2) Cattle rearing and beekeeping. Supporting services provided in both cases were: managerial and organization training and training/education on measures of park conservation as well as veterinary services, communal agronomists, veterinarians and veterinary nurses provided by government.

Reason why the alternative was chosen:

Before the projects began, people were being arrested/receiving punishments by the police when they had been caught hunting, but the problem with this was that no alternatives to hunting were being offered for people to be able to change their behavior.

The initial idea and concept for the project therefore came from local communities and the Zone Chief, but activities seem to have been refined during the collaboration process of the NGOs, local administration and funders.

Was the alternative already used in the project site?

- (1) Other types of rearing existed in the area, but goats were newly introduced by the project.
- (2) A traditional form of cattle farming existed in the area prior to the project. The project introduced modern methods in order to better protect the cattle from breeding with wild buffalo, and diseases.

Beekeeping also previously existed in the region. However, the project introduced modern beekeeping methods in order to increase honey production. The region is said to have a good reputation nation-wide for producing high-quality honey. The honey market therefore seems to be quite developed, which various selling points and markets that the project taps into.

How the alternative was designed to reduce hunting:

- (1) They chose goats primarily to provide an alternative source of protein, but also because beneficiaries can sell goats for income as well as use their manure as fertilizer. Overall then, the hope is to provide alternative protein and income while improving crop outputs to add value to this alternative.
- (2) This project chose cows as an alternative in order for participants to initially produce and sell milk, use manure to fertilize their fields and, once they have enough offspring, consume cows for an alternative source of protein or sell them as an alternative source of income.

As it takes some time before participants can start consuming or selling cattle, they decided to also offer beekeeping as this is activity generates income very quickly. Participants can therefore benefit financially from beekeeping early on while farming cattle, which will provide additional benefits in the long run.

Participant selection: Both projects are open to anyone. They are not particularly aimed at hunters. Instead, the target all groups within the communities, regardless of their previous occupation. The project funding provided participants with all necessary equipment and training to carry out activities.

Number of participants:

- (1) 300 participants (including, 120 women, 180 men). Of these 300, 80 were “vulnérables” who are the poorest members of the community)
- (2) 80 participants (17 women, 63 men)

Conditionality: In both projects, members must comply with project rules (these rules are, among others, to register as a member of the recipient association, regularly attend association meetings, pay contributions to the association and show good behavior in the village). There is a local committee may decide on sanctions, but to date, no cases of violation has been recorded and no penalty was therefore applied.

Project monitoring and project impacts:

Baseline monitoring: Both projects have socio-economic baseline studies that will allow for analysis of rates of growth (financial, animals) and reduction in hunting. Photos were taken to serve as evidence when evaluating project impacts.

Project implementation and uptake: Both projects monitored activities once every two or three months. The monitoring program was designed to provide information on outcomes in order to evaluate projects impacts.

The following monitoring indicators were mentioned:

- (1) - level of threats to the national park
 - level of reduction of soil erosion
 - state of participants' nutrition
 - level of participant's income
 - quantity of wood preserved after introducing efficient cook stoves
- 2) - state of forest cover in project zone
 - level of technical and environmental knowledge of participants
 - state of soil in project zone
 - quantity of wood preserved after introducing efficient cook stoves

The following data was collected for project activities:

The initial 300 goats initially distributed participants have increased to a total of 450. 50 heads of household were trained in modern agro-sylvo pastoral techniques; the 9 heifers and 1 bull initially distributed to participants have increased to 21 cows in total. 50 members were trained in modern beekeeping techniques; 120 hives have been fabricated and used; 2880 kg of honey have been produced.

Socio-economic impact:

- (1) Goat rearing will still take some time to fully develop and become more profitable. Monitoring results have showed minor increase in revenue thus far.
- (2) Results show that beekeeping has greatly increased participants' level of income (another indication is that most children are able to attend school). Cattle farming will take more time to develop. As the number of cows has increased, participants have started giving calves to other members in solidarity, also pointing to their improved financial situation.

Impacts on hunting behavior:

- (1) Interviewee says that they are in the process of compiling the documented information on hunting information, which indicates a reduction of hunting.
- (2) Evidence from local administration on hunting levels show reduced level of hunting. Levels of bushmeat being sold in markets have decreased.

Ecological impacts: The projects were not able to perform ecological monitoring, as this requires many resources (financial and technical) of which the project did not dispose.

Sustainability: Both projects continue without funding and the interviewee is confident that they will continue to develop and expand as the project is locally organized and managed by members with the help of two reputable NGOs and assistance from the local administration. Furthermore, results are now becoming more apparent. Project monitoring also continues but

not as in-depth as with funding. Project (2) has received more funding from the French Embassy (EUR 55,998) to extend activities.

The interviewee also noted that he thinks cow and goat rearing will have a more meaningful impact than beekeeping because of the various benefits these activities provide (meat, income, fertilizer). Beekeeping, however, is a good revenue-generating tool to bridge the gap.

Community-based management and conservation of great apes in South-west Cameroon

Interview ID: 2

Country: Cameroon

Start Date: 2004 **End Date:** Ongoing

Organisation: The Environmental and Rural Development Foundation (ERuDeF)

Collaborating organisations: The government of Cameroon (Ministries of Forestry and Wildlife, and Agriculture). As the project runs within a co-managed protected area, and the creation of protected areas falls under the remit of the Ministry of Forestry and Wildlife, the project works closely with the government and receives logistical support.

Funder (s): Various funding sources, includes FFEM, FFI, ACF, Trees for Nature, Ecos, The Tusk Trust, PTES, ITPL and WWF.

Budget: The budget for 2010 – 2015 is currently \$249,000. The alternative livelihoods component takes up approx. 30% of the budget.

Staff: Four national staff. The interviewee did not think that the number of staff was sufficient for the project

Aim of the Project: Conservation of the region's Great Ape populations. The two main threats to apes are hunting and habitat conversion for agriculture, so the project aimed to tackle this issue through: 1) landscape management 2) provision of sustainable livelihoods to communities within the project area and 3) improvement of education quality and quantity.

Aims and objectives were created in collaboration with the local community, through a local priority-setting exercise at the beginning of the project.

Alternative livelihood provided: A range of different alternatives, provided by different local NGOs with oversight from ERuDeF:

- Beekeeping
- Agroforestry
- Community forestry
- Palm oil refining
- Improved farm production
- Village forest protection fund scheme (which supports the Village Conservation Committees and also provides micro-financing).

Reason why the alternative was chosen: Alternatives were chosen by asking local communities which activities should be promoted, during village meetings

Was the alternative already used in the project site? Activities that already existed in the communities were chosen, through community meetings.

How the alternative was designed to reduce hunting: The creation of the PA meant that effective law enforcement of the PA would lead to village farmers and hunters being fined/arrested if continuing to hunt within the PA. The alternative livelihoods were provided as a form of compensation for the creation of the PA, but also to affect behavior change.

Participant selection: Participants must own a farm, or hunt within the habitat that the project is concerned with protecting (the PA and buffer zone). To create a Village Conservation Committee, the group has to contribute \$20 towards the forest protection fund.

Number of participants: Approximately 50 people per village, in 20 villages.

Conditionality: No conditionality, apart from due to the creation of the PA, it is now illegal to hunt or have farms within the PA boundaries, and anyone caught doing so will be fined under the law.

Project monitoring and project impacts:

Baseline monitoring: A baseline socioeconomic survey, including a study of bushmeat hunting and reasons for hunting, was conducted at the beginning of the project. A baseline ecological survey was conducted using camera-trapping, and the results have been published in a peer-reviewed journal.

Project implementation and uptake: There is monthly project monitoring. This includes collecting information (but not data with an organized questionnaire) on whether hunting has increased or decreased, what local people are saying about the project, are incomes increasing or decreasing, what are the successes and failures of the project, what aspects need to be resolved. This monitoring system has been in place since January 2011. The first impact evaluation was scheduled for the end of 2012.

Socio-economic impact: Data has not yet been analysed, but the interviewee suggests that the project has resulted in increased incomes, through increased soil quality, agricultural yields and increased livestock.

Impacts on hunting behavior: Data has not yet been analysed, but the interviewee suggests that hunting of protected species (which the project focuses on) is decreasing/reduced to zero, in the villages that they work in. Habitat conversion from farms is seen as the bigger threat to the PA.

Ecological impacts: Data has not yet been analysed, but the interviewee suggests that they are seeing chimpanzees with young, and that the camera-trapping photos are suggestive of recovery.

Project sustainability: The interviewee suggests that the main reason for the project success so far is the constant presence of ERuDeF in the communities. The project is moving towards a model in which the project is sustained by the Forest Protection Fund. The community would have 70% control of the fund, and ERuDeF 30%. This will require capacity building in terms of management, so that the community can run the fund with little ERuDeF presence. However, the Fund does not yet have sufficient capital for sustainable financing of the project.

The interviewee suggests that without a high level of monitoring, the project will not be successful.

Lessons learned: The local response to the project varied from village to village. The communities view the creation of the PA as a land grab, in a country where 100% of the land is owned by the government. They think that they are going to lose their land to the PA, and so they are unhappy. The communities unanimously requested support alternative livelihood provision, and there was unanimous acceptance of this provision. So the project was accepted, but attitudes towards conservation were negative.

Promoting Community Wildlife Management in the Southern Bakundu Forest Reserve Area

Interview ID: 3

Country: Cameroon

Start Date: 11/2008 **End Date:** ongoing

Organisation: Community Action for Development (CAD). Email: communityactionfordevelopment@yahoo.com. Website: www.cadcameroon.org

Collaborating organisations: Government agencies (Ministries of Forestry and Wildlife, Environment and Nature Protection, Livestock and Fisheries, Agriculture and Rural Development, Territorial Administration and Decentralisation).

Funder (s): Currently funded by UNEP GEF Small Grants Programme. Others include: Rufford Small Grants Foundation, People's Trust for Endangered Species: Now searching for grants to consolidate and scale up project activities.

Budget: \$63, 535 over 4 years (2008 – 2012; GEF: \$21,477; Rufford: \$9121, \$18,242, PTES \$14,735). Approximately 30% used for the alternatives livelihoods segment of the project.

Staff: 3 Cameroonian staff. Interviewee reports that staff numbers were insufficient for the project, and low salaries at the beginning of the project created a high staff turnover.

Aim of the Project: To reduce pressure on wildlife resources through education, campaigns and non-consumptive use of biodiversity. The objectives were: 1) To campaign against unsustainable hunting practices and methods in the project area, 2) To explain the wildlife law to local communities, 3) To gather bushmeat marketing information in the project area, 4) To introduce and promote alternative activities to hunting of bushmeat to local communities.

Alternative livelihood provided: Pig farming, Snail farming, beekeeping, poultry, market gardening.

Reason why the alternative was chosen: The alternatives were chosen after an initial consultation meeting with the local community.

Was the alternative already used in the project site? Some alternatives (livestock, gardening) were existing livelihood activities and some (beekeeping, snail farming) were new.

How the alternative was designed to reduce hunting: Activities designed to provide an alternative source of income and food for local hunters, but also designed so that undertaking the alternative activity will reduce the time available for local people to go hunting. assume

Participant selection: Legally recognized Village Wildlife Common Initiative Groups (VWCIG) were formed, comprised of local hunters (people who carry guns into the forest to hunt), and bushmeat traders.

Number of participants: 5 VWCIG involving 76 hunters and bushmeat traders (46 men, 20 women and 10 youths).

Conditionality: No behavior change required to participate (the aim of providing the alternative is to create behavior change through the time devoted to the alternative), and no sanctions for continuation of hunting activities.

Project monitoring and project impacts:

Baseline monitoring: No baseline monitoring conducted, although originally planned. Some assessment of income generation in the area. In the Bakundu protected area, population surveys of key species (gorillas, chimpanzees) have been conducted but not as part of this project.

Project implementation and uptake: The project monitored the number of participants involved in alternative livelihood activities, then number of resources (i.e. livestock) provided to each group, and the number of training sessions attended. It also recorded observation of key problems and benefits.

- Organic vegetable production: two training workshops were organized (29 men and 7 women), and 8 vegetable farms were established.
- Snail farming: one training workshop was organized (16 men and 9 women), and 8 snail farms (4 men and 4 women) were established.
- Beekeeping: one training workshop was organized (18 men and 12 women), and 52 beehives installed, 28 of which have been colonized by bees
- Pig Farming: On farm training sessions organized, 30 piglets provided, 27 pig farms set up (14 men, 9 women). Now 68 pigs. A 'pass the piglet' scheme is used, where those farmers who have been given pigs will pass 1 piglet from their litter onto a new participant, thereby expanding the scheme.
- Chicken farming: On farm training sessions organized, 55 fowls provided to 15 people (10 women, 5 men). 25 new chickens produced.

Socio-economic impact: No organized monitoring of socio-economic impacts. The interviewee reports that: 1) pig farmers seem invested in the project, are guarding their business, and spending time on pig rearing. In the view of the interviewee this is reducing the desire to go hunting. 2) The legal status of the VWCIG has allowed two groups to apply for small loans to expand activities 3) alternative bridge the gap in the agricultural cycle (where cocoa and coffee incomes are not available) traditionally bridged by hunting. This means that minor incomes (from hunting or the alternative) can be very important in certain months. 3) incomes from the project have been reinvested to buy additional piglets/beehives/maize seeds, and have been used to pay school fees.

Impacts on hunting behavior: No organized monitoring of hunting impacts. The interviewee reports that he believes that there has been a reduction in hunting from project participants, but that many hundreds of others, not involved in the project, are still hunting, and that people will still continue to hunt for cultural reasons.

Ecological impacts: No organized monitoring of ecological impacts. This was identified by the interviewee as a key element lacking in the project.

Lessons learned:

The interviewee highlighted number of insights gained from running the project:

1) **Long-term planning:** Many projects are short term. It can take 5 years or more for people to change their behavior and activities. However, the projects are short term, with short term financing. By the time people start to change their behaviors, the project has come to a close, and people will switch back to their regular activities.

2) **Constrained participation:** Due to the small scale of the project, only a few people have been able to participate in the project. While the interviewee believes that the livelihoods alternatives have been successful in reducing participant hunting, there are a great many more people who are not engaged in the project. The overall impact of the project is therefore low.

- 3) ***Rule-breaking:*** The pass the piglet scheme has not worked well, as participants have not been willing to give away a piglet.
- 4) ***Disease:*** Swine fever had a pig impact on the project, and some beneficiaries lost all of their pigs and therefore dropped out of the scheme.
- 5) ***Project perception:*** Many people originally assumed that foreigners would be engaged in wildlife law enforcement. This created obstacles to participation at the beginning of the project.
- 6) ***Knowledge of wildlife laws:*** There is little knowledge of what animals can be legally hunted and which cannot.
- 7) ***Lack of infrastructure:*** Lack of vehicles meant that much of the project cost and time was spent on transport.
- 8) ***Increase government support.*** Small projects such as this one need to be framed and supported within a larger national development strategy
- 9) ***Start with a range of alternatives:*** With several alternatives, the failure of one can be compensated by another in terms of income generated.

The Lebialem Hunters' Beekeeping Initiative

Interview ID: 4

Country: Cameroon

Start Date: 2008 **End Date:** The discrete funding for this pilot alternative livelihood project ended in 2011, but the project itself is now funded as part of a suite of other activities coordinated by ERuDeF (see ID 2).

Organisation: ERuDeF

Collaborating organisations: Independent conservationist, Menji Beekeeping and Environmental Education Consortium (MEBEEC-CIG), Ministry of Agriculture and Rural Development, Belo Rural Development Project, Bees Abroad, Guiding Hope, Great Apes Film Initiative and the Great Primate Handshake.

Funder (s): International Primatological Society, International Primate Protection League, Primate Society of Great Britain and Bees for Development Trust.

Budget: £10,000 over 4 years

Staff: 1 national project coordinator (ERuDeF), 1 international project coordinator (volunteer), 1 beekeeper trainer (MEBEEC-CIG), 1 assistant beekeeper trainer and 6 community-based coordinators, with support from other ERuDeF staff. The international project coordinator is the only expat.

Aim of the Project: To reduce financial dependence on bushmeat and the volume of species harvested by providing hunters with an alternative income through beekeeping. The sub-aims were to:

- Train bushmeat hunters in beekeeping and supply them with the necessary equipment and technical support
- Establish Common Initiative Groups (CIGS) in each community involved with the project and a beekeeping association in Lebialem
- Evaluate the effectiveness of beekeeping as a bushmeat mitigation strategy and monitor the impacts on standards of living
- Implement a conservation education program.

Alternative livelihood provided: Beekeeping

Reason why the alternative was chosen: The international project coordinator was approached by hunters from several of the communities that she had been working in as part of her MSc project. She was asked if she could help them start up beekeeping as an alternative to hunting. The communities had been told about beekeeping during a visit by a representative from 'Bees Abroad'. ERuDeF had been keen to initiate a beekeeping project for some time but lacked the finances. It was thought that beekeeping might be a suitable substitute as it had characteristics in common with hunting in terms of being open-access with flexible labour inputs. Extensive research had recently been conducted investigating demand for honey and bee products nationally and many organisations were actively involved in organising the honey trade sector in Cameroon to, among other things, create the enabling environment to export organic honey and beeswax to Europe. Beekeeping also has little negative impact on the forest.

Was the alternative already used in the project site? There were existing beekeeping groups in the area but of the project-targeted hunters, the majority had no previous experience of beekeeping. A few had experience of honey hunting and/or used local-style beehives. The

project employed local top-bar beekeepers as trainers but also encouraged the use of local-style beehives. Honey has not traditionally been sold in large quantities in this region, so commercial beekeeping was relatively new.

How the alternative was designed to reduce hunting: Baseline studies found that hunting was mainly carried out for income generation. Beekeeping was provided as an alternative income on the proviso that the hunters would honour a pledge not to hunt specific species.

Participant selection: Anyone who was interested in beekeeping could participate. However, the project aimed at getting major hunters involved, and beehives were given preferentially to major hunters. Many of those interested in the project were observed by the interviewee to not be those who were having the biggest hunting impacts: i.e. older men who were towards the end of their hunting career and looking for alternatives.

Number of participants: Training: 139 hunters from 7 communities (7 CIGs).

Conditionality: A pledge must be signed: “ By taking part in this beekeeping initiative, we the hunters and trappers of [village name], pledge to reduce our hunting and trapping activities in the forest, and stop hunting monkeys, drills, chimpanzees and gorillas. We shall endeavour to sensitise others about the program and discourage them from hunting and trapping endangered forest species”. The words of the pledge are created through discussion with the hunters, and vary from village to village. The five focal species for the project were Cross River gorilla, Nigeria-Cameroon chimpanzee, Drill, Preuss’ guenon, Red-eared guenon.

Sanctions: No sanctions. There were no protected areas nearby at the time of this pilot project, which means that there was no other enforcement activity in the area. It was based on people voluntarily complying.

Project monitoring and project impacts: Data were collected during initial training sessions through standard of living questionnaires and semi-structured interviews with trainees. Questionnaires were administered by the by the national project coordinator to gather quantitative data about financial responsibilities, income sources and expenditure. Follow-up interviews with trainees were conducted on an annual basis during the project implementation phase but no further interviews have been conducted thereafter.

Baseline monitoring: A preliminary investigation into the social dimension of bushmeat hunting in Lebialem was conducted during May and June 2007. The research revealed that the main reason for hunting in this area was income generation. Fish was the principal source of animal protein consumed on a regular basis. It was concluded that the development of economic alternatives to bushmeat should be given priority (Wright & Priston 2010).

Project implementation and uptake: Training sessions were held in seven villages. During training sessions participants were provided with the materials, equipment and instruction to construct a hive. Participants were checked on after the initial training, and then at 6-month intervals. This included asking questions about how much honey was being produced and how they were doing with sales. Seven Common Initiative Groups (CIGs) were established (and registered within Cameroonian law) at the village level to encourage trainees to assist one another with beekeeping and marketing activities.

Socio-economic impact: The interviewee felt that participants were earning revenue from beekeeping. However, the length of time that she was there to observe the project was not long enough to determine the real socioeconomic impacts (allowing time for the project to develop). A follow-up visit to the villages in 2011 showed that over 50% of the hunters originally involved in training had stopped beekeeping; however many hunters who had continued with beekeeping had constructed additional hives. Few hunters were producing enough honey to satisfy the

consumption demands of their extended families, and hunters were expressing concern over the levels of market demand for the product.

Impacts on hunting behavior: There was no official monitoring of hunting activities because at the time the participating communities were not adjacent to a protected area. The interviewee thought it probable that participants are both hunting and beekeeping. However, it should be noted that it was never the project's aim to stop hunting, rather it aimed to provide enough financial incentive to encourage hunters to discriminate between species and avoid hunting 5 focal species. Interviews and informal discussions suggest that the hunting of gorillas and chimpanzees has reduced due to the combined effort of all of ERuDeF's community engagement activities.

Ecological impacts: Ecological monitoring was not a component of this project but see ID 2.

Sustainability: Beekeeping activities are still ongoing with continued support from ERuDeF (see ID 2). The economic crisis and devaluation of the dollar meant that the original scale of the project had to be scaled down: the original aim to train 200 people from 10 villages was reduced to 139 people from 7 communities.

Lessons learned

- Honey production and profitability can be greater in some areas than in others; in Agamaoua Region in the north of Cameroon, savannah communities can build 200 grass hives for very little cost thus spreading the risk and producing more honey. In forest communities, hives are more commonly constructed of wood, a process which is more time consuming and expensive.
- Having fewer hives creates uncertainty since African honeybees frequently abscond as a predator avoidance mechanism (particularly from ants). To avoid disappointment, a beekeeper needs to have more hives spread over a larger area to keep a certain level of hive occupancy. Reaching the threshold beyond which a good honey harvest is relatively certain requires significant investment, either on the part of the individual or an external donor.
- Beekeeping without some degree of law enforcement is unlikely to reduce hunting effort, as both are low-time, open-access activities, and a hunter can continue to hunt while being a beekeeper.
- Introducing new activities needs time and quite intensive support to guide the participants through the process. Beekeeping has an annual cycle and it takes time for hives to be colonised by bees. Participants need support over several consecutive years and therefore project development and the monitoring of success needs to take place over longer time periods.
- The earning potential of hunting (US \$1,762 pa) is estimated to be over 4 times higher than beekeeping (US \$397pa) in Lebialem.

Maringa-Lopori-Wamba Landscape - Alternative Livelihoods in Conservation

Interview ID: 5

Country: Democratic Republic of Congo

Start Date: January 2004 **End Date:** Ongoing

Organisation: African Wildlife Foundation

Collaborating organisations:

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.

Reseau des Femmes Africaines pour le Développement Durable (REFADD): strengthening of the role of women and minorities in natural resource use decision-making.

World Fish Centre (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 government: The interviewee stated that the project worked closely with government, and each time that community workshops are organized, representatives of local government are included. The Landscape has official recognition (government decree) of the SLW landscape as a zone where participative land use planning is underway.

Local NGOs: Alternative livelihoods are delivered through local NGOs, and the project currently works with approximately 20 NGOs.

Funder (s): Large international donors: CARPE, World Bank, AFD, USFWS, Frankenbrg Foundation, Disney, ICCN.

Budget: Initial funding (\$750,000) from CARPE for 1 year. Followed by funding from AFD of \$1 million over 3 years and further funding from USFWS and the Arcus foundation. In 2010 they were given \$1.9 million by the World Bank, with a funding focus on livelihoods.

2010 and 2011 funding:

- \$188,000 from ICCN (18 months)
- \$145,00 from FF (over 3 years)
- \$100,000 from Disney (1 year)
- \$46,000 from USFWS (1 year)
- \$1.9 million from World Bank (5 years)

Staff: unknown, as AWF works through local NGOs to deliver projects. There were between 5 and 10 AWF staff – all were nationals apart from the project leader (Jef Dupain).

Aim of the Project: The alternative livelihoods component was one tool within a larger land-use zoning project, which aimed to zone the CARPE Landscape into different types of land use (protection, agriculture, buffers etc.). The AWF used the Heartland landscape-level planning process in this landscape, which aims to identify threats to conservation targets and to design reduction activities. The alternative activities were part of a conservation planning exercise, and not perceived by the project manager to be a form of compensation for the creation of the PA.

Agricultural land conversion (slash and burn) and commercial hunting were identified as key threats in the HCP workshop in Kinshasa.

Alternative livelihood provided: Most of the alternatives are focused on agriculture: agricultural practices to improve yields (the SOIL program), and the boat project which provides a cheap route to local markets for agricultural products. Alternative protein was tried (pigs and chicken) but with little success. The one remaining project focused on protein is one run by the World Fish Centre to help people with the post-harvesting processing of fish to decrease losses of biomass from bad processing practice. Most of the alternatives focus on alternative agricultural practices.

Reason why the alternative was chosen: The alternatives were mainly chosen based on a Theory of Change (see below). Over 1 year was spent at the beginning of the project collecting baseline data and engaging villages in a consultative process to design the project. However, many of the meetings were held at Kinshasa, which reduced the number of potential participants.

Was the alternative already used in the project site? Most of the alternatives were not actually alternatives, but projects designed to increase the efficiency of existing livelihood activities.

How the alternative was designed to reduce hunting: Most families use agricultural incomes to provide money for schooling/healthcare etc. However, there are few transport options to market, and so agricultural products often don't get sold, In this case when money is needed, whole families decamp from the village to hunt in the forest. The smoked animals can be much more easily sent to market in a canoe than agricultural products because they are less bulky (have a much higher price per kg than agricultural products). If you provide a cheap route for agricultural products to get to market, then people will stay in the village and not go to hunting camps. AWF has bought a cargo boat, which makes scheduled trips to market, and takes the agricultural products of project participants. Only commercial hunting is being targeted by the project.

The Theory of Change was designed using strong baseline studies, which looked at the main threats to the landscape, and why local people were carrying out these activities.

Participant selection: Villages in priority regions of the landscape. There was no real selection of who could be involved in the project, and projects ran at the community level, with local NGO support.

Number of participants: The project works at the community (village) level, and agreements have been signed with 27 communities, along the southern access reserve of the Lomako-Yokokala forest reserve. The project is completely voluntary.

Conditionality: Quid pro quo agreements with villages. Representatives of each village have signed a Memorandum of Understanding (MOU) with the MLW Consortium to respect the permanent and non-permanent forest boundaries and zones as defined in joint mapping and consultation, in exchange for support for agricultural development in the non-permanent forest, or RDZ, micro-zones. As part of the MOU, each community agrees not to expand their agricultural activities outside of a given RDZ, thereby restricting the conversion of forests in the permanent forest zone and protecting it for NTFP activities and biological habitat. In exchange, MLW Consortium partners provide technical and financial support to increase the productivity and diversity of agricultural production in the RDZ.

There were no sanctions – if villages and communities decided that they did not want to be part of the project (by not keeping to the quid pro quo agreement) then there would be discussions,

and the community could decide to leave the project. It was a 2-sided contract, and if communities did not want to be involved under the conditions laid out by AWF then it was their decision.

Project monitoring and project impacts:

Baseline monitoring: Baseline monitoring was conducted with a view to designing the project along a Theory of Change: identifying the main threats to the forest, determining why local communities were carrying out these activities, and designing appropriate strategies based on these reasons. Satellite data was used to look at agricultural encroachment; bushmeat market studies were used to look at the level of bushmeat trade. Socioeconomic surveys were collected on villages along the roads, from 50 villages. Young Congolese researchers carried out the majority of the data collection

Project implementation and uptake: The interviewee suggests that although the baseline monitoring was thorough, there is no real monitoring program during the course of the project. Uptake (in terms of number of participants, amount of agricultural land within the project, agricultural assistance provided) is being monitored. Some mood indicators are being used to monitor participant attitudes/happiness with the project.

Socio-economic impact: There is no data being collected on socio-economic impacts. The interviewee suggested that there was evidence that communities found the project beneficial as other communities were approaching them to see whether they could join. The interviewee suggested that incomes were increasing, but that this could be an output of the end of civil war, and we must be cautious about attributing it to the project.

Impacts on hunting behavior: There is no data being collected on hunting behavior. The interviewee said that he could not say what impact the project was having on hunting, and pointed out that only a select number of communities were involved in the project so in many communities hunting levels would definitely be the same.

Ecological impacts: Within the reserve the populations of target species are being monitored. The University of Maryland is monitoring agricultural encroachment using remote sensing techniques

Project sustainability: The landscape is very isolated and long-term project sustainability will depend on the reality around the landscape. If mining comes into the area, then the project efforts will be lost very fast. When the project started DRC had just come out of civil war, and the priority was providing short-term assistance, not long-term sustainability.

Action participative de lutte contre le braconnage et la surexploitation des ressources animales dans le paysage de l'Ituri- Aru

Interview ID: 6

Country: Democratic Republic of Congo

Start Date: 2006 **End Date:** Ongoing

Organisation: Two local NGOs: Program d'Education à la Santé et la Gestion de l'Environnement (PESGE) et Solidaires et Organisés pour Sauver la Nature (SOS Nature).

Collaborating organisations: No others

Funder (s): CARPE small grants

Budget: in 2006 the budget was \$4500, and 45-50% was spent on alternative livelihoods. In 2007 the project had no funding. In 2007 a financial accord was drawn up with CARPE, and there have been two small grants from CARPE since of \$31,853.

Staff: Project manager and 15 'volunteers' who receive bonuses for motivation.

Aim of the Project: The overall aim was to reduce the amount of hunting pressure in the Ituri forest. The project aimed to reintroduce the idea of animal husbandry, which had been decimated after the war.

Alternative livelihood provided: Domestication of duikers, fish farms and chickens. The domestication of duikers was more of an educational tool than a real alternative, to demonstrate the low reproductive rates of forest antelopes and therefore demonstrate the impacts of hunting.

Reason why the alternative was chosen: The alternatives were selected on the basis of the amount of knowledge that the communities already had about these alternatives. The alternative activities are associated with the dietary habits and consummation habits and needs of the community.

Was the alternative already used in the project site? Animal rearing has always existed, but the methods provided here have not always existed.

How the alternative was designed to reduce hunting: These communities have a history of animal husbandry, during the war the troops from both sides 'ate of the backs' of the local communities, destroying livestock. The project aims to reintroduce and rebuild the culture of keeping domestic meat, and therefore shift people back from hunting to livestock (i.e back to the state they were in before the war).

Participant selection: The project put in place both a management committee and committees of hunters. There were 5 hunting committees with 20-25 people on average. The project was aimed at the household level. Each committee might represent 4-7 villages, with a base in the centre village to reduce travel time. The target group was hunting households, and women who sell bushmeat. The hunters and hunting households were identified through meetings with village 'responsables' and through community meetings.

Number of participants: Approximately 110.

Conditionality: There are rules for being a member of the project:

Abiding by hunting regulations: no killing of protected species, and no hunting in the closed season. The project recruited a number of 'informants' to provide any information on illegal hunting. There was no other conditions, and the hunting laws are enforced by the state and not the project.

Project monitoring and project impacts: The interviewee acknowledged that monitoring of the project was not sufficient, and that monitoring an activity as complex as poaching in an area the size of the Ituri was not within the scope of his project.

Baseline monitoring: No baseline monitoring

Project implementation and uptake: Monitored the basics of the project, such as the number of hunters in the committees, the number of hunters receiving training, the number of alternatives provided. There is a CARPE format for recording project implementation, and they follow this.

In terms of alternative livelihood provision, the project provided:

- 150 chickens
- 1 duiker enclosure raising 3 pairs of duikers
- 2 fish ponds

Socio-economic impact: No monitoring program. The interviewee believes that there has been an increase of incomes in the area, but cannot attribute it to the project because there have been many previous and concurrent interventions in the area.

Impacts on hunting behavior: Although there is no proper monitoring of the impact of the project on hunting behavior, the project employs local informants to provide information on illegal hunting activity, including poacher ID and characteristics, who has ordered the hunting trip, and how many individuals of each species have been killed. He cannot say whether the amount of hunting has reduced or not, but he cant say that the awareness of over-hunting and the law has been raised.

Ecological impacts: No monitoring program. The interviewee believes that for some of the small-bodied animals there has been a reduction in hunting. However, for the large-bodied species he does not believe that much has changed. This is because he believes that most large-bodied animal hunting is either carried out or contracted by the military, who are conducting commercial hunting of elephants. Sometimes they contract village hunters to do the hunting, and in this case the hunter is unlikely to refuse due to this small project.

Project sustainability: There was no transfer to local communities at the end of the project – there needs to be training for people to take over management. The duiker rearing has stopped but the other alternatives are ongoing.

Lessons learned:

- Forest communities are often individualistic. Each individual feeds his own household, and can enter the forest with a machete and bring back ignames, honey, mushrooms, so it gives him all that he needs. The natural disposition of forest people is not to work in a group, and so creating hunting committees for projects like this can be difficult. For savannah communities it is more likely to work.
- The project is unlikely to have had large environmental impacts as the biggest threats to fauna are from outside influences (ivory poaching by the military).
- Alternative livelihood programs are not providing sustainable payments, because they only have short-term funding. They should be government funding with longer time-frames (5,10,15 years).

Eleavage de chèvres comme alternative à la chasse et à la commercialisation de la viande de brousse à Djolu, Landscape MLW (Maringa – Lopori / Wamba)

Interview ID: 7

Country: Democratic Republic of Congo

Start Date 2009 **End Date** 2010 (10 month project)

Organisation: Centre de Développement Agro Pastoral de Djolu (CEDAP), based in the province of L'Equateur

Collaborating organisations:

AWF, the leader of the larger Maringa- Lopori- Wamba landscape project, responsible for monitoring and evaluation of projects financed by CARPE/IUCN/PACO.

Local community organisations in 3 groupements; structures responsible for the distribution of goats, and internal monitoring and evaluation

The project does not work with local government.

Funder (s): CARPE with cofounding from CEDAP.

Budget: \$16,340: CARPE gave 90%, CEDAP gave 10%. The whole budget is for the provision of alterative livelihoods.

Staff: 1 project manager, 1 project budget manager (responsible for managing the project budget), 1 vet. A regional consultant has been hired to monitoring as an environmental landscape inspector. Within each goatfold two local supervisors are paid a small salary for looking after the goats and giving out kids. The interviewee reports that the number of staff was insufficient.

Aim of the Project: Reduce human pressure on faunal resources in the Djolu territory.

Alternative livelihood provided: Goat husbandry.

Reason why the alternative was chosen: Goats were chosen as an alternative through consultation with the local community, after a qualitative evaluation of wildlife popualtions surrounding the villages, which suggested a reduction in wildlife resources.

Was the alternative already used in the project site? In rare cases, but goats were not enclosed, they were free roaming, without veterinary care or a rearing program.

How the alternative was designed to reduce hunting: By converting hunters to livestock rearers. This project is one of the offshoots of the larger AWF Maringa-Lopori-Wamba (MLW) landscape programme. The interviewee sees that project as more of a compensation project, to ask that the population doesn't hunt protected species. If goats are provided as an alternative, hunters will spend their time looking after the goats and will have less time to go into the forest. Traditionally Djolu was a big agricultural producer, but during the war this was decimated. People turned to hunting in place of agriculture.

Participant selection: The management committee and project manager, in collaboration with the local population and traditional authorities, decides who will receive the goats. Currently there is more demand to be involved than the project can supply. Being involved in the project is voluntary. The criteria for being involved is being a hunter, and the interviewee said that they aim to chose the biggest hunters first, followed by female bushmeat traders. An evaluation of the project by AWF said that the selection process for particiants was unclear.

Number of participants: 3 groupements (collections of villages). 5 goatsfolds created, with 100 goats (10 males and 90 females). When kids are produced, 30-50% go back to CEDAC, to seed new goat folds. In this way 20 kids have been distributed.

Conditionality: Project participants must abide by national hunting regulations; it is against the law to hunt protected species. In reality the interviewee said that it is unfair to impose sanctions on the community, as the communities are very poor, and the project has not provided that much benefit. No-one has been sanctioned from the project as yet.

Project monitoring and project impacts:

Baseline monitoring: No baseline monitoring.

Project implementation and uptake: The project follows the progress of each goatfold, in terms of the number of goats and kids., and the reasons for any increases/decreases. An NGO committee follows the progress each month. Goats raising has been adopted by 65% of local communities

Socio-economic impact: No monitoring. The interviewee reports that the community are enthusiastic about the project. The community is so poor after the war that even the small amount of money that the project has brought has increased incomes, and provided money with which salt and soap can be bought.

Impacts on hunting behavior: No monitoring. The interviewee suggests that the hunters have adhered to the philosophy of the project, and that for those hunters who have been given goats, the number of times that they go into the forest has reduced. They have also observed a reduction in the amount of bushmeat in the local markets, and an increase in domestic meat sold. However, there has been no monitoring of hunting effort of bushmeat markets. The project only works with a small number of hunters, so the majority of hunters in the study area are still hunting.

Ecological impacts: The interviewee reported that personal observations suggest that wildlife is returning to the forest surrounding the villages. However, the goats and funding provided by the microfinance is not enough to cover the level of hunting in the forests that they wish to protect.

Project sustainability: There are currently no donors so the project has effectively finished. However the interviewee suggested that sustainability is provided by the return of kid goats to the project by hunters who have already received goats, which can then be distributed to those who are waiting for goats

Lessons learned:

- The small budget and slow rate of goat reproduction means that demand for goats greatly exceeds the supply, which has created animosity in the communities. There are 500 hunters and further women who sell bushmeat, waiting for goats in the 3 groupements.
- Problems with goat rearing includes disease, leopard kills and thefts.
- The goats and financing offered by the microfinancing is not enough to cover the level of hunting in the forests that they wish to protect
- The local community move into the forest for caterpillar harvesting during the caterpillar season. During this time they leave the goats and go hunting
- The interviewee expressed shock at how much money was being spent on large workshops in Kinshassa, and how little was getting to the local communities.

An AWF assessment of the project suggested that problems included: high demand for goats, little understanding of husbandry and veterinary techniques (i.e. not excluding sick goats from well goats), weak involvement of the local community, and not enough funding for such an ambitious project.

Développement d'Alternatives au Braconnage en Afrique Centrale (DABAC)

Interview ID: 8

Country: Cameroon, Gabon and Congo

Start Date: 2002 **End Date:** 2004

Organisation: CIRAD

Collaborating organisations: Co-management with the government, and collaboration with many local NGOs. The Centre for Agronomic Research in Cameroon.

Funder(s): The European Union – budget line ‘tropical forests’

Budget: EUR 1.6 million over 3 years

Staff: 3 expats, 20-25 national staff. Further local NGO staff when required.

Aim of the project. To continue to spread the idea of small animal/wildlife husbandry from Benin (where husbandry had seen high uptake) to Central African countries. The project's ecological focus (the reduction of hunting) came about due to the environmental focus of the European Fund For Development funding stream (the ‘tropical forests’ stream) which the project applied for.

Alternative livelihood provided: Cane rat farming (animal husbandry). Centers for breeding and training were set up in peri-urban areas (such as the outskirts of Libreville and Pointe Noire). Training and animals were provided to individuals who wished to become breeders, and support to breeders provided at regular intervals after the original training session.

Reason why the alternative was chosen: A precursor to the DABAC project, Projet Pilote d'Élevage de Petit Gibier au Gabon (PEPG) had introduced wildlife rearing with cane rats, and DABAC was continuing the work that this project had started, extending it into new countries. Cane rats were chosen because they had already been trialed in Benin, where it was reported that cane rat farming was technically successful and uptake was high. Other species (red river hog, porcupines) were also trialed during the DABAC project but found to be technically and/or economically unfeasible.

Was the alternative already used in the project site? No. Cane rat rearing was new to all three countries; animal husbandry practiced to some extent in Cameroon.

How the alternative was designed to reduce hunting: The volume of meat produced from cane rat farming would capture a significant part of the market for bushmeat, reducing hunting and poaching by reducing urban demand.

Participant selection: There were no criteria for participant selection; anyone could become a breeder. Breeders were required to build their own pens, and this selected for individuals who were willing to put up this time/investment.

Number of participants: Approximately 100 cane rat rearers in Gabon, 15 in Congo and over 500 in Cameroon.

Conditionality: There were no terms or conditions that had to be followed by participants. No one was ejected from the project.

Project monitoring and project impacts:

Baseline monitoring: There was no baseline monitoring. The project benefitted from previous research into bushmeat markets in all three countries, as well as the comprehensive literature on cane rat rearing.

Project implementation and uptake: The project monitored the number of participants who were joining the project, and who had stayed with the project over time. New project participants were visited at regular intervals. In Gabon and Congo none of the participants have continued to rear cane rats one year after project completion. In Cameroon the project manager suggested that the number of people rearing cane rats will have increased to over 500. He suggested reasons for this difference:

Cameroon has a lower availability of fresh bushmeat than Gabon and Congo, which means that the demand for fresh reared meat may be higher, and command higher prices. Mini-livestock rearing in Cameroon is more embedded as an existing livelihood activity. Introducing a new species (cane rat) does not therefore require as much training as for participants in Gabon and Congo where livestock rearing is less common.

Socio-economic impact: There was no monitoring of the impact of the project on the livelihoods of participants. The project manager suggested that overall there had been little benefit for local people in Gabon and Congo (despite observing a few cases where households saw their incomes increase), as at the point at which the project ended in 2004 the rearing projects were not yet at the stage of creating significant benefits. In Cameroon, where the project is still active and participation thought to be increasing, a follow-up study could determine the longer-term socio-economic impacts of the project.

Impacts on hunting behavior: There was no monitoring of the impact of the project on hunting behavior. The project manager suggested that there had been no impact on hunting behavior, which was not the aim of the project.. Hunting was an activity that they were skilled at, and hunters did not have the mentality for rearing. In addition, the project was carried out in peri-urban areas, close to areas of consumption.

Ecological impacts: There was no monitoring of the impact of the project on biodiversity. The project manager suggested that there had been no ecological impact of the project, because the amount of reared meat was insignificant compared to the amount of meat being reared in the study sites, and therefore reared meat would not influence demand for wild meat.

Projet Pilote d'Elevage de Petit Gibier au Gabon (PEPG) (pre-DABAC cane rat pilot project)

Interview ID: 9

Country: Gabon

Start Date: 1997 **End Date:** 2002 (became the DABAC project)

Organisation: Veterinaires Sans Frontière (VSF France)

Collaborating organisations: Veterinaries Sans Frontieres (VSF), who began the project.

Government partners: The Ministry of Agriculture and the Ministry of Water and Forests. The two ministries were part of the steering committee and provided technical support.

Funder (s): French Coopération Office (Coopération Française).

Budget: EUR 700,000 over 5 years.

Staff: 1 head of project (Ferran Jori), four technicians (Gabonese), 1 representative of VSF (from Mali).

Aim of the Project: A feasibility study. Cane rat farming experiences in Benin, funded by the German Cooperation Office, had been working on developing a technical framework for farming cane rats. It has worked well, and cane rat farming in Benin is a major activity in Benin and is spreading to other countries in West Africa. The PEGEG project aimed to see if it was possible to develop a similar project in Gabon, and demonstrate whether it would work technically.

Alternative livelihood provided: Cane rat rearing. Rearing of other new species was also trialed (blue duiker, porcupine, red river hog)

Reason why the alternative was chosen: Cane rat rearing was found to be successful in Benin.

Was the alternative already used in the project site? No. The idea of breeding cane rats was totally new. Part of the aim of the project was to introduce this new livelihood activity to Gabon.

How the alternative was designed to reduce hunting: The alternative was not designed to reduce hunting; the project aim was to see whether it was technically feasible to breed cane rats. Ecological aims were brought in as part of the DABAC project. The project set up an experimental farm on the outskirts of Libreville, with a breeding stock of 100 Benin cane rats (bought from Benin).

Participant selection: Anyone was free to join the project. The project went to talk to local communities, and also held 'open doors' for people to come and visit the experimental farm. Participant received 2 weeks training and then given a family of cane rats to rear themselves. Participants had to fund and build the cages themselves – this was to foster a level of investment in the project. Participants were given monthly support. A cane-rat farming association was developed but political trouble within the association meant that it did not go very far.

Number of participants: 12-15.

Conditionality: None

Project monitoring and project impacts:

Baseline monitoring: None.

Project implementation and uptake: Number of participants, cane rat breeding. Technical results (the success of breeding cane rats in captivity) were good in all three countries. Uptake of cane rat breeding was only successful in Cameroon.

Socio-economic impact: No monitoring. The project was set up as a pilot to the DABAC project, so project impacts came later.

Impacts on hunting behavior: None: not part of project design.

Ecological impacts: None: not part of project design.

Sustainability: The PEPG project came to a close in 2002, and was replaced by the DABAC project.

Lessons learned:

- Cane rat rearing worked best in peri-urban areas, as it is close to the market for cane rats. In remote areas it will not work because of the transport costs involved. In this case people could get wild cane rats at the market for a cheaper price than reared cane rats, and this is one of the reasons the interviewee thinks that the DABAC project stopped.
- The cane rat farm needs to be big enough to be cost effective, but not so big that it becomes a burden (i.e. the owner needs to pay people to help him with it). Cane rats need to be fed every day and the interviewee thinks that people may have rejected it because of the relatively high inputs needed
- In West Africa livestock rearing is already an ingrained livelihood activity, and part of the culture, and cane rat is eaten frequently. In Gabon a range of species are eaten and livestock rearing is uncommon; animals when kept are free ranging. The interviewee felt that these were some of the reasons why cane rat rearing is successful in Gabon but not in Benin.
- Technically cane rat farming was successful, but anthropologically it wasn't – it did not work in Gabon for social reasons. Successful technical trials do not ensure economic and financial success.
- Cane rat rearing in peri-urban areas does not provide an alternative to hunting – it does not employ the same people in the same places. In addition the amount and diversity of meat is not comparable to that provided by wild hunted meat.
- Cane rat farming is a viable economic activity in peri-urban areas, where game meat is rare and expensive, when people already have mini-livestock rearing experience and skills. The ambitions of the project should not be extended beyond providing an additional economic activity to provide environmental objective.

Alternatives a la chasse dans la zone de l'aire conservee des communautes d'Ibolo-Koudoumou et les villages peripheriques

Interview ID: 10

Country: Republic of Congo

Start Date: 2008 **End Date:** 2009

Organisation: Conservation de la Faune Congolaise (CFC).

Collaborating organisations: No other collaborating organisations. They did not work with the government, because it was too complicated to do so. After the creation of the community reserve they were going to sign an accord with the government, but for political reasons it did not happen.

Funder (s): Co-financed by the French Development Bank, CARPE, WCS and the Van Tienhoven foundation.

Budget: EUR 97,079 over 2 years. EUR 47,732 EUR 25,459 from WCS/CARPE-Congo, EUR 11,281 from Van Tienhoven and EUR 12,607 from the CFC. This funding is also to set up community management of hunting, as well as providing alternatives to hunting.

However, the full funding was not provided, as the funders did not think that the intermediate project targets had been achieved after the production of the first project report, and so they held back the rest of the funding. The funding was therefore only disbursed for one year, instead of for two, and the total funding received was around EUR 48,000.

Staff: 4 permanent staff and some other part-time staff, who were brought in when work needed to be done. Veterinary consultants to carry out vaccinations. Apart from the consultants, everyone was from the area.

Aim of the Project: Help to reduce pressure on wildlife, and increase the value of biological diversity, in the community reserve of Lac Tele, in particular the communities of Ibolo-Koundoumou.

The area is heavily hunted, and this has resulted in large reductions in animal populations. Much of the pressure came during the war, when bushmeat markets were created to supply military demand. The protected area was created after the local populations of Ibolo and Koundoumou asked for one to be created, to prevent outsiders from hunting and clearing land in their territory – they wanted to protect their land. The alternative livelihoods project came about as part of this land use planning – to add to the conservation actions of the protected areas. The aim of the project was to get hunters to reduce their hunting in exchange for other animal proteins.

Alternative livelihood provided: Aquaculture, crocodile farms, livestock and beekeeping.

Reason why the alternative was chosen: They were chosen in collaboration with the local communities.

Was the alternative already used in the project site? Yes, people were already livestock rearing, but maybe only 2 or 3 goats. It wasn't used as a main source of revenue. If they needed protein they could just get it from the river. Even in times of famine they didn't see to sell or eat their goats.

How the alternative was designed to reduce hunting: To provide another form of income. If this had worked, and the wild populations went into recovery, the next step of the project would have been to set up a plan for the sustainable hunting of wildlife, with a quota system.

Participant selection: The project worked with anyone from the communities who was interested. Anyone could join the project.

Number of participants: Unknown.

Conditionality: There were no conditions. The interviewee said that the project was created to help the populations to accept the ideas of conservation, and not to tell them what they can and cannot do. No sanctions were accorded to those that chose to continue hunting.

Project monitoring and project impacts: The project used qualitative 'entretiens'. Since they have been working with the population for a long time, and baseline socioeconomic and ecological surveys had been conducted at the time of reserve creation, they felt that classic studies were not needed, and what was needed was to talk with the people, and that gave them ideas of how to progress.

Baseline monitoring: When the reserve was created, there were socioeconomic and ecological studies conducted.

Project implementation and uptake: Information on the different project activities undertaken was collected:

Identification of hunters and creation of hunting committees. 96 hunters were identified in 12 villages. Six committees were formed.

Apiculture: 15 beehives were installed, but they have not yet achieved enough production to create good revenues for the producers. 25 litres of honey have been produced, and the total revenue was FCFA 87,500. The reports do not mention the number of crocodiles being raised.

Livestock: Existing animals owned by villagers were vaccinated, and villagers were given information on animal diseases by the consultant vets

Crocodiles: The report gives little information on the number of crocodile farms set up.

Socio-economic impact: No monitoring. The interviewee thinks that it is too early to tell if the project has increased incomes.

Impacts on hunting behavior: No monitoring. The interviewee went back to the site in 2011 for a few days, but otherwise has not been back and an evaluation of the project has not been carried out. In 2011 there was a big flood of all the crocodile enclosures, and all of them escaped.

Ecological impacts: No Monitoring. In the original project concept there were plans for faunal inventories, and the collection of hunting data.

Project sustainability: It seems like the project was wound down before the funding was spent, and the project manager has not been back often.

(1) Projet d'élevage Porcin au Village Impini, District De Lekana

(2) Projet d'élevage Porcin au Village Okiéné, District De Ngo

Interview ID: 11

Country: Republic of Congo

Start Date (1) 2009 (2) 2011 **End Date** (1) 2010 (2) ongoing (1 year funding delayed)

Organisation:

(1) Association Ferme Agricole Et Bois D'impini (FABI)

(2) Association Okiene Production (GOP)

Collaborating organisations: WCS-Congo (technical assistance, awareness-raising); agricultural sector of district government (advice on livestock rearing, initial veterinary observations); RINDRA (ONG Malgache Réseau d'Initiatives pour la Nature et le Développement Régional et Africain); Private Veterinary technicians.

Funder(s): CARPE Microfinance Program, FABI, GOP

Budget: (1) 15,890 USD (8,001,500 CFA Franc - 7,501,500 by CARPE and 500,000 by FABI)

(2) 18,818 USD (9,475,500 CFA Franc - 8,975,500 by CARPE and 500,000 by GOP)

The second part of this funding has yet to be dispersed

Staff: The projects are implemented and managed by the local NGOs – no fixed number of WCS staff was assigned and assisted in project locations when needed.

Aim of the Project:

Both projects had the following set of overall objectives:

- produce domestic animal proteins
- entice rural populations to engage in agro-pastoral activities
- encourage creative initiatives to improved local livelihoods
- enforce economic capacities of implementing NGOs and increase villages food autonomy
- fight against the loss of biodiversity (hunting was mentioned as one of drivers of biodiversity loss during the interview)

Alternative livelihood provided: Pig farming.

In (1), private veterinary visits were provided as a supporting service 3-4 times. Same planned for (2) but funding is dispersed very slowly.

Reason why the alternative was chosen: In both projects, the local NGOs approached WCS eager to develop agricultural programs. WCS advised to add livestock farming as a component.

The local groups then drafted proposal drafts, and after several rounds of consultation, they decided upon the project set-up, including pig farming.

Was the alternative already used in the project site? Yes. People in both project areas are primarily agriculturalists but also engage in livestock farming, as it is an additional source of income. There is even a local breed of pig, which is used in (1) Impini. As (2) Okiéné is more easily accessible from Brazzaville, they have begun using a Moroccan breed which is better for breeding purposes.

How the alternative was designed to reduce hunting:

For both projects, agriculture is the primary activity and hunting serves only to generate income. If people can earn enough additional income with pig farming they will thus no longer have the need to hunt.

In (1) Impini, in particular, people resort to hunting when they do not have enough other activities to engage in as hunting is a very difficult task in the area because people have to travel far to reach forest areas.

Participant selection: No criteria used. Participants are members of local groupements.

Number of participants: (1) 19 – all male (2) 16 – 8 women, 8 men

Conditionality: No behavior change required to participate.

Project monitoring and project impacts:

Baseline monitoring: For both project areas, WCS had done market studies to determine whether markets existed for such projects, how they could be integrated and what was consumed.

Project implementation and uptake: Monitored project implementation and health of pigs.

In (1) Impini, technical implementation of the project was monitored 4 times throughout the year, including one visit by the NGO RINDRA. Animal check-ups (incl. vaccinations) were performed 3 times by technicians (vets).

In (2) Okiéné, technical implementation of the project was monitored once thus far. No veterinary visits yet due to slow release of funding, but local NGO members are being trained in maintaining livestock health.

Socio-economic impact: No organized monitoring for either project. Interviewee recognizes that local groups should adopt an evaluation system to monitor changes in livelihoods by participants. Furthermore, while the (2) Okiéné project has already produced offspring, it is too early for sales to have taken place.

Impacts on hunting behavior: Interviewee says that WCS has monitored hunting in the (1) Impini project area and have observed a slight reduction in hunting. Such data is not available for (2) Okiéné and he is unable to say whether there has been a change in behavior.

Ecological impacts: No monitoring program or data available. Unable to say whether there has been a change, but think it is unlikely.

Project sustainability: (1) Impini activities still continue after funding has ended. The pig farming has been well-maintained, and sales continue (in fact, participants are told not to accumulate too many animals and rather sell them off at a constant rate to avoid problems). Only some activities related to maize production have slowed down a bit since funding ended.

Overall though, the interviewee believes that activities will continue unless there is internal conflict within the organization that would lead to management falling apart.

While the (2) Okiéné project is still ongoing, the interviewees hopes for long-term project sustainability are high as the implementing NGO is comprised of a dynamic groups of people and, based on previous experiences in Impini, they have made adjustments to aspects of the project pertaining to crop management.

Furthermore, the region of Okiéné offers a more diverse range of job opportunities overall (to which this project is contributing) which keep people occupied, as well as it having more direct access to bigger cities, opening up market opportunities and facilitating project development.

Contribution à la conservation de la faune sauvage par le développement de l'élevage des bovins

Interview ID: 12

Country: Republic of Congo

Start Date: 2011 **End Date:** 2012 (1 year funding, but project ongoing)

Organisation: Groupement Précoopératif des Jeunes Sans Emploi de Bouanela (G.P.J.S.E-Bnl)

Collaborating organisations: N/A

Funder (s): CARPE, IUCN

Budget: 20,623 USD (10,400,000 CFA Franc)

Staff: The local hunter group manages operations. Three employees from WCS (2 local, 1 national) were available for technical support when required, but were not part of the management group. Veterinary assistance was also provided by WCS. Staff were deemed sufficient for the individual project, but the project manager felt that there should be a full-time veterinary and zoo technician on site.

Aim of the Project: Being a geographically enclosed area, the district of Bouanela offers very few possibilities of income generation – hunting and fishing are therefore the main sources of revenue. In order to create more income-generating opportunities and improve livelihoods through the sale of milk, cows and the use of dung as a fertilizer, a group of local hunters decided to abandon hunting and start rearing cattle.

This group set up the project independently, deciding upon its aims and objectives, and only later approached WCS for additional technical assistance.

Alternative livelihood provided: Cattle rearing.

WCS acts only as a support service/technical facilitator, providing guidance on group management, market research, cattle rearing, herding and dairy production techniques.

Reason why the alternative was chosen: The alternative was chosen by the group of hunters in hope of creating a stable source of income and generating dairy products to counter malnutrition.

Was the alternative already used in the project site? Cattle rearing is a new activity in the area and people are not familiar with fresh milk. However, goat, sheep and chicken farming are present throughout the region (while no sophisticated rearing culture exists because the area is within a tropical forest).

How the alternative was designed to reduce hunting: The activity is designed to provide hunters with more income than hunting, therefore making cattle rearing a desirable alternative, eventually even for other surrounding villages, transforming the original project into selling point for cattle. Furthermore, interviewee hopes that, since hunting is driven by the external markets, if locals obtain income from other sources they will disengage in supplying this market.

Participant selection: The G.P.J.S.E-Bnl comprises local hunters that decided to start the group.

Number of participants: Around 15 hunters of all ages.

Conditionality: The group has drawn up set of rules and regulations that require members to (i) renounce hunting, (ii) adhere to the group's objectives and (iii) actively engage in their work, providing the necessary labor to maintain activities. If these rules are broken, members get excluded from the group, but there have been no such instances thus far.

Project monitoring and project impacts:

Baseline monitoring: Biodiversity and socio-economic baseline studies were conducted by WCS in the region independently of this project in 2001. These studies revealed that the area is a hub for elephant and buffalo hunting, the river giving villages access to bigger cities.

Project implementation and uptake: Technical monitoring of the animals is meant to be performed every trimester by the “Direction départementale de l’agriculture et l’élevage” while WCS is meant to monitor project activities every trimester.

Although a set of indicators/procedures has been developed for project monitoring (member and project annual revenue increase, number of clients (milk), number of staff meetings (governance), number of self-evaluations, rearing quality, health of local population), these are not yet enforced and project monitoring by WCS is done on an informal (and irregular) basis.

To date, the stock of cattle has evolved as follows:

The group started out with 17 cows (12 female (8 adults and 4 calves); 5 male (3 adults and 2 calves) and now disposes of 23 cows (15 female (10 adults and 5 calves); 8 male (6 adults and 2 calves).

Socio-economic impact: No organized monitoring of socio-economic impacts (despite existence of the above indicators). Interviewee notes that it is yet too early to observe impacts as project has only been running for one year.

Impacts on hunting behavior: No organized monitoring of hunting behavior for this individual project. Based on personal observations, interviewee reports significant changes: reduced number of shotgun ammunition found in forests; hunters have voluntarily handed in their guns and ivory scales; villagers are now aware that hunting is illegal and no longer pursue it openly; hunting is now more prevalent amongst outsiders rather than locals.

(WCS did perform a 3-4 year study on bushmeat hunting in the area (not pertaining to this project), identifying primary hunter families, hunting and fishing offtake and data on bushmeat confiscations)

Ecological impacts: No organized ecological monitoring pertaining to this project. Interviewee has observed slight recovery of buffalo populating in the area.

As a follow-up to the initial biodiversity baseline study in 2001, WCS has monitored the area around 2004-2006 and again in 2011, recording, most importantly, human impact (roads, traps and poachers).

Project sustainability: The interviewee is positive about the long-term sustainability of the project as it was started up by the local group itself and is still fully managed and controlled by this group – they have ownership of the project and WCS has only ever been a facilitator.

Furthermore, the group has started selling cattle, which has not only given members a motivational boost but the hope is that this will continue and the project will become a center for other villages/projects to buy their cattle from.

Promotion de l'apiculture moderne pour la réduction de la pauvreté et protection durable de l'environnement à la lisière du Parc National de Nyungwe et réserve naturelle de Cyamudongo

Interview ID: 13

Country: Rwanda

Start Date: 1/11/2011 **End Date:** 1/11/2012 (funding ends, though project still running)

Organisation: ARDI

Collaborating organisations: IUCN

Funder (s): IUCN

Budget: \$26,000 (\$6000 contribution from ARDI, \$20,000 from IUCN) for 1 year. All the funding was for the alternative livelihood project.

Staff: Six. One coordinator, two administrators, three extension officers. Only two staff were full time, the others were 40 – 50% time. All staff were Rwandan.

Aim of the Project: Due to the legal gazettement of Nyungwe National Park, many surrounding communities were forced to abandon land and activities with the forest borders. Data recorded by ARDI show at the end of 2007, of the 2,031 traditional beekeepers recorded in the districts of Rusizi and Nyamasheke, 55% were of beekeeping within the natural forest of Nyungwe and Cyamudongo. To protect nature reserves in force, all beekeeping were evicted from the forest, which has had a strong negative impact on the socioeconomic development of this group. This beekeeping project therefore aimed to compensate local communities for reduced forest access, and provide alternative ways of raising income. The objectives of the project were to:

- Conduct a commodity chain analysis
- Conduct training and raise one unit of queen bees, with technical support from an external expert
- Provide support for modern beekeeping techniques
- Technically support cooperatives on quality standards and certification
- Organize training on entrepreneurship in beekeeping (business plan, pricing, marketing, and development of small income-generating projects).

Alternative livelihood provided: Beekeeping using modern methods, outside the protected area.

Reason why the alternative was chosen:

Agricultural investments in Rwanda are still relatively low due to the lack of familiarity with agricultural processing techniques for adding value to raw materials harvested, weak private entrepreneurship, very fragile farmers associations, and difficult access to agricultural credit. Farmers have limited bargaining power, and advocacy efforts tend to be isolated. Beekeeping is a good source of protein and income, but also requires little land. Traditional beekeeping already existed in the area. Many of the community were already traditional beekeepers, and had inherited this from their ancestors. However, traditional beekeeping, using fire, can damage the forests. The beekeeping sector still faces major challenges related mainly to the lack of application of modern production techniques, inadequate equipment and modern beekeeping infrastructure, and low management an institutional capacity of beekeeping organizations. This means that potential honey harvests are not being realized.

ARDI has chosen to promote modern beekeeping at the edge of the Nyungwe National Park for the following reasons:

- Beekeeping can provide an alternative source of income and employment
- Traditional beekeepers in particular threaten biodiversity within national parks
- Beekeeping improves crop yields through insect pollination of plants
- Honey is a very nutrient-rich energy food
- Beekeeping requires little land
- Beekeeping is not labor intensive, and has low start-up costs
- By-products of the hive can also be a good source of income

Was the alternative already used in the project site? Yes, using traditional, rather than modern, methods

How the alternative was designed to reduce hunting: The alternative was not specifically set up to reduce hunting, but to reduce overall pressure on the protected areas. Beekeeping was chosen as an alternative income-generating livelihood activity, to reduce destructive beekeeping practices inside the reserve, and compensate local people for reduced forest access.

Participant selection: In collaboration with the local government, ARDI carried out a means assessment, to identify those households most in need of help. Most (around 70%) had experience of traditional beekeeping. Equipment for beekeeping was provided by the project (e.g. honey extractors).

Number of participants: 8 village cooperatives (4 in Nyamasheke and 4 in Rusizi) with 1250 members in total, covering 249 households. Number of beekeepers not yet reported.

Conditionality: None

Project monitoring and project impacts: Baseline socioeconomic data was collected. During implementation data was collected for a number of target indicators (honey production, uptake of new technologies, number of participants).

Baseline monitoring: Baseline data collection on income per household, and access to main services (hospitals, schools).

Project implementation and uptake: The administrators collected data on honey production per hive, number of participants, General honey production in the area (this data is not yet available). Results suggest that honey production is improving, technology adoption has increased, and membership has increased. However, participants need more support with entrepreneurial skills and marketing their honey products.

Socio-economic impact: Although baseline data on income, and data on honey production, have been collected, it does not seem that further work to estimate socio-economic impacts has been undertaken.

Impacts on hunting behavior: n/a

Ecological impacts: No monitoring

Lessons learned:

- Many of the cooperative members are the older members of the community (more than 45 years old) and it has proved very difficult to introduce them to different mentalities. ARDI suggests that a priority is introducing younger community members to the beekeeping group.
- There are some traditional taboos which prevent women from fully engaging in beekeeping activities
- One year is not enough to properly establish a project; 3 – 5 years would be more suitable.
- The vision of the cooperatives (at a national level) is not clear. Many cooperative members think that the organization is there as a development project (such as those after the genocide), to provide goods, rather than as an entrepreneurial project. The cooperatives are institutionally, organizationally and managerially fragile.
- Beekeeping cooperatives were ‘parachuted’ in, and created with too many members (often more than 100) in relation to their weak capacity.
- There is a need for a business model and business training
- The honey produced using modern techniques is often mixed with poor quality honey, reducing its value



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