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**Links Between Conservation/Development Projects and International Conventions
and Programs : The Southeastern Rainforest of Madagascar**

A Dissertation Presented

by

Bénédicte Leclercq

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in Partial Fulfillment of the

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(Cultural Anthropology)

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Abstract of the Dissertation

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Integrated Conservation and Development Projects (ICDPs) emerged in the 1980s and 1990s, to reconcile the need to protect threatened natural areas and, at the same time, to foster human development. Increasingly, around the world, natural resources were being rapidly depleted. In some cases local communities were held responsible for over-exploiting these resources, even when for their subsistence.

The present research was based on an intensive case study of an ICDP developed within the framework of the UNESCO World Heritage Convention and implemented around Midongy-Befotaka National Park, in the Southeastern Humid Forests of Madagascar. The main activities involved were linked not only to conservation (in particular, the management of the park), but also to human development, in areas such as education, health, and income-generating activities. This research attempted to identify the successes and failures of the case study ICDP, and its impacts on conservation and development, over both short and mid-length time periods (between 1 and 5 years). The research was informed by various conservation and development theories and Conventions, and their applications in the field, with special attention paid to the design,

implementation, and evaluation of the ICDP case study. Methods used included PRA techniques, such as household surveys; the analysis of specific environmental and socioeconomic indicators; and an examination of results obtained for specific variables related to the United Nations Millennium Development Goals.

The results demonstrated first that positive results for conservation can be achieved if development activities successfully encourage the participation of local people and bring them immediate and sustainable benefits; and second, that success is related to international, national, and local parameters that need constantly to be evaluated, rethought, and readapted to changes in the local and national contexts.

The research ended during a particularly difficult time in Madagascar, a political crisis followed by an environmental crisis involving illegal logging in 2009. Thus the research also briefly focused on analyzing the main reasons for the environmental crisis, which appeared to be related mainly to past mistakes in Malagasy conservation programmes and ICDPs that had neglected to co-opt local people and national institutions. Finally, the research yielded several important lessons from the past and recommendations for the future.

To my grand-father René-Albert, my mother, and my NBA team...

« Quelques dizaines de mètres de forêt [tropicale] suffisent pour abolir le monde extérieur, un univers fait place à un autre... où l'ouïe et l'odorat, ces sens plus proches de l'âme, trouvent leur compte ».

Claude Lévi-Strauss (1908-2009), *Tristes Tropiques* (1955:408)

“A few dozen of square yards of [tropical] forest are enough to abolish the external world; one universe gives way to another... where hearing and smell, faculties closer to the soul... come into their own”.

Claude Lévi-Strauss (1908-2009), *Tristes Tropiques* (translation 1974:341)

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GLOSSARY OF ACRONYMS

AC	(community moderators)
ANGAP	Agence Nationale pour la Gestion des Aires Protégées (now MNP)
ASBC	(agents for basic community services)
CARE	(an international NGO)
CBD	The Convention on Biological Diversity
CCPTF	<i>Cercle de Concertation des Partenaires Techniques et Financiers du Secteur Environnement</i>
CI	Conservation International
CISCO	the Education Ministry
CITES	The Washington Convention
CLB	<i>Communautés Locales de Base</i> (see also COBA)
CMS	The Convention on Migratory Species
CoAP	<i>Code de gestion des Aires Protégées</i> , or Code of Protected Areas Management
COBA	<i>Communautés Locales de Base</i>
CS	(members of follow-up committees)
CSB	<i>Centre de Santé de Base</i> (health center)
CSBI	<i>Centre de Santé de Base I</i> (health centre category I)
CSBII	<i>Centre de Santé de Base II</i> (health centre category II)
DEAP	<i>Droit d'Entrée des Aires protégées</i>

DFID	Department For International Development
DINA	(a regulatory body that manages the life of a community)
DRDR	<i>Direction Régionale de Développement Rural</i> (Regional Direction for Rural Development)
EIA	Environmental Investigation Agency
EP	Environmental plan
EPT	Education Pour Tous (or PC/EPT, Education For All, a project partner)
ETFRN	European Tropical Forest Research Network
FAO	The United Nations Food and Agricultural Organization
FIMPAMA	(a local association with forty-nine mixed-sex members).
FIVEMA	Fikambanana Vehivavy Maroangaty (an association of women in Maroangaty)
FMG	(a unit of Malagasy currency, now Ariary)
GCF	<i>Gestion Contractualisée des Forêts</i>
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GELOSE	<i>Gestion Locale Sécurisée</i>
GIS	Geographical Information System
GNP	Gross National Product
GW	Global Witness
HAT	(the new and current « Government of High Transition »)
ICDP	Integrated Conservation and Development Project

IEFN	<i>Inventaire Ecologique Forestier National</i> , or National Ecological Forest Inventory
IMF	International Monetary Fund
IRD	Institut de Recherche pour le Développement (a research institute for development)
IUCN	The International Union for Conservation of Nature
IEG	(management efficiency index)
JIRAMA	(the national public water and electricity company)
JSI	John Snow International (NGO)
JSI/PENSER	a health NGO
KMTNC	The King Mahendra Trust for Nature Conservation (Nepal)
MAB	Man and Biosphere Programme
MAROMANGA	(a local association of mixed-sex members)
MB ICDP	Midongy-Befotaka ICDP
MBNP	Midongy Befotaka National Park
MDG	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
MINENVEF	Ministry of Environment, Water and Forest
MNP	Madagascar National Parks
NEAP	The National Environmental Plan
NGO	Non-governmental organization
ODA	British Overseas Development Administration

ONE	<i>Office National pour l'Environnement</i> , or National Office for the Environment
OUV	Outstanding Universal Value
PC/EPT	<i>Programme Conjoint Nations Unies Madagascar/Education Pour Tous</i> (Joint Programme United Nations Madagascar/ Education For All)
PRA	Participatory Rural Appraisal/ Assessment
PSDR	<i>Programme de Soutien au Développement Rural</i> (Programme of Support to Rural Development)
PV	(popularizer farmers)
RNM	Ranomafana national park
SAGE	<i>Service d'Appui à la Gestion de l'Environnement</i> (Support Service to Environment Management)
SAVEM	Sustainable Approach for Viable Environmental Management
SGP	Small Grants Programme
SOAMANDROSO	(association of neo-literate farmers/ water beneficiaries in Befotaka)
SPSS	Statistical Package for the Social Sciences (software programme)
SRI/SRA	System of rice intensification/ Improved rice cultivation
SSB	Single-side band modulation (radio)
SSD	<i>Service de Santé de District</i> (district representative of the Ministry of Health)
TELMA	(national phone company)
TM/JSI	
or PENSER	Tany Meva and JSI (project partners)

UN	United Nations
UNCCD	The United Nations Convention to Combat Desertification
UNCED	The United Nations Conference on Environment and Development
UNDP	The United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations
UNFCCC	The United Nations Framework on Climate Change
USAID	United States Agency for International Development
VAHATRA	(a national association of biologists)
WB	The World Bank
WCMC	World Conservation Monitoring Centre
WCS	World Conservation Society
W&F	The Department of Water and Forests
WHC	The World Heritage Centre
WHO	World Health Organization
WWF	World Wildlife Fund
ZOC	<i>Zone d'Occupation Controlée</i>
ZUC	<i>Zone d'Utilisation Contrôlée</i>

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INTRODUCTION

- A. Origin and Evolution of the Subject
- B. Research Introduction and Research Motivation
- C. Research Choice Justification and the Importance of the Study
 - 1. Future Challenges
 - 2. Delimitation of the Subject
 - 3. Research Problems Encountered
 - 4. Related subject questions
- D. Assumptions, Hypotheses, and Dissertation Plan

INTRODUCTION

A. Origin and Evolution of the Subject

Integrated Conservation and Development Plans (IDCPs) were conceived and initiated in the 1980s, to reconcile the protection of the environment, especially in officially-designated conservation areas, with the social and economic development needs of local people living near these areas (see, for example, Wells and Brandon 1992; McShane 2005; Sayer 2005; Ferraro 2005; Belsky 2003: 90). Many of the early IDCPs were initiated for biodiversity conservation purposes. Because local people living near conservation areas were often heavily dependent on the local environment for their livelihood, professionals working in such contexts increasingly expanded their interests to include human development considerations. As such, environmental conservation became inextricably linked to the lives of local people.

The first-generation IDCPs were conducted by representatives of the industrialized countries, who believed that such projects, large-scale and well-funded, would reconcile two antagonistic visions: (a) a view of the natural environment as virtually self-managed and auto-sufficient; and (b) the belief that an increased capacity for human management would promote necessary development for local people. At that time, it was thought that both ideas – environments characterized by constantly self-renewing natural resources, and well-intended interventions to promote human development – were neither mutually exclusive nor reciprocally harmful, but in fact were compatible.

The beginning of IDCP implementation in the 1980s was characterized by large-scale projects involving numerous expatriate staff with funding totaling about \$US 1 million per year, and management by international organizations. These first-generation projects targeted “biodiversity countries,” for which conservation of the environment had become a priority. Third world national

governments typically ranked the environment below other problems, such as poverty, income, education, and health, but ICDPs were nevertheless included in governmental agendas. Governments were attracted by these projects, first because they were bringing in considerable funding, and second because, in addition to biodiversity, they also incorporated a development component. However, in the implementation agreements established between beneficiary governments and funding organizations, crucial details, such as a given project's roles at the national and local levels and the specifics of their management, were often not spelled out.

The early ICDPs were designed to extend over a relatively long period, typically ten years. Few mid-project evaluations were undertaken, and few mid-course corrections made; it was only when these early ICDPs were approaching their end points that the efficacy and efficiency of the activities undertaken were reviewed. Not surprisingly, therefore, many of these projects were failures. Not until the last decade of the 20th century and the first years of the 21st did those involved begin to consider the reasons for success or failure, and on the implications of ICDPs for their host countries and the lives of participants.

In the early to mid-2000s, there was still much disappointment with the results of ICDPs. This disappointment, however, did not result in the disappearance of ICDPs. The core concepts underlying them involved so many disciplines and components, from environmental to developmental, that the basic idea was maintained as the backbone of subsequent environmental conservation projects.

After years of disappointments, most ICDPs – labeled as such -- were dismissed from worldwide environmental programmes. But realizing that ICDPs still had valuable potential and could be re-tooled for greater success, some researchers highlighted specific lessons learned and proposed specific recommendations for future projects. This evaluative process is amply described in Wells and Brandon's *People and Parks* (1992), Western and Wright's *Natural*

Connections (1994), Stevens' *Conservation through Cultural Survival* (1997), O'Riordan *et al.*'s *Biodiversity, Sustainability and Human Communities* (2002), Terborgh *et al.*'s *Making Parks Work* (2002), McShane and Wells' *Getting Biodiversity Projects to Work* (2004), Brechin's *Contested Nature* (2003), and McNeely's *Friends for Life* (2005).

The process of questioning past ICDPs and attempting to generate new and better ideas and guidelines with which to implement similar programs in the future yielded a second generation of ICDPs, based on lessons learned between the 1980s and the mid-2000s. This current research has relied especially heavily on previous ICDPs undertaken in Madagascar, such as projects implemented in Ranomafana, Amber Mountain, and Andohahela.

B. Research Introduction and Research Motivation

The main subject of the study is ICDPs, which exist at the edges of several different disciplines, in both the human and ecological sciences. Any research into their effectiveness must be based on the general framework and context in which ICDPs were created and have been implemented and evaluated.

As a student of the natural sciences in general and a trained biologist in particular, I became interested and involved in primate conservation sixteen years ago. My experience in this area first involved working with prosimians, for the lemur conservation breeding programme at the National Museum of Natural History in Paris (France). My French Masters degree in Biodiversity, Genetics and Evolution led me to Madagascar, specifically to confirm hypotheses on captive populations and differentiation in the feeding behavior of Hapalemur groups. At the time, I was working with a French primatologist, Professor Jean-Jacques Petter, a natural sciences researcher who had been working in Madagascar for 40 years and was one of the pioneers of lemur research there.

In addition to my primatological research, I was introduced to, and became familiar with, the UNESCO Man and Biosphere Programme (MAB). Because it

combined the conservation of species with community development efforts, this was one of the first programmes that would later be described as an ICDP in concept. I was therefore already familiar with the idea of integrating conservation and development activities when I first went to Madagascar for primatological research.

On my first visit to Madagascar, in 1995, I stayed at Ranomafana National Park. Starting my field research with Malagasy guides, I was initially impressed by the beauty and richness of the rainforest, but soon became interested in the lives of my Malagasy counterparts, the students with whom I was sharing the research station, the local Malagasy people who were employed as research guides, and other ICDP staff. The Ranomafana ICDP was still being implemented at the time, and I had the opportunity to become familiar with the various activities that constituted the project, as well as with the project staff. This experience was an important one, as it was my first opportunity to see an ICDP implemented in the field, rather than as a concept on paper. I was particularly interested in gaining further knowledge on the integration of different project components, such as health and agricultural activities, and their link to environmental conservation and environmental awareness in a tropical landscape.

This interesting immersion in an ICDP provided me with observations that in turn helped me to formulate a definite perspective on ICDP successes and failures. I should note, in this regard, that the views expressed in this document, created in the process of my research, are those of a foreigner to Madagascar, and moreover one with occidental ideas and concepts, who was invited to participate in a process that encompassed many parameters, various personalities, and a wide range of human behavior. The results of my research do not, therefore, constitute a moral judgment but rather reflect my evaluation of a complex situation.

After this experience in Madagascar, I became curious about what could be done to integrate environmental conservation with human development. Soon afterward, I accepted an internship position with UNESCO's Division of

Ecological Sciences, in the Man and Biosphere Programme (MAB). At the same time, I also applied for a Fulbright scholarship to pursue my studies in the U.S. The choice of Stony Brook University for further graduate study was an academic one; the curriculum at the institution I chose permitted me to be engaged in both the natural sciences and human sciences – biology and cultural anthropology -- simultaneously, which would not have been possible in France. It was a good opportunity for someone trained in biology and conservation science, but also interested in cultural anthropology, to learn more about an aspect of ICDPs that was at the time less familiar to me: the relationships between local people and conservation. I left for the U.S., but remained in contact with my UNESCO supervisor, Dr Natarajan Ishwaran, with whom I shared the idea of eventually developing a project in Madagascar.

The plan was to design a project based on a UNESCO World Heritage nomination, which would provide international recognition for certain sites, while at the same time attempting to combine the conservation of these sites with development activities in an effort to reduce local environmental pressures. The ICDP would be designed in conjunction with the preparation of the nomination. My idea was that for a site to be recognized as sheltering some of the most Outstanding Universal Value (OUV) species, it must be surrounded by a human population that would not only be able to benefit from such nomination, but also to meet so-called acceptable standards of development. The implementation of this project would provide me with field data for a PhD dissertation.

The design of this ICDP was therefore based on my first experience in Madagascar, where I worked with national authorities, Madagascar National Parks (or MNP, the organization in charge of protected areas), as well as international and national NGOs. After the first phase of the project was designed and approved, I returned to Madagascar as a UNESCO technical advisor. One year after the beginning of the project, it was re-designed, new staff was hired, my

role changed from Technical Advisor to Project Manager, and I continued to work with a national coordinator as counterpart.

The reasons for these changes lay in a mid-term evaluation that recommended the project be reoriented. As part of the re-design, the project sites were modified; the main project interventions now targeted the Midongy National Park. (The problems encountered during the first phase of the project were instrumental in re-orienting project activities for the second phase to be discussed.) My new role gave me more freedom to influence the direction of activities to be implemented, as well as to identify national and local staff and partner organizations.

In sum, this experience provided me with the opportunity not only to utilize my dual educational and professional backgrounds, but also to work with an important UN organization, both in the field and at headquarters – in short, to practice applied anthropology (one of the reasons why I choose to study Cultural Anthropology) by drawing on theory during fieldwork. I was able to see and appreciate the impact of international decisions, treaties and conventions in the field, and their subsequent results.

ICDPs' participants often seek the "holy grail" of perfect integration of the environment and development, which, I submit, does not exist. These are two perspectives, two ways of thinking, two academic schools at odds with each other. On the one hand, there are biologists who believe that the conservation of species is a way of sustaining the life of local people, and should therefore be considered a priority; on the other are sociologists and cultural anthropologists who feel that the environment is often prioritized to the detriment of local people. Because of my dual background in Conservation Biology and Cultural Anthropology, I accept both perspectives. I belong to the school that prioritizes development; making what is needed available to local people must occur for environmental conservation to succeed. However, I also believe it is possible to find a balance, if

professionals representing different disciplines can learn how to work with each other.

I was often concerned about the way conservation and development activities were being conducted in Madagascar (as were other researchers who visited Madagascar and with whom I shared similar experiences), all the more so because of my project implementation responsibilities. Agriculture, health, and education were issues into which I could not have imagined that my biologist background would eventually lead. Working in the context of ICDPs, however, leads one inevitably into these areas, even if their perfect integration is elusive.

C. Research Choice Justification and the Importance of the Study

The environment and climate change are among the most important considerations for the life and well-being of human beings, and present some of the most serious challenges. The history of the consequences, to the environment, of human population growth, extractive technologies, and resource use over the past few centuries has been well documented (Brundtland 1987). No longer can we delude ourselves that natural resources, many of which are non-renewable, are infinite. Quite apart from the fact that the world is thus facing a major environmental crisis, local resource-depletion issues, which are the inevitable offshoots of this crisis, have often been sufficient to bring about human conflict.

We now recognize that human development that involves the overuse of resources is not, nor has it ever been, sustainable. In general, economic development in countries of the Northern hemisphere has resulted in serious environmental degradation, and it is only relatively recently that the world has realized the extent to which vital resources are located in the countries of the Southern hemisphere (Borgerhoff and Coppolillo 2005; O’Riordan and Stoll-Kleeman 2002).

The background chapter of this study will explain how – as environmental degradation increased, we became more aware of the potential for conflict and, as

a result, began to think about the possibilities for various kinds of environmental programmes incorporating the needs of humans. It has already been pointed out that initially, the environment was viewed as secondary to human development. This idea was perpetuated by the assumption that resources were infinite. Ultimately, when it became clear that massive deforestation and overuse of natural resources could jeopardize the entire world, the industrialized nations began to contribute specific resources for the benefit of environmental programmes. This is the context in which ICDPs were born: the attempt to reconcile the negative impact of human development on the environment, and to conceive of and then implement activities that, on the one hand, could reduce harmful environmental pressures, and on the other, could promote sustainable development (Redford *et al.* 1998; Sayer and Campbell 2004).

These seemingly incompatible ideas, when first proposed, were viewed as both innovative and challenging. Today, those involved are still grappling with understanding how the two ideas impact each other, and how to reconcile them in the field.

1. Future Challenges

Second-generation ICDPs are considerably improved over their earlier counterparts, thanks to lessons learned from the earliest attempts at integrating conservation and development. However, no universally successful paradigm has yet been established. The learning process proceeds, not only in terms of how best to link conservation with development, but also in terms of testing hypotheses about how, and to what extent, conservation and development impact each other. It now seems clear that biologists and cultural anthropologists must work together, focusing on understanding the mutual and reciprocal impacts of the two disciplines and establishing specific indicators of success or failure. I hope that the research reflected in this dissertation will facilitate the process of evaluating the impact of the integrated conservation and development approach.

Additionally, I hope that my research will be of use in understanding the impacts of international programmes on applied projects in the field. At the international level, international conventions are agreed upon between countries based on theoretical notions. What is needed -- the missing link -- is a way to evaluate how effective these programmes are in the field, and how the challenges that inevitably arise in the field can best be taken into consideration at the international level. The present document will provide specific examples of how international programmes and field projects interact with each other.

An important goal of this study is to suggest, drawing on results from a case study of an ICDP undertaken in Madagascar, how ICDPs can be implemented with an improved likelihood of success. The case study will therefore focus on how the local people interacted with the project based on internal factors, such as activities proposed and interactions with the project staff, as well as on how their behaviors were influenced by factors external to the project, such as the effects of the involvement of local authorities, park management, and governmental institutions.

2. Delimitation of the Subject

The present study will identify specific elements that could help in understanding impacts and parameters affecting today's ICDPs. It will not be possible to treat the topics of conservation and development exhaustively, but the study should help to promote a better understanding of how the international development concept affects local people and, in turn, how it also impacts the implementation of ICDPs.

The applied cultural anthropological perspective, adopted here, will be used to describe the various groups affected by the case study ICDP implemented at Midongy National Park. This ICDP will be evaluated from the point of view of my own experiences, in order for my research to provide insights and recommendations for other ICDPs. These groups, all of which have been involved in the implementation of the ICDP, include national and local authorities as well

the local people who depend on and live near this specific protected area in Madagascar. Researchers tend to think that “groups should be considered as culturally and economically adapted groups, rather than ethnic tribes” (Korhonen 2003). I will view the indigenous people in the park area, the Bara and the Antaisaka, as members of ecological groups rather than specific ethnic groups, because I believe that when it comes to the traditional practices with which natural resources are exploited, human groups are more profoundly affected by their environmental adaptation than their ethnic identity; indeed, the former shapes the latter. The Bara and the Antaisaka will thus be analyzed not only in terms of the way they interact with the environment and how they shape the landscape, but also in terms of how each group interacted with the ICDP.

The dissertation will also examine an important dimension of ICDPs: capacity-building. It will evaluate how project implementation can either prevent or facilitate the development of genuine national and local capacities. The political dimension will also be discussed in the framework of ICDP implementation and sustainability, and considered as a factor underlying the success of the project, especially locally.

Finally, the research will analyze the implementation of the case study, the Midongy ICDP, from its creation and design, through its implementation, to its final evaluation.

3. Research Problems Encountered

The initial research for the case study ICDP, designed in 2001, proposed an evaluation of 15 years’ worth of ICDPs between 1990 and 2005 in Ranomafana National Park. Due to a re-evaluation, however, UNESCO officials decided to change the project to focus on conservation and development in Midongy National Park. My research was refocused accordingly, in order to reconcile my data-gathering as a Ph.D. student and my work as a project manager. The change allowed me to design and implement a new phase of the project around a protected area that had never before been the target of an ICDP. Thus –

since the two ICDPs were not created and implemented in the same way -- the research, as it was foreseen at the beginning (to compare two ICDPs) changed; the subject of the present study reflects the second phase of the project. Nevertheless, some elements of my initial research will be integrated into the analysis, as well as some bibliographical data on other ICDPs implemented elsewhere in Madagascar and the rest of the world.

4. Related subject questions

The following questions will be examined: What kind(s) of conservation can be carried out in which countries? What is the appropriate level of involvement of foreign staff and organizations? What are the structural dependencies a country must face with regard to technology, access to funding, capacity-building and environmental property rights? Who should bear the responsibility for environmental destruction when international conventions are not fully respected? How can foreigners involved in projects determine priorities given to both environmental conservation and development, especially in terms of policy? What constrains national authorities from taking a lead role in environmental projects? How do we fairly and accurately evaluate ICDPs, especially when it comes to internal evaluation? What does a project need in order to become locally sustainable, both in terms of conservation and development? What is the best mix of intervention and non-intervention? Finally, are conservation and development activities best implemented by governmental or non-governmental organizations?

D. Assumptions, Hypotheses, and Dissertation Plan

Based on the case study, the dissertation suggests that:

- 1 ICDPs do not automatically lead to mutual and reciprocal benefits for both conservation and development activities.
- 2 The success of an ICDP rests mainly on the degree to which its implementers understand national politics; economic, social, and legal frameworks; and the

degree and effectiveness of the participation of people surrounding the protected area.

The analyses aims to evaluate the effectiveness and short-term impacts/effects of the various interventions that took place, and the variables that can be assessed as indicators of immediate benefits to the community, with the ultimate goal of designing effective programmes for the UNESCO World Heritage Area. These programmes had to be drawn in the frame of the nomination of a new World Heritage site in Madagascar. The UNESCO cluster « Rainforests of the Atsinanana » was inscribed on the World Heritage List in 2007. It includes six national parks representing the ecological dimension of the Eastern humid forests of Madagascar: Marojejy, Masoala, Zahamena, Ranomafana, Andringitra, and Andohahela.

Using data drawn from the case study, two hypotheses will be evaluated, in the following manner:

Hypothesis 1 is that interventions by external agencies can positively impact local development by increasing the well-being of local populations. To evaluate this hypothesis, the study will consider two kinds of variables. It will first specify the qualitative variables relevant to the measures of ICDP success: pre-existing conditions, such as historical and ecological factors; internal factors unique to particular groups, such as ethnic, social, and political factors; and outside factors, such as the geographical location of villages, people's relationships, both formal and informal, with local, regional, and national authorities, and the way development activities are implemented. Second, the work will then identify specific (and interrelated) quantifiable variables and indicators of well-being relevant to the hypothesis, chosen from among the Millennium Development Goals (MDGs) (United Nations 2003): the amount of land newly brought under cultivation as the result of the ICDP; the number of beneficiaries; an estimation of the amount of additional local income that can be

attributed to training intended to increase economically-sustainable activities; the literacy rate; the number of project-related associations created; changes in infection/disease rates; changes in immunization rates; and the number and type of newly-implemented sanitation measures.

In the process of evaluating this hypothesis, this work will examine two important ideas pertaining to the question of who should benefit from ICDPs, to what extent, and for how long (Wells and Brandon 1992:30): first, that a protected area should be designated for the benefit of all (by conserving unique ecosystems and species); and second, that local populations should realize their fair share of benefits. In particular, the study will consider how local people should be compensated for economic losses resulting from the implementation of ICDPs in a protected area, especially when their access to resources has been denied. Individuals of the same community cannot be assumed to reap the same share of benefits, since social and political issues can undermine these shares. The study design will evaluate and include these parameters in order to minimize them and balance benefits between dominant and minority groups. Gender equity will also be considered.

These ideas will be examined in light of Paulo Freire's (1970) definition of "empowerment" as the ability of local people to understand, question, and resist the underlying conditions of their poverty. Far from being misled about their own development, locals make the most of potential solutions to their problems (see also Dudley 1995:14). Following Freire, it will be assumed that local people living in the environs of Midongy National Park are not passive bystanders to aid projects. Instead, they are aware of what is inappropriate or unsuccessful, and capable of taking an active part in efforts to modify their behavior or status.

Hypothesis 2 is that development activities can have a positive impact on the environment in protected areas and their peripheral zones. In particular, local people who are offered alternative economic activities and opportunities will

become less dependent on the use of natural resources from a protected area. The hypothesis will be evaluated, like the first one, by examining both qualitative and quantitative data drawn from the case study. Qualitatively, the study will evaluate the changes that occur when local people: (a) are made aware of protected area regulations and of the benefits that could accrue to them through ecological services (e.g. sustainable use of natural resources, watershed management, drinking water availability); (b) understand that the existence of a protected area is not incompatible with the realization of short-term benefits, such as increased income and improved well-being, as a direct result of development activities; and (c) receive assistance in managing their resources more wisely and efficiently than before the implementation of the research activities. Specific quantitative variables and indicators relevant to this second hypothesis are: an estimation of decreases in the consumption of natural resources collected inside the protected area; the number and perceived efficacy of environmental education and awareness programmes implemented to increase the local population's awareness about the need to protect the environment; changes in environmentally-related behaviors and -- if production and/or income do in fact increase in response to implemented activities -- the evaluation of these trends.

It is axiomatic that in developing countries inhabitants who rely on natural resources, not only for their livelihood but for their very survival, often have no other choice but to exploit local resources, whether or not they realize the negative impact of their subsistence activities (Bajracharya 1995:153, Bradford and Gwynne 1995). The second hypothesis will be examined in light of the reality that such people are likely to prefer to maintain traditional resource utilization, because this is what assures their survival (Redclift 1987:150).

The dissertation will be divided in two main parts. The first part will be dedicated to delineating the international and national framework in which ICDPs were conceptualized, and the second part will analyze the main results obtained in

the field in connection with the implementation of a specific ICDP in Midongy National Park in southeastern Madagascar.

Chapter 1 will present the different international theories, conventions and programmes associated with conservation and development. The chapter will explain the context in which ICDP projects were originally conceived, and the way their subsequent design and implementation were influenced at the international level.

Chapter 2 will explain the main indicators used by the United Nations to evaluate the general status of ICDPs in terms of economy, development, and environment. UN Millennium Development Goals will be used in this study to establish the link between environmental conservation and development that is often missing in ICDPs – a link that can be used to evaluate the mutual impact of each on the other. The MDGs will also be used to test the impact of conservation and development activities on poverty reduction, and to help in understanding the link between environmental conservation and development in relation to poverty alleviation. This understanding is crucial to the conclusions to be drawn in this dissertation, because I think that ICDPs can never be considered successful if conservation and development do not succeed in tandem, as well as individually.

Chapter 3 will discuss the history of deforestation in Madagascar, a subject of particular importance because of national policies and the present forestry situation. The forest in Madagascar has always been used as a political football, with the use of natural resources fluctuating with specific periods of colonization and populations movements. Today's population groups living in the areas surrounding the forests are the groups that tried to escape a domination in different periods in the past. The deforestation process has always been associated with periods of revolt in Madagascar, and today the burning of the forest is still a way of delivering strong political messages. Chapter 3 will also introduce the current Malagasy national environmental programme and policies, which informed and oriented the research design and the activities associated with it,

particularly conservation activities. This chapter will be important for an understanding of how national programmes influence locally-implemented projects, and for highlighting the gap that so often exists between decisions taken at the government level and their application and impact in the field.

Chapter 4 will introduce the historical background of ICDPs worldwide, and describe what are now perceived as failures and successes based on the first generation of projects. It will also discuss lessons learned and recommendations for the implementation of a second generation of ICDPs. Chapter 4 will then describe ICDPs that were developed for Madagascar. Based on documentary sources, such as reports from different organizations and researcher's publications, the chapter will try to underline successes and failures specific to Madagascar.

The second part of the dissertation will specifically address the research study site:

Chapter 5 will outline the methodology, consisting mainly of questionnaires and direct observation, which was used for the research.

Chapter 6 will offer a general overview of the study site, including a description of the major human groups around the national park and information about the local environment, in order to locate the field study area in its environmental and human contexts. The various constraints affecting the site in terms of conservation, the history of deforestation in the region, and the use of natural resources will be highlighted.

Chapter 7 will contain an analysis of the main statistical results of the research. Results will be interpreted both qualitatively and quantitatively, with the goal of emphasizing the successes and failures of the case study research project.

Chapter 8 will present lessons learned, recommendations, and a general conclusion, based on the results of the research, and attempt to define what might

be used in the future as recommendations drawn from lessons learned, for future ICDP implementation.

Chapter 9 will constitute a personal conclusions section.

PART ONE. THE FRAMEWORK OF ICDPs

CHAPTER I. INTERNATIONAL CONVENTIONS AND PROGRAMMES

CHAPTER II. MILLENNIUM DEVELOPMENT GOALS AND POVERTY ALLEVIATION

CHAPTER III. DEFORESTATION AND CURRENT NATIONAL POLICIES IN MADAGASCAR

CHAPTER IV. INTEGRATED CONSERVATION AND DEVELOPMENT PROJECTS WORLDWIDE AND IN MADAGASCAR

CHAPTER I

INTERNATIONAL CONVENTIONS AND PROGRAMMES

A. DEVELOPMENT IN THE CONTEXT OF ENVIRONMENT

1. The Notion and the Evolution of Development Concept
 - a. Development Theories: Historical Perspective
 - b. The “Aid Industry”
2. The Development Discourse
3. Sustainable Development
4. Postmodernism and Critical Development
5. Environment, Biodiversity and Conservation

B. FROM DEVELOPMENT THEORY AND ENVIRONMENTAL CONSIDERATION TO BIODIVERSITY-RELATED CONVENTIONS

1. Stockholm 1972
2. The UN Commission on Environment and Development (1983) and the Brundtland Report: “Our Common Future” (1987)
3. The United Nations Conference on Environment and Development (UNCED) Conference “Rio: Earth Summit 1992”

C. BIODIVERSITY-RELATED CONVENTIONS

1. The Convention on Biological Diversity (CBD)
2. The World Heritage Convention (WHC)
3. The 2010 Targets

A. DEVELOPMENT IN THE CONTEXT OF ENVIRONMENT

1. The Notion and the Evolution of Development Concept

"Sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs"
(Brundtland, 1987:9).

Theories on development - economic at the start -- predated any consideration of the environment. The first idea of development was economic. These theories were influenced by western notions of development, and developers thought their ideas could be applied to developing countries. Later on, development theories incorporated the notion of social change and the necessity of abandoning ethnocentric approaches. The environmental dimension was also added. Following important criticisms on the way development was practiced, it was realized that development could not succeed without recourse to local knowledge and the involvement of local communities. It was also noted that the most valuable lessons came from the field and from on-the-ground realities; only these lessons successfully played into global strategies and policies.

a. Development Theories: Historical Perspective

During the 20th century, some have argued that development, in part at least, has been a mechanism of the Northern countries to maintain a certain level of domination over the South, especially in the period after colonialism (now often called neo-colonialism). The main factors that could have endangered such domination were World War II, the decline of colonialism, the Cold War, the need for capitalism to find new markets, and the faith of developed countries in science and technology (Escobar 1995).

During the colonial period, local populations were seen as groups for which development was needed and necessary, but to whom development could be brought only by colonizers (Said 1978). Colonial era development was focused on the maintenance of a minimum level of health, education and nutrition, but also on economic development.

During the postcolonial era, the notion of development has been clearly linked to capitalism, colonialism and the emergence of particular European epistemologies from the eighteenth century (Gardner and Lewis 1996). In the global context of access to independence for formerly colonized countries, civil societies were keen to embrace modernization and accelerated development. This development was expressed more in terms of infrastructure (such as roads, railroads, buildings, access to electricity, etc.) than in terms of social development (such as schools, health centres, rural development, and training procedures). This change was reflected in the UN agenda: budgets and development projects were implemented to sustain Gross National Product (GNP). Development ideology was based on several issues: the accelerated growth of productive forces resulting from the diversity of production and industrialization, the use of the most productive technological models, and the major role of the state in the implementation and control of the growth process (Guichoua and Goussault 1993).

b. The “Aid Industry”

The "aid industry", the World Bank (WB), and the International Monetary Fund (IMF) were created at the Bretton Woods Conference in 1944. At this time, aid - instead of being bilateral - became multilateral, involving a large number of donors who could not interfere with the World Bank policies. However, the WB was heavily influenced by the U.S., and tended to favor centralized, democratic governments involved in a free market (Robertson in Gardner and Lewis 1984). At the same time, two important bilateral aid agencies were created: USAID (1961) and the British Overseas Development Administration (ODA) (1964). In the U.S., the Marshall Plan, or “European Recovery Programme,” led to the notion that foreign aid to developing countries could benefit both the industrialized and the developing countries.

By the late 1960s, after many former colonies had won their independence and aid programmes had become numerous, a kind of competition appeared among donor countries. Not only did the donors genuinely wish to support developing countries, they also realized that economic and political benefits could be gained from this aid.

During the 1970s and the 1980s, a new ideology emerged, which stressed the importance of "basic needs." The dominance of the industrialization and modernization discourse was replaced by a new focus on combating poverty. It was thought that development should first satisfy people's basic needs, challenging prevailing notions of development (Gardner and Lewis 1984).

In the 1980s, there were constant pressures on the World Bank to undertake environmental reforms, especially from grassroots movements (Rich 1994). These were years of the debt crisis and "structural adjustment": economic reform and growth were seen as priorities by eminent organizations such as the WB. The notion of growth involved "technological sophistication, urbanization, high levels of consumption and a range of social and cultural change" (Gardner and Lewis 1996:6). The idea of environmental preservation also came to the fore.

By the 1990s, technological progress itself was being questioned, due to increasing environmental degradation. Almost all international organizations had, by the beginning of the decade, included a division or section for the environment, and the view of academics, consultants, and even politicians had been reoriented (Black 1999). The 1990s were consequently the years of sustainable development for environmental and economic reasons (Cernea 1998). This development first included target groups such as peasants and women, and then focused more on the environment. By the mid-1990s, the benefits of modernization had proved almost non-existent, and hypotheses based on the progressive benefits of economic growth, technological change and scientific rationality had failed (Escobar 1988). Moreover, these hypotheses were linked more globally to the domination of the North over the South; development represented a world in which the North was "advanced" and the South, still in the grip of traditionalism, was not (Gardner and Lewis 1996).

2. The Development Discourse

The re-signification of nature as environment, the re-inscription of the earth into capital via the gaze of science, the reinterpretation of poverty as an effect of destroyed environments, and the new lease on management and planning

as arbiters between people and nature, all these are effects of the discursive construction of sustainable development (Escobar 1995:202).

Escobar (1988) considers development to be a discourse -- a particular mode of thinking designed to incite those countries often described as undeveloped with the desire to strive towards industrial and economic growth. Ferguson (1990) takes the same approach by saying that beyond the advantages/disadvantages of development, we should analyze a particular discourse was constructed through the lens of development projects. Ferguson is also critical of those who present development as politically neutral, whether it is or not, and of those who take only the technical dimension into account, not the social one.

Underlying this argument is the premise that people need to be aware when engaging in or subjected to a development project. This does not mean that development should be abandoned, but rather that lessons should be learned from failures, and that a better application of the development discourse to social conditions is necessary. It is also important to work in both directions, both towards and against change. The dominant discourse can be maintained, challenged and transformed at all levels: local, regional, national, and international (Escobar 1995). This dissertation attempts to make a contribution by analyzing how the development discourse can have an impact on the implementation of development activities (see Chapter Eight and Nine). It has particularly insisted on the gap that exists between these development theories and applied development, especially relevant are social considerations and the necessity for local populations to have a lead in their own development.

3. Sustainable Development

What makes Third World development both an interesting and an immensely difficult field is that all facts of life are involved. It deals with the growth and change of a civilization in all its aspects, economy, politics, technology and culture (Dudley, 1993:10).

Ideally, sustainable development includes a social, an economic, and an ecological dynamic, and aims to encourage harmony among human beings and between humans and nature (Sachs 1992). Inherent in the definition of sustainable development is the assumption that the well-being of humans should be ensured; they should have food, shelter and clothing, and a basic level of education and health care, and should be able to work and to enjoy their lives (see Chapter Two).

Two major concepts underpin sustainable development: (1) the concept of “needs,” especially essential needs for poor people, and (2) the concept of “limitations” imposed on the environment’s capacity to answer the actual and future needs of populations (Brundtland 1987). Resources are considered sustainable if rhythms of extraction do not exceed regeneration capacity. When species disappear, it is forever, so sustainable development strongly implies species conservation.

If sustainable development, when linked to conservation, incorporates the concept of sustainable use, then it should also embody the idea of human use (Brandon, Redford, and Sanderson 1998). In the specific context of the 1980s, the process of sustainable development required the following elements:

“a political system that secures effective citizen participation in decision-making; an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis; a social system that provides for solutions for the tensions arising from disharmonious development; a production system that respects the obligation to preserve the ecological base for development; a technological system that can search continuously for new solutions; an international system that fosters sustainable patterns of trade and finance, and an administrative system that is flexible and has the capacity for self-correction” (Brundtland 1987:65).

Developing countries have increasingly tried to attract the attention of the international community to their resource scarcities. Environment, like development, has been progressively transformed into a business, the "aid industry," discussed above. In this business, developing countries are dependent on funds allocated through assistance

or loans, and have no choice but to enter into a process of production for the global economy, jeopardizing their own resources. Numerous environmentalists believe that the process of environmental degradation in the Southern countries is so intense that it will rapidly lead to a non-sustainable environment, and therefore will endanger these countries' populations.

The research on which this dissertation is based focuses on the first major concept inherent in the definition of "sustainable," the concept of needs. Indeed, due to time constraints, the case study project's activities focused on providing immediate or short-term benefits to local populations. The analysis of these results produced findings in which I am confident, while the analysis of resources limitations could not produce definitive findings because of the requirement for a much longer assessment period.

4. Postmodernism and Critical Development

The concept of development itself shares certain similarities with cultural anthropology. Historically, and especially during colonial times, both projects have been marked by the domination of the North over the South.

Both have also faced a crisis in recent years, the postmodern crisis. As applied anthropologists have become more involved in development projects, they are still struggling to formulate a theory or theories around which they will be able to frame their field researches (Barry 2000). The debates around postmodernism occurred during the '80s and early '90s. Postmodernists have often criticized what was called "progress," as well as the Western values that are associated with it. Instead of thinking about modernity as the only solution for progress, postmodernists suggest other alternatives to economic development and organization (Barry 2000:168). Postmodernists do not consider the industrialized countries "better" or "more advanced" than developing ones.

Postmodernism also takes a social approach to the environment, incorporating the idea that "nature" and "environment" are in fact social constructions that are brought into the discourse of development. For post-modernism, the concept of "nature" has been reduced, with modernity, to the material exploitation of nature. Nature is simply seen as

"a collection of resources, determined by human considerations" (Barry 2000). What "nature" and "environment" are and mean vary from culture to culture, group to group, and historical era to historical era. Postmodernism additionally incorporates the idea that domination over nature also implies domination over humans, and control imposed on the South by the North.

Postmodernism embraces diversity against the notion of a universal set of standards, values and practices that tend to standardize humans in the world. It goes beyond the values of the Western world, and includes popular, ethnic, and non-Western cultures (Kottak 1998).

Postmodernism, applied to development, has been criticized (Crewe and Harrison 2000), for two main reasons. First, as an anti-political theory, it does not propose any solutions, yet politics are an essential component to decision-making; and second, postmodernism is more a discourse than a practice. Indeed, post-modernism insists on the discourse, such as words, narratives and texts, and is often silent on material conditions, especially regarding poverty (Crewe and Harrison 2000).

These ideas are embedded in in the concept of critical development. "The important point to raise is that in analyzing environmental issues one must be aware of the different actors, claims, types of knowledge, communication and cultural contexts in which these problems are articulated, contested, presented and represented" (Barry 2000:171).

Socio-anthropological approaches are not free of the Western context in which they have been drawn either, and therefore cannot be separated from the political, economic and social circumstances of occidental countries, nor can they be separated from the problems these countries have experienced and their relationships with the developing world. This means that for any development project advanced by Westerners, this connection to the North is still present. This connection might influence the way projects are designed, and the way development is applied in the field. If this influence is important when discussing the notion of development, it is also important to understand the perception of environment, biodiversity, and conservation by local people.

In opposition to postmodernism, critical development theory does not simply reject development altogether, but assesses both the positive and negative effects of development. It also advocates for social change to be included, in addition to the economic component of development.

In recent years, the concept of development has been rethought with more awareness of several issues, such as culture, environment and gender, and above all, the effects of globalization. Development is not perceived as negative, but field experiences are assessed in order to apply a development that is realistic. In this sense, critical development tries to analyze the difference between what exists and what can be theorized. It questions the fact that development, in theory and in practice, is influenced by Western notions rather than being a natural process. In practice, this perspective affects the design, implementation and evaluation of development programmes and projects, whether programmes and projects should be influenced by both local and global realities.

Critical development therefore assumes that development applied in the context of local situations differs from what is developed in global theories (Mosse 2005). Frequently, what succeeded locally cannot be expanded to a larger area or to other countries; therefore, it is difficult to develop a global theory about development (Ferguson 2006 and Escobar 2008). Another problem related to applied development is the fact that results obtained in the field cannot always be transformed into national or more global policies (Mosse 2005).

However, the critical censure of critical development theory remains that development theories are driven by Western domination and neocolonialist ideas. Development theories do not take into account the local perception of the environment; neither do they include traditional knowledge and the involvement of local communities. Developers tend to have what they consider to be universal solutions, but local communities should be the innovators and instigators of changes (Chambers 1990).

For Cernea (1998), beyond economic development, it is important to take into consideration the social structure, the cultural models, and the needs of local populations.

Cernea also recognizes that development implies multiple actors and multiple techniques. Li (2007) also notes that these different actors and institutions have continuous changing identities, meaning that development situations are constantly changing.

These different situations created in the frame of natural resources conservation and development are well-depicted in *Friction* (Tsing 2005). The author states that the control over resources brings a large palette of local and global actors all of whom have different views on how these resources should be managed (environmentalists, scientists, business people, representatives of UN agencies, local traditional chiefs) who all have different views on how these resources should be managed. Tsing (2005) acknowledges the fact that local ideas may contradict one another, but that ultimately such situations produce positive outcomes – in Tsing’s case, a positive outcome in the way an Indonesian forest is at last recognized and discussed.

Agrawal’s (2005) research centers on how political decentralization impacts the way people interact with their environment. He describes how Indian communities first resisted the environmental initiatives during colonialism, only later becoming more conservationist and more respectful of their environment. This change of behaviors was positively influenced by the interdependencies of governmental power, institutions, and traditional knowledge.

Scott (1998) criticizes the use of modern science as not always adequate for the local context. He denounces the fact that global development theories oversimplify specific and complex local contexts and lead to failures of projects. He also criticizes the fact that global policies are usually imposed on local inhabitants.

In some cases, development can be harmful to locals when it fails to include traditional knowledge, as well as the values of local communities. Mistakes perpetrated in the name of misguided development have led to the appearance of conflicts between development actors and local communities, which acquire stronger self-identity and mobilize themselves against the development that is imposed to them.

The World Bank (WB) has been very much involved in environment and development considerations. However, the WB's approach, which tries to combine economic development and environmental conservation, has recently been criticized. The WB is an arm of the UN, but its financial domination separates it from other UN agencies. The WB has its own consultants most of whom are economists and only rarely anthropologists, and the WB's actions rely more on economic theory than real experience in the field. The WB has also been criticized for its "neocolonialist" approach, which is often in discordance with local considerations (Goldman 2006).

The present research was undertaken with a critical development perspective. It assumes that development activities did not have to be taken from global programmes, but should instead be based on local needs and potentials. The research is also based on the belief that a development theory, or development policies, should be evaluated in light of results obtained in the field.

5. Environment, Biodiversity and Conservation

The environment, as it is represented in international conventions and texts, is globally perceived to serve economic and political interests, but it is not always perceived as a "physical" concept. For many, the notion of environment is embedded in a set of relationships between physical space, natural resources, and changing economic forces (Redclift 1987:79); it is not only a notion but also a process.

Additionally, the environment is typically seen as a place that is inhabited, and therefore humanly managed. The concept of environmental management, too, is problematic: it is often described in political and economic terms. All this means that care must be taken when using the term "the environment." It is important to define the term in the appropriate context, whether international or local.

The 1990s has been called the decade of biodiversity as the concept of biodiversity was reinforced and discussed, and the economic value of species increased. Species were no longer seen simply in terms of resources, but more of a value to be exploited through biotechnology, and represent capital (see Chapter Two). In this

perspective, indigenous people are also recognized as the owners of their territories, as long as they protect these values or this "capital" (Escobar 1995). After the U.N., the first agency to have considered the importance of biological diversity, and to have invested funds for its protection, was USAID, with its 1986 allocation for environmental protection of \$US 2.5 million (Brundtland 1987).

"Much wildlife conservation is based on a dualistic view of nature and society, according to which nature is a sphere that should be free from human resource appropriation" (Knight 2000:11).

This "preservationism" view sees local populations as obstacles to be removed from protected areas to ensure the protection of wildlife. Newer ideas, often described as "conservation", include the "recognition of indigenous rights, consultation, co-management, and indigenous management" (Stevens 1997). (Not all environmentalists have been converted to this approach.). Conservation includes different levels of resource management, from prohibitive of virtually all human activity to accommodating of genuinely sustainable human activity (Ishwaran 1998). Conservation groups, based on local people's interest, have frequently opposed the concepts of the old conservation and of total environmental preservation that forbids all human use. Notions of "co-management," "participatory conservation" or "community-based management" are based on the reality that the participation of local populations improves conservation efforts considerably, because participants tend to become committed to conservation activities. Moreover, when people concluded that wildlife is useful to them, they will conserve it.

The contemporary conservationist view is critical to the design of projects, but conservationists hold that protected areas cannot be the only cornerstone of sustainable activities. They take a view that focuses on biodiversity protection, and believe that sociologists and agronomists can also be of important help in conservation decisions (Brandon 1998). In this view, the best approach to such interlinked problems is multidisciplinary.

McNeely (1995:9) sees the need for a multidisciplinary approach as one of the "formidable challenges" facing the "modern approach to protected management," which

involves "partnerships with local human communities." He challenges the notion that "many protected area staff believe that the cooperative approach could ultimately reduce the quality of the protected area, and that strong legislation supported by vigorous law enforcement is the best option for long-term conservation."

In some cases, development efforts have actually increased environmental degradation. The example of Costa Rica which has long benefited from considerable international assistance is illustrative. However, Costa Rica also has the highest rate of deforestation on earth, averaging four percent annually during the 1980s. By 1985, 25 percent of Costa Rica's forest reserves had been depleted (Rich 1994). At the same time, the country was carrying a large debt, with most of its borrowing for debt service. Subjected to structural adjustment imposed by the WB/IMF, Costa Rica was forced to cut its budget -- especially funds allocated for national park services, thus creating even more poverty. The consequent economic pressure induced Costa Ricans to live where resources are still available, such as forests, therefore creating even more pressure on the environment (Rich, 1994:278).

B. FROM DEVELOPMENT THEORY AND ENVIRONMENTAL CONSIDERATIONS TO BIODIVERSITY-RELATED CONVENTIONS

1. Stockholm 1972

Stockholm 1972, also known as the Conference on Human Environment, was held the same year as the 17th session of the UNESCO General Conference. These two conferences provided the beginnings of two United Nations (UN) programmes: the United Nations Environment Programme (UNEP) and the Man and Biosphere Programme (MAB), as well as the World Heritage Convention.

The Stockholm Conference highlighted for the first time that damage to humankind and the environment was possible. This was also the first time that conservation and the sustainable use of environmental resources were discussed in conjunction with each other. Participants at Stockholm suggested that in many countries, environmental destruction was a consequence of underdevelopment, and linked this

degradation to the fact that millions of people existed below minimal standards of living (\$US 1 per day) and were deprived of food, clothing, appropriate housing and educational opportunities. A perceived population explosion was also considered to be a major challenge to the preservation of the environment, with the concept of “limits of economic growth” and the fact that economic growth should be stabilized and made sustainable for humanity (Mayr 2008).

An important outcome of the Stockholm Conference was the definition of various principles for the preservation of an environment that includes people. The Final Declaration stated: “our species is both the product and architect of its own environment, which provides it with the opportunity to grow intellectually, morally, socially and spiritually” (Mayr 2008).

For the UNESCO conference, representatives of the participating governments expressed a need to implement a convention that would encompass the notion of global heritage, common to all countries. They also discussed the necessity of implementing a tool that would allow the identification of sites of exceptional value and of preparing a legal framework to ensure the protection of such sites.

As a follow-up to the Stockholm and UNESCO conferences, other biodiversity-related conventions, frameworks and conferences were designed and organized (see section 3, below).

2. The UN Commission on Environment and Development (1983) and the Brundtland Report: “Our Common Future” (1987)

“Our Common Future” (1983), or the Brundtland report (see below), stated that the time has come to unify economy and ecology. Governments and people around the world would assume the responsibility not only for environmental degradation, but also for the political dimension that causes this degradation.

The UN Commission on Environment and Development was created in 1983 by the UN General Assembly to respond to the crucial necessity to identify environmental problems and to link environmental concerns with development concerns. The

identification of these problems and linkages was revealed to have been missing in previous years, especially in developing countries. The Commission was supervised by Gro Harlem Brundtland, Prime Minister of Norway, and acted as an independent organization to the UN. Its goals were to analyze the problems of environment and development, to formulate realistic propositions to resolve them, and to ensure that humanity's progress would be maintained by development that does not threaten natural resources. The idea was not to focus, as before, on the effects of environmental degradation, but rather on the causes of this degradation (Redclift 1987).

The originality of this Commission was the fact that experts from different disciplines tried to work together to form a consensus. The Commission included a variety of countries from North and South, and its members were nearly independent from their government's decisions. It was the first time that problems were analysed using such a global and integrated approach. The new strategy aimed at encouraging industrialized countries to donate funds to benefit the environment, both in their own and in developing countries, based on the awareness that all must take responsibility for environmental degradation.

The Brundtland report resulted from the work of the Commission. It pointed out difficult and crucial problems related to the environment, while side-stepping the political dimension. At this time, no one expected the industrialized or even the developing countries to follow the recommendations made by the Commission – despite its goal of managing the international environment (Redclift 1987).

The Commission also sought legal instruments, such as a universal declaration and a convention, to compel countries to comply with international rules and regulations. The commission stated that the “Our Common Future” report should be incorporated in UN programmes for sustainable development. It would then be necessary to organize an international conference, to evaluate the progress made, arrange for a follow-up, and to apply the outcomes of integrated environment and sustainable development. This “Earth Summit” conference was organized a few years later in 1992 in Rio.

3. The United Nations Conference on Environment and Development (UNCED) Conference “Rio: Earth Summit 1992”

Agenda 21, conceived for the 1992 UNCED Conference, was intended to set out principles and programmes for sustainable development and the environment. Its 800 pages can be summarized in the astonishing idea that the industrialized countries should support, through funding, programmes linked to the environment, addressing issues such as health, sanitation, conservation, education, and technical assistance. The cost of this agenda was evaluated at \$US 600 billion a year, of which the industrialized countries would to assume \$US 125 billion annually. Developing countries therefore would have to come up with \$US 475 billion annually in matching funds (Rich 1994:245). It was obvious at the time that such an ambitious agenda would not be carried out without the widespread belief that this was the cost of saving the planet.

The Rio UN-sponsored Earth Summit gained more recognition for diplomatic reasons than for concrete results. More than 118 heads of state participated in the debate; more than 30,000 individuals attended the Summit; 9,000 journalists covered the event; and more than 5,000 non-governmental organizations (NGOs) participated. NGOs, including those representing local people, however, were not included in the “official” conference. Physically, they were situated at some distance from the debate, about 30 km from the official conference, making it difficult for them to be heard. Indeed, as the Malaysian Ambassador to UNCED commented: "Rio has been about governments, not about the planet."

The Rio Conference had two principal goals: to increase the body of international environmental treaties among nation-states, and to increase foreign aid for environmental protection and management (Rich 1994). The agenda ranked the environment third in a list of international priorities, after security and economic considerations.

The outcomes of Rio were numerous in terms of international texts and conventions: the UN Framework Convention on Climate Change, the Convention on Biodiversity (CBD), the Statement of Forest Principles, the Rio Declaration, Agenda 21, social and economic development principles, the conservation and management of

resources for development, strengthening the role of major groups involved in achieving sustainable development, and ways of implementation (Reid 1995). Rio was also a starting point for follow-on conferences: on human rights (Vienna, Austria, 1993), on health, education and poverty alleviation (Copenhagen, Denmark, 1995), on racism (Durban, South Africa, 2001) and on development financing (Monterrey, Mexico, 2002).

A major criticism of Rio was that none of the problems discussed at the 1972 Stockholm Conference, seen as a preliminary meeting to Rio, were resolved. In the twenty years after Rio, not only did existing problems become even more serious, but new problems were added to the list. In the end, the developing countries were the last ones to benefit from the Rio agreements. Conflicts of interest between the North and the South, such as agreements on consumption levels, and issues surrounding population pressure, funding, technology transfers, and intellectual property rights, had not been resolved. The richest countries, following a recommendation made by the UN, made the commitment that 0.7 percent of their GNP would be committed to the protection of the environment. In 1997, this rate did not go over 0.33 percent (a 20 percent shortfall), and only five countries in Europe reached the 0.33 percent level, the others did not go over 0.27 percent.

C. BIODIVERSITY-RELATED CONVENTIONS

[Conservationists] think they created this World Heritage Site by filling out a bunch of papers and encircling this area on a map. They didn't create it. This forest and these animals wouldn't be here if we hadn't kept others out. We took care of this forest that our ancestors left us. We Karen are responsible for creating this World Heritage Site... not the conservationists" (Karen village leader, northern Thailand, in Lynch and Alcorn 1994:381).

Conventions are a means to enable governments to determine how they will allocate reduced resources for international conservation, but also to determine which activities are beneficial and which are illegal to the environment (Mc Neely 2000).

There are seven biodiversity-related conventions. The oldest are Ramsar (1971), the World Heritage Convention (WHC) (1972), and the Washington Convention (CITES) (1973). The four more recent ones are the Convention on Migratory Species (CMS) (1983), the Convention on Biological Diversity (CBD) (1992), the Framework on Climate Change (UNFCCC) (1994), and the Convention to Combat Desertification (UNCCD) (1994).

1. The Convention on Biological Diversity (CBD)

“Biological diversity” means the diversity of life on the planet, including genetic diversity, species diversity and ecosystem diversity. It therefore mainly addresses genetic resources, species and ecosystems (Chouchena-Rojas 2000).

The CBD was signed in 1992, but came into force in 1994. To date, there are 193 Parties to this convention, including the European Union. In signing the CBD, industrialized countries agreed to be committed, especially financially, to support the newly industrializing countries in the application of the CBD. Even so, the CBD has been quite controversial, and 166 countries have established their own national strategies. The parties recognize that the problem should be confronted globally, but should also include the development of national strategies and programmes. The CBD presumes that each country is responsible for its own natural resources, and therefore should develop its own national strategy, programmes and planning (European Commission).

The CBD is the best known of the conventions whose focus is the environment. It is in fact perceived by environmentalists as a general framework. The three main pillars of the CBD, all of equal importance, are: the conservation of biological diversity, the sustainable use of biological resources, and the equitable sharing of benefits derived from genetic resources.

The ultimate goal of the CBD is to preserve biodiversity while improving the living conditions of human populations through the integration of biological, ecological, social, cultural and economic considerations. The CBD is the first convention to provide a comprehensive approach to conservation and the sustainable use of biodiversity. It

recognizes that reversing biodiversity loss is subject to many underlying development conditions.

A potential problem with many conventions is that they consist of a series of articles inspired by theories of environment and development, rather than real guidelines that could be applied in the field. A second problem is different countries' differing levels of commitment to these conventions. How will countries be able to let institutions like NGOs take over some of their responsibilities? To what extent will they allow local participation? How will governments be accountable? To what extent will they be able to share power (Reid 1995)?

At the national level, biodiversity unfortunately remains a low political priority at the national level, especially in developing countries pressured by social and economic priorities. At its start, some were also concerned that the CBD would be implemented by industrialized countries to control the use of natural resources in the developing world, preventing them from using their own resources for their own social and economic development. The compromise that emerged was that industrialized countries should financially support the CBD, organize the exchange of technology, recognize the role of indigenous communities in protecting biodiversity, and promote an equitable sharing of the benefits of genetic resources (CBD 2008). The fact that natural resources were not seen as the common heritage of humankind meant that individual countries had sovereignty over their own biological resources.

In the coming decade, the CBD will have to become better incorporated into sustainable development by reinforcing national institutions, involving all stakeholders (women, the private sector, indigenous people) in the elaboration of national policies, implementing objectives after the planning phase effectively, and educating the public on environmental destruction. The CBD will also need to go beyond the establishment of new policies, and to question whether the policies already in place can be realistically applied in the field. CBD meetings can be quite discouraging; participants are often not familiar with local realities, and there is a tendency for participants to discuss semantic problems rather than environmental facts. Such meetings frustrate people working in the

field since they often fail to address real environmental concerns. The text of the CBD does not need to be improved; it simply needs to be applied in a simple straightforward way.

2. The World Heritage Convention (WHC)

“Natural heritage can be a source of pride in developing as well as in developed nations. Once pride comes, responsibility in protecting biodiversity follows, and the nation that responsibly protects biodiversity can gain credibility in international diplomacy” (Takacs (1996) quoted by Ishwaran (2004).

The World Heritage Convention was born in 1972, from the linkage between two concepts: the idea of preserving the cultural heritage of the world (at this time, the specific focus was the Temple of Abu Simbel in Egypt), and the idea of protecting the natural heritage of the planet. It “acknowledged that the evolution of social and economic life was threatening to destroy cultural and natural heritage, and that this destruction would impoverish heritage worldwide” (UNESCO 1972). UNESCO therefore appealed to the international community to ensure the protection of the cultural and natural heritage of the world (Mayr 2008).

The WH Convention is remarkable for its Outstanding Universal Value (OUV) concept, according to which the most important sites in the world, in terms of species endemism, ecosystem process, and aesthetic value, are identified. There is also the obligation that a site be well-managed, with integrity. The World Heritage Committee selects new sites for the World Heritage List among cultural and natural sites. For natural sites, advice is provided by the World Conservation Union (IUCN), as an advisory body to the WH Convention. To date, the World Heritage List includes 911 sites, including 704 cultural, 180 natural and 27 mixed sites, in 151 countries, all of which are parties to the WH Convention. The Convention is ratified by 187 State Parties.

The financial tool for the WH Convention is the WH Fund, which is provided by contributions at different levels from the State Parties to the Convention. Between 2000

and 2002, the WH Fund provided between \$US 5 million and \$US 5.5 million a year to all sites, and \$US 1 to \$US 1.5 million to natural WH sites. This is a relatively limited amount, considering the number of sites on the list. But the WH Convention is also a tool to leverage other funds from bilateral or multilateral donors or foundations around the world, such as the UN Foundation, which provided \$US 40 million to 50 million in co-financing with Conservation International between 2001 and 2007 for projects in the field. GEF also provided about \$US 250 million to WH sites between 1997 and 2000 (Ishwaran 2008).

WH sites have a high level of political exposure and political support, and have been defined as “political hotspots” (Thorsell 2005:170). The WH Convention, for example, is involved in countries with civil unrest and political turmoil. The WH Convention has also helped to give rise to new concepts and approaches to management, such as serial and transboundary sites (*i.e.*, sites that are located at the borders of several countries) -- for example, the Central Eastern Rainforest in Australia, the Rainforest of Atninanana in Madagascar, and twenty isolated atolls belonging to six different countries in the Central Pacific.

The WHC, compared to the CBD, is a more restrictive and a smaller Convention. It targets particular sites, and can therefore address problems encountered in the field in a more specific way. WHC’s ability, through the inscription on the list, is to commit a country to its conservation. The weakness of the WHC is that it remains an intergovernmental convention, and sometimes political issues eclipse technical matters.

An interesting aspect of the WHC is that it reflects the gap that still exists between industrialized and developing countries. In recent years, the WH Committee¹ sessions

¹¹ The WH Committee is composed of 21 State Parties to the Convention. 12 new members are elected every two years. A mandate usually lasts for 6 years but in order for each country to have the possibility to be represented on the Committee, Committee’s members voluntary decided to keep their position as a member for 4 years. The current 2010 Committee is composed of the following State parties: Australia, Bahrain, Barbados, Brazil, Cambodia, China, Egypt, Estonia, Ethiopia, France, Iraq, Jordan, Mali, Mexico, Nigeria, Russian Federation, South Africa, Sweden, Switzerland, Thailand, and United Arab Emirates.

have seen important and tense debates, mainly political, especially in terms of inscription on the Endangered List².

The research reflected in this thesis was designed with the WH priorities in mind. These are defined every two years during the UNESCO General Conference; an example is the promotion of the WH Convention by the identification and nomination of new WH sites for Madagascar. Activities were also defined based on existing UN programmes in Madagascar, such as the Education For All programme, and with a view to improving Millennium Development Goals (MDGs) (see next chapter).

3. The 2010 Targets

The year 2010 was identified as the year for biodiversity. In 1992, it was believed that “by 2010, a significant reduction of the current rate of biodiversity loss will happen [...] as a contribution to poverty alleviation and to benefit of all life on Earth” (Engels and Winkler 2008). UICN supported this process with its “countdown 2010.”

In 2006, the 2010 biodiversity targets were included in the UN Millennium Development Goals , as intermediate steps towards achieving the eradication of extreme poverty by 2015 (see Chapter Two). It is now realized that the 2010 targets will not be achieved by then. Environmental decision-makers now consider these targets as a part of a general dynamic process, the most important being the mainstreaming of biodiversity into national strategies and programmes.

The problem remains that the poorest countries on Earth are first affected by biodiversity loss, meaning that there will have to be a priority shift from biodiversity to poverty reduction (MacShane 2005). Despite the fact that funds were mainly used to protect natural resources, which are primarily located in developing countries, industrialized countries took advantage of the use of these natural resources, notably via

² A WH site is inscribed on the WH Endangered List when the Outstanding Universal Values for which it was inscribed are threatened. This inscription is a tool of the Convention to allow the State Party to appeal to the World Community to help saving the site. However, this inscription is often seen as a sanction by the State party.

the use of biotechnologies, without an equitable share of benefits going to the developing world. Once again, developing countries were deprived of their natural resources, while at the same time being accused of environmental degradation.

This research attempted to take advantage of the lessons learned to design and implement activities that rely on the local context and involve local participant populations in the whole project. The research took a step back from these different frameworks to try to adopt a more bottom-up approach, and also by trying to use concrete examples from the field to feed into general global concerns, especially in regards to the WHC Convention, for which more concrete applied modes are needed. This research was also conducted in collaboration with donors that did not impose specific frameworks or activities, and who agreed that the project would be constantly adapted to local circumstances.

Beyond the theoretical background, the research focused on specific indicators mainly inspired by the UN Millennium Development Goals, in order to achieve basic and specific development interventions in addition to environmental conservation.

CHAPTER II
POVERTY ALLEVIATION
AND THE UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS

A. POVERTY IN RELATION TO ENVIRONMENT

1. A Definition of Poverty
2. The Concept of Human Well-Being

B. THE UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS (MDGs)

1. The Capital of Human Society
2. Presentation of the UN MDGs
3. MDGs and Strategies for Poverty Alleviation

C. ECOSYSTEM SERVICES AND TRADE-OFFS

1. Ecosystem (Ecological) Services
2. Trade-Offs

A. POVERTY IN RELATION TO THE ENVIRONMENT

1. A Definition of Poverty

Poverty is often defined in absolute terms as the condition of people in a given country who have fallen below a specified level of income, commonly \$US1 per day or the equivalent. This national poverty level reflects a person's ability to afford a diet sufficient to meet minimal nutritional needs.

The most common definition of poverty, however, is the one adopted by the World Bank, for which there are three dimensions: lack of assets, powerlessness, and vulnerability. A lack of assets implies a lack of five types of capital: natural, human, financial, physical and social. Powerlessness is caused by social differences such as gender, inequitable access to resources, unresponsive public administrations, corruption, and inequitable legal systems. Vulnerability is based on risks resulting from economic crises, natural disasters, and social crises (Fisher *et al.* 2005:40).

Poverty is thus a multi-faceted condition involving several, usually interconnected, economic and social development components: lack of opportunities to engage in productive activities to sustain livelihoods; lack of voice and empowerment; exclusion from the decision-making process, governance systems and legal recourse; vulnerability to man-made and natural disasters, ill-health and economic shocks; and lack of capacity to promote and defend community interests (Scherl *et al.* 2004:15).

The food and fuel crises that struck in 2007 and 2009 led to an increase of about 100 million people to be trapped in poverty (IFAD 2010). In 2007, "about 200 million did not have sufficient land to provide a decent standard of living" (IFAD, 2007).

The significance of forests in poverty is widely recognized. Rural poverty is concentrated in many areas of the world's most threatened forest biodiversity, and over 90% of the world's poorest people depend on forested land for their livelihoods (World Bank 2001).

More than a billion people live within the 19 forest “biodiversity hotspots” designated by Conservation International (2009), and population growth in tropical areas is 3.1% per year, twice the world’s average growth rate (Cincotta and Engelman 2000). As many as 150 million people (12.5% of the world’s population) perceive wildlife as an important livelihood asset (Fisher *et al.* 2005); and poor people are significantly dependent “on wildlife for livelihood and food security, particularly through bushmeat” (DFID 2002:9).

Since 1961, tropical countries have lost over 500 million hectares of forest cover and deforestation continues at an alarming rate. Some 13 million hectares per year have been lost during that time (FAO 2005:13), and consumption of forest products has risen by 50% (Gardner-Outlaw and Engelman 1999 in Scherr *et al.* 2004:1). Since the location of much biodiversity is in the poorest countries, and poor are dependent on natural resources, conservation clearly has an important role to play.

On the other hand, if people living around protected areas in developing countries are often poor and marginalized, this situation may simply reflect the fact that protected lands are often located in the less agriculturally productive areas, or in remote rural regions with little access to markets, or in areas to which socially marginalized peoples have been relegated by dominant societies (Scherl *et al.* 2004:25). Forests may sustain poor people and help them survive, but degrading and converting forests to forest’s natural resource use areas may also be an important, and not always “unsustainable,” pathway out of poverty (Sayer 2005:107). Forests can be used by local people as a way out of poverty, if used appropriately. The question is whether reducing poverty will have a positive impact on the environment or, on the contrary, will lead to the end of biodiversity (Sanderson and Redford 2003).

2. The Concept of Human Well-Being

Human well-being has several key components: the basic material needs for a good life, freedom and choice, health, good social relations, and personal safety. Determinants and constituents of well-being include: security, such as the ability to live in an environmentally clean and safe shelter and the ability to resist ecological shocks and

stressors; basic necessities for a good life, such as the ability to access resources, to earn income and make a living; health, including the ability to be nourished, to avoid preventable diseases, and to have access to clean drinking water, clean air, and energy; good social relations, such as the opportunity to express aesthetic and recreational values associated with ecosystems; and the opportunity to express cultural and spiritual values associated with ecosystems (Millennium Ecosystem Assessment 2003:78).

How well-being and poverty are expressed and experienced is contextual and factual; they reflect local, social and personal factors, such as geography, ecology, age, gender and culture. In the context of environment and development, for poor people, the greatest gains in well-being will occur through more equitable and secure access to ecosystem services (MEA 2003:74), defined – based on the definition of FAO (2005) – as : “The conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life.”

B. THE UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS (MDGs)

The UN Millennium Development Goals are derived from the Millennium Declaration made in September 2000 at the Millennium Summit at the UN headquarters in New York City, U.S. (Annan 2000). At this time, and considering the poor results obtained since the Brundtland report, it was important to begin the new century by defining precise and achievable development goals and specific targets to be reached by the year 2015.

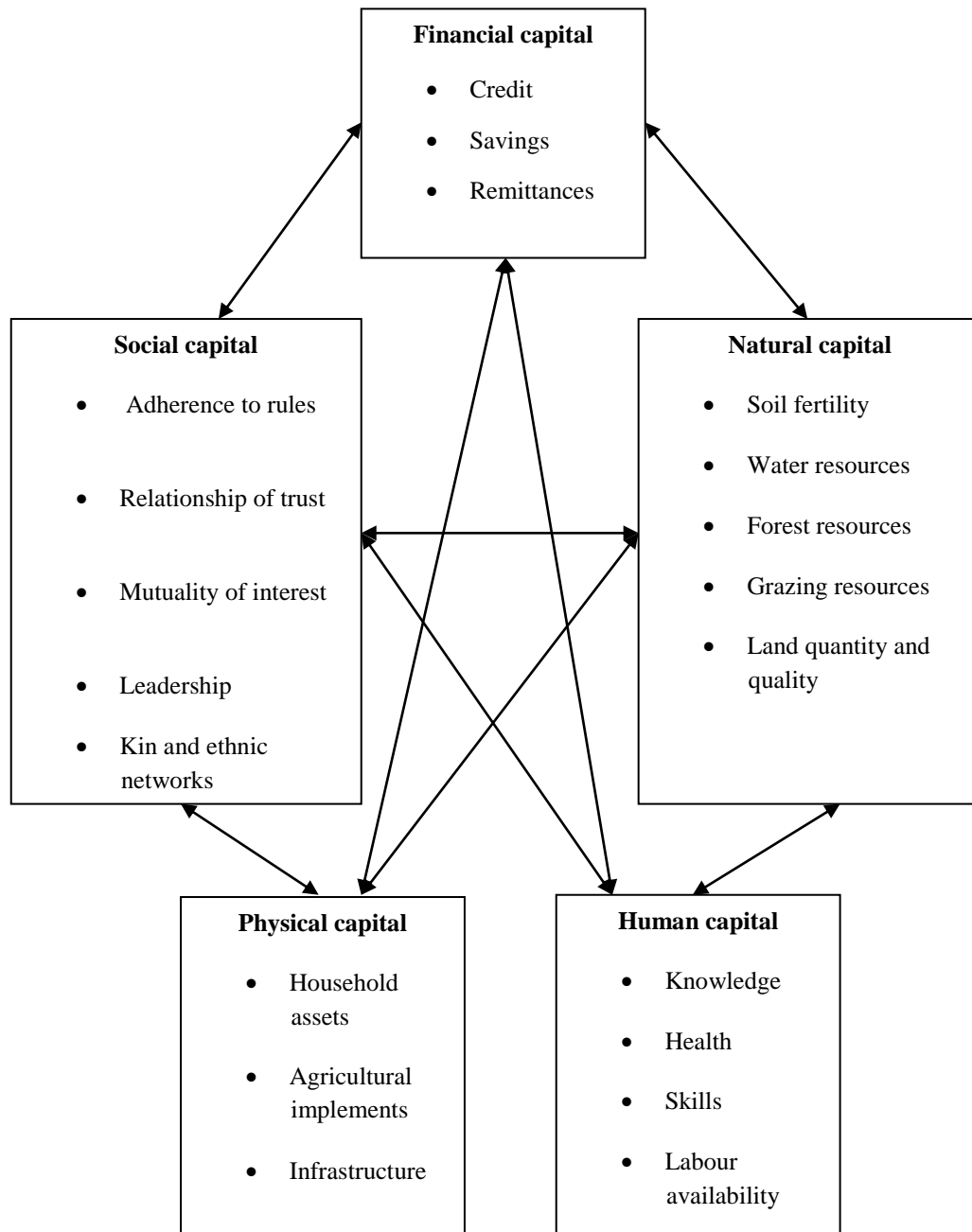
MDGs were to be the backbone of all UN activities, and all UN agencies and programmes would have to coordinate their actions to fulfill these goals. Governmental and non-governmental institutions would also use these goals to define their agendas and to optimize their chances for successes in achieving these targets.

1. The Capital of Human Society

A society's productive base is composed of five types of capital: financial, natural, human, physical and social (MEA 2003:29; Sayer and Campbell 2004:216; Fisher *et al.* 2005; Sachs 2005:40).

The different capitals are described in the Table II.1 below (Sayer 2005; Sachs 2005:244; Fisher *et Al.* 2005:45).

Table II.1: Different forms of Capital in human society (Source Sayer and Campbell (2004:216)



Natural capital exists when species are protected. It is composed of agricultural land, healthy soils, biodiversity, and well-functioning ecosystems that provide for human society. Natural capital also provides protection against natural hazards such as droughts and cyclones, and provides the conservation of ecosystems services to support crop productivity, and avoid toxic wastes in the air and water.

Financial capital – the result of improved incomes – is related to facilities and the technologies used in agriculture, industry and services. It is indicated by (for example) higher household income to invest in safer shelter, piped water, modern cooking fuels, access to doctors, improved diets, etc.

Human capital results from improved education and health care, which together contribute to the skills that individuals need to be economically productive. Contributing to human capital are preventive health measures (such as disease prevention and family planning), improved nutrition, and educational measures (such as mothers' literacy and public health awareness).

Social capital derives from the creation of strong local institutions. It includes science and technology and the promotion of physical and natural capital: fighting epidemic diseases, development of new drugs and immunizations, improved seed varieties to improve food intake, and low-cost energy sources for the household for food preparation and storage. It also includes commercial law, markets, an equitable division of labor, judicial systems, government services and policies, extension of public health services, nutrition programmes, and community participation.

When investments are made in roads, plantations, processing capacity, and related phenomena, physical capital is generated. This type of capital includes roads, power (for safer cooking), clean water and modern sanitation, airports, seaports, and telecommunications systems, all of which are critical inputs into economic productivity.

2. Presentation of the UN Millennium Development Goals (MDGs)

The interdependence of human welfare and the conservation of natural resources is now internationally recognized, and predominant in policy instruments such as CBD and MDGs (Scherl *et al.* 2004:3). MDGs constitute an operational plan in which the UN system, governments, and civil society can contribute to the fulfillment of the plan's objectives (Sachs 2005:232). MDGs and targets are set, for the most part, for 2015.

According to the UN's website (<http://www.un.org/millenniumgoals/>), the UN goals and targets are:

- “Goal 1. Eradicate extreme poverty and hunger.

Target 2015 : half the proportion of people living on less than a dollar a day and those who suffer from hunger.

- Goal 2. Achieve universal primary education.

Target 2015 : Ensure that all boys and girls complete primary school.

- Goal 3. Promote gender equality and empower women.

Target 2005 and 2015 : eliminate gender disparities in primary and secondary school education preferably by 2005, and at all levels by 2015.

- Goal 4. Reduce child mortality.

Target for 2015 : reduce by 2/3 the mortality rate among children under five.

- Goal 5. Improve maternal health.

Target for 2015 : reduce by 3/4 the ratio of women dying in childbirth.

- Goal 6. Combat HIV/AIDS, malaria and other diseases.

Target for 2015 : halt and begin to reverse the spread of HIV/AIDS and the incidence of malaria and other major diseases.

- Goal 7. Ensure environmental sustainability.

Targets : Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources; reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss; by 2015, reduce by half the proportion of people without access to safe drinking water; by 2020, achieve significant improvement in the lives of at least 100 million slum dwellers.

- Goal 8. Develop a global partnership for development.

MDGs place human development at the centre of social and economic progress in all countries. Their implementation first requires local action, local capacity and good governance.

In 2006, UN agencies evaluated the progress made on the MDGs. Some of the targets were progressing well, but most of them have yet to be realized when considering the 2015 deadline. The most difficult goals to achieve are specifically Goal 1 (poverty) and Goal 7 (environment).

The primary results of the implementation of MDGs, so far, include the following: in Asia there are 200 million fewer people below the poverty line of \$US 1 per day than there were in 1990; progress has been noted in North Africa; primary school enrollment is close to the target in Asia, Latin America, the Caribbean, North Africa and the Commonwealth of Independent States; hunger is receding everywhere, although the 2015 targets will unfortunately not be met; and there is a significant worldwide improvement in access to water. In general, problems remain numerous for Sub-Saharan Africa and for child and maternal mortality and improved sanitation. To achieve the MDGs by 2015 will take significant effort (Roe 2008:7).

A problem with the MDGs is that environment, instead of being listed as a separate goal (Goal 7), should be a cross-cutting theme. In fact, out of the 8 MDGs, only Goal 7 makes clear reference to the environment. In countries' progress reports on MDGs, fewer than 5% of countries report that they will achieve environmental sustainability by 2015. Some countries do not report at all on Goal 7, and the ones that do

report on the environmental dimension do not place the environment in the context of other MDGs (ETFRN:8).

The fact that the environment is not sufficiently embedded in the MDGs is a major weakness. Since sustainable development relies on three pillars (economy, society and environment), it is important to acknowledge the environment in all MDGs, and also to report on environmental impacts. Nevertheless, the MDGs have unprecedented political backing; never before have such concrete goals been endorsed by rich and poor countries alike, and never before have the UN, WB, IMF and other international organizations come together to work toward a common development agenda.

In section A-1, above, it was noted that there is a strong interaction between poverty and environment, and achieving the MDGs requires an integrated approach to conservation and development that recognizes both healthy ecosystems and basic human needs. Achieving the MDGs will also require innovative and diverse efforts across disciplines and approaches, and more environmentally sustainable economic development.

3. MDGs and Strategies for Poverty Alleviation

The MDGs set the eradication of extreme poverty as a primary goal. Individual countries' Poverty Reduction Strategies and Programmes (PRSP) have the potential to improve interactions between conservation and poverty reduction.

Conservationists have not always collected data on the economic value, to the poor, of renewable natural resources, and heretofore, conservation and natural resource management have not been mainstreamed in poverty reduction strategies. Indeed, some conservation agencies have treated poverty reduction as beyond their responsibility. At times, conservation efforts have actually contributed to local poverty, by denying poor people control over access to natural resources and jeopardizing their livelihoods (Fisher *et al.* 2005:xii).

Conservation has, however, also contributed to human well-being, by safeguarding global public goods, such as drinking water, and by maintaining ecosystem

services at the regional and national levels. At the same time, of course, poverty often has negative effects on conservation efforts – a premise that is somewhat easier to demonstrate than the premise that conservation has been generally beneficial to human populations.

To design management systems that permit certain subsistence activities in some categories of protected areas could provide a safety net for poverty reduction strategies (Scherl *et al.*, 2004:vii). Excluding protected areas as potential pockets of poverty, then it is important to take into account history, geography, national economic status, and national development strategies. The conclusion reached by most concerned development specialists is that it is important to mainstream environment into development, and its framework and strategies, including poverty reduction strategies, thus creating a more coordinated approach to poverty-environmental challenges.

Tanzania may provide the best known example of this notion. The country's first poverty-reduction plan did not include environmental sustainability as a factor of growth. The second plan included factors such as the use of natural resources, supply of drinking water, the need for irrigation system, environmental disasters (such as droughts and floods), and also governance considerations such as access, rights and control over natural resources. The second plan proved to be more successful (Fisher *et al.* 2005:114).

C. ECOSYSTEM SERVICES AND TRADE-OFFS

The Millennium Ecosystem Assessment (MEA) is a four-year international programme designed to meet the needs of decision-makers for scientific information on ecosystem change and human well-being. The MEA focuses on how changes in ecosystem services have affected human well-being, what their impacts in future decades will be, and what kinds of solutions can be found at the local, national or global levels to improve ecosystem management and to contribute to human well-being and poverty alleviation (MEA 2003:x).

1. Ecosystem Services

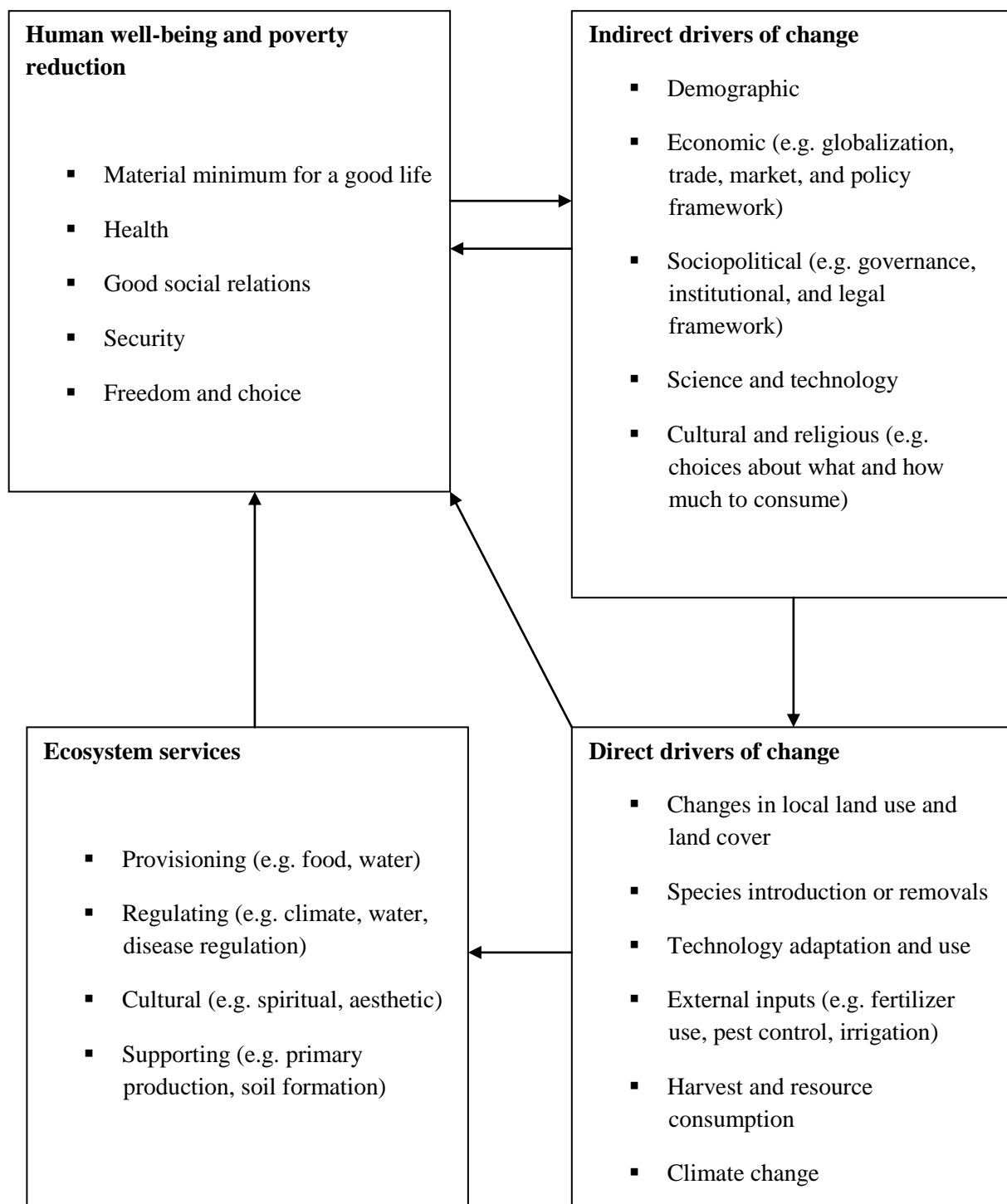
Ecosystem services were defined as “The conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life.” Examples include provision of clean water, maintenance of liveable climates (carbon sequestration), pollination of crops and native vegetation, and fulfilment of people's cultural, spiritual, intellectual needs.

Ecosystem services include benefits for the poor (MEA, 2003:78; Scherl *et al.* 2004:20). Supporting services are services necessary for the production of all other ecosystem services (such as soil formation, nutrient cycling, primary production). Provisioning services produce necessities obtained from ecosystems (such as food, fresh water, fuel wood, fiber, medicines, and genetic resources). Regulating services are benefits obtained from the regulation of ecosystem processes (such as climate regulation, watershed protection, water regulation, water purification, coastal protection, carbon sequestration, pollination, and disease regulation). And cultural services are nonmaterial benefits obtained from ecosystems (such as spiritual and religious values, recreation and ecotourism, education, and cultural heritage).

The benefit for poverty alleviation is made evident by new income-generating activities for marginalized communities, exemplified by, *e.g.*, improved nutrition, safe drinking water, or a reduced risk of floods. Instead of blaming communities as consumers of ecosystem services, it is important to recognize that they are both consumers and suppliers.

Functioning institutions are vital to enable equitable access to ecosystem services. While many such institutions perform admirably, some do fail or remain undeveloped because of powerful individuals or groups. Ideally, entities that organize the distribution of goods and services should empower minorities (MEA 2003:72).

Box 2.1.: Millennium Ecosystem Assessment Conceptual Framework (MEA 2003:9). Changes in factors that indirectly affect ecosystems can lead to changes in factors directly affecting ecosystems. The resulting changes in ecosystem cause the ecosystem services to change and thereby affect human well-being.



The conservation of ecosystem services implies the conservation of species for future generations. And conservation aims to also protect direct benefits (food, water, medicine, fuel, cultural and spiritual meanings). In compensation, trade-offs must be found for the local people.

2. Trade-Offs

“One of the anomalies of modern ecology is that it is the creation of two groups, each of which seems barely aware of the existence of the other. The one studies the human community almost as if it were a separate entity, and calls its findings sociology, economics and history. The other studies the plant and animal community and comfortably relegates the hodge-podge of political to the liberal arts. The inevitable fusion of the two lines of thought will, perhaps, constitute the outstanding advance of the present century.”

Aldo Leopold (1935), quoted by Sayer and Campbell (2004:3)

It is often said that local communities should not bear the costs of either conservation or development. In the case of conservation, activities to alleviate poverty are also ethical and practical reasons for addressing the social justice dimensions of these actions (Fisher *et al.* 2005:xi). It is important to make agencies in protected areas aware of poverty issues so that their activities do not contribute to greater poverty (Scherl *et al.*, 2004). In the case of protected areas, resettlement of people also contributes to the increase in poverty.

Alternatively, conservation can never be the solution to extreme poverty, but at least it can help find equitable and ecologically sustainable solutions. Conservation approaches should be socially just; they should avoid or mitigate the “actual opportunity costs” (Scherl *et al.* 2004:103) of conservation to the poor. And addressing poverty can often lead to improved conservation outcomes. In many cases, lands have long been managed by local people, and conservationists should take this knowledge into account in the implementation of activities. NGOs should also question themselves about who is really benefiting from conservation, and ensure that attempts at conservation will not be at the expense of local communities. Trade-offs are therefore a part of a process of

political negotiation between implementers and receivers. Issues related to the environment, and the implementation of protected areas, for example, are a part of the political ecology, for which politics and economics, as well as social factors, should be taken into account. Before implementing rules and regulations, it is important to define whether or not communities actions, before interventions have been implemented, are harmful to the environment. It is equally important to assess whether or not communities' contributions will be an asset in conserving specific areas, and the impact of interventions on these communities (Sutton 2004) .

Stewardship of natural resources, upon which so many rural communities depend, is a vital aspect of strengthening the “resilience of the poor” (Sanderson and Redford 2003). Indeed, the root causes of biodiversity loss are frequently not physical, but rather political, social or economic, and these different causes occur at different levels. For effective biodiversity conservation, therefore, it is necessary to focus action in the frame of these levels and locations (Fisher *et al.* 2005:81). Access rights of poor people to the forest are generally open and informal, but in the case of external interests, conflicts might erupt between on-site users. When powerful actors from outside -- such as logging or mining firms, commercial farmers or ranchers -- exploit the forest, poor “forest-dwellers’ benefits” are endangered (Sayer 2005:108).

Some question why conservation should address poverty reduction, and why development professionals must address the natural resource base on which many people depend (Fisher *et al.* 2005). The answer seems self-evident, if development agencies cannot act upon poverty, then how would conservation agencies be able to do so? A major consideration is that biodiversity measures might have negative impacts on poverty alleviation (Redford and Sanderson 2003). The upshot is that divisions remain between the conservation and development communities. Clearly, needed economic development should not be undertaken at the expense of environmental sustainability, but conserving biodiversity becomes a challenge when demand for development is increasingly urgent (Scherl *et al.* 2004: viii).

In summary, poverty alleviation, considering the limited funds allocated to biodiversity, is not considered a priority for conservation agencies, and vice-versa; biodiversity is not considered to be an important subject for development. Although poverty reduction is one pillar of conservation success, poverty alleviation that ignores the environment will be undermined. Ultimately, the argument about whether conservation is the means through which to achieve poverty reduction, or poverty reduction is the means through which to achieve conservation, is moot. Both are desirable objectives (Fisher *et al.* 2005:15). The divisions that once separated the conservation and development communities are slowly breaking down, and poverty reduction should be the focus of a common attack. Conservation and development had historically different trajectories, but trade-offs are now inevitable (Ishwaran 2005). Today, conservation and development are compatible and mutually supporting goals.

When trade-offs are necessary, one must be careful that they do not disadvantage either the environment or development. Moreover, as the following chapters will show, local communities are not the only source of environmental degradation; other threats, such as timber and mining concessions, may be much more destructive of the environment, on a much larger scale.

Trade-offs between conservation and local development also depend on whether or not local participation is a way to help or an end in itself. For example, do local people choose short-term economic gains over long-term conservation? This example shows that a continuum, from poverty reduction as a tool for conservation to conservation as a tool to poverty reduction approaches, is desirable. Negotiated compromises are often the only really effective management strategy. The ecosystem approach with varied stakeholders should also be encouraged, together with the intervention of the private sector, which admittedly sometimes conflicts with environmental objectives and is responsible for some environmental degradation. The paradox here is that so much environmental funding comes from the private sector.

To ensure trade-offs and successful compromises, three types of interventions are necessary: communication to explain the link that exists between the environment and

poverty (more data are also needed); impact studies and indicators to create databases on integrated conservation and development; and the engagement of all stakeholders in capacity building that integrates the two dimensions.

Some brief examples, provided by Roe (2004:29), will illustrate the interdependence between the two dimensions:

Example 1: Previously in Lake Malawi, a freshwater lake, schistosomiasis did not exist. However, overfishing caused a reduction in the population of fish which were predators of snails, themselves vectors for the schistosomiasis infection. As a result of this change in the ecosystem, the infection spread to the surrounding communities.

Example 2: In Uganda, changes in biodiversity induced the multiplication of breeding sites of the tsetse fly in coffee plantations that were abandoned after political turmoil.

Example 3: In Vietnam, mangrove rehabilitation contributed to increased resilience against cyclones, and also fostered income-generating activities dependent on sales of crab, shrimp, and shellfish.

Other innovative issues also need to be foreseen for the future, such as direct payments to farmers (Ferraro 2002) for maintaining ecosystem services, which would constitute economic incentives and contribute toward the maintenance of biodiversity while reducing poverty. Additional examples include strengthened global frameworks and scaled-up successful local initiatives. Most importantly, developing countries need to set, measure and achieve MDGs, including supporting environmental sustainability and poverty reduction. Environmental indicators, targets and interventions with development strategies need to be coordinated, especially poverty reduction strategies; the role of civil society in mainstreaming environment in poverty alleviation needs to be expanded; and farmers should be encouraged to produce environment-friendly products (Roe 2004).

It will be also important to move from the restrictive concept of conservation towards a landscape management approach; to revise the right to access and to use natural resources for local people; and to support local governance and decision-making. Also vital are reinforcing the role of MDGs and then monitoring and evaluating them,

and understanding that the best possible outcomes are preferable to unachievable perfect outcomes (Fisher *et al.* 2005). These ways forward should find their application in the implementation of the second generation Integrated Conservation and Development Projects.

As noted, this dissertation was inspired by the UN MDGs' implementation, but initially it was not so obvious that a development component should be included in what was initially conceived of a conservation project. Even today, some years after my research began, conservation and development are often thought of as two clearly divided components in the mind of implementers. For implementers, poverty is a general and complex problem which most people, beside theoreticians, are reluctant to tackle. The situation becomes even more complex for implementers when poverty must be associated with environmental notions. This is why the research reflected here was based on the general principle that both the environment and development would be interconnected in the design, implementation and evaluation of the research project.

CHAPTER III

DEFORESTATION AND CURRENT NATIONAL POLICIES IN MADAGASCAR

A. DEFORESTATION IN MADAGASCAR

1. Historical Background
2. The Discourse of Deforestation
3. New Threats to the Malagasy Forest
4. The Malagasy Forest: A Symbol of Exclusion and Repression
5. Relations between ICDPs and National Institutions
6. Questionable Data and the Deforestation Discourse

B. MADAGASCAR'S RECENT RESPONSE TO DEFORESTATION

1. The National Environmental Plan (NEAP)
2. NEAP's Actors
3. The Management of Natural Resources by Local Communities
 - a. Gestion Locale Sécurisée (GELOSE)
 - b. Gestion Contractualisée des Forêts (GCF)
4. The 2003 Durban Declaration
5. The Price of Conservation in Madagascar

A. DEFORESTATION IN MADAGASCAR

Deforestation and fires have been key concerns for Madagascar for centuries. Indeed, since the island is largely recognized for the richness of its natural environment and its high proportion of rural dwellers, forests are at the center of all concerns. The forest, *ala* in Malagasy, considered both sacred and infinite, is the place to find one's subsistence and to bury kin. It is also the economic and political object of the farmer's underlying resistance to foreign invaders. Above all, the forest embodies, all at once, the social, cultural, political, and environmental interests of the Malagasy people. As such, it is as much a key cultural symbol as a natural resource, and has for many years stood at the centre of all environmental and conservation issues.

Not only does the Malagasy forest shelter some of the most exceptional and valuable biodiversity in the world, it is also the place where, historically, Malagasy people resorted to avoid conflict. It has thus become a powerful symbol of resistance, but it also compels the interest of the international community. Access to its natural resources has been the source of conflict between these two groups, which hold different ideas about its appropriate management. For outsiders, the Malagasy forest should be kept intact, but for Malagasy people, it should be opened to free access. How were these different views historically shaped and amplified by the deforestation discourse, and what kinds of activities should now be undertaken in order to reconcile them, in order to find the right balance between conservation and sustainable livelihoods for the communities of people surrounding the forest?

1. Historical Background

King Andrinampoinimerina (1800s) was the first to establish rules and regulations concerning the Malagasy forest. At the time of the expansion of the Merina Kingdom, he was conscious of its value, and declared it "the property of the Kingdom" (Kull 2004; Rabesahala 2004). With this declaration, farmers who were dependant on the forest for natural resources were obliged to obtain authorization to exploit it. The forest was then became politicized. It was initially used as a screen between the Kingdom and local

farmers in the surrounding areas. However, farmers who broke the law were rarely sanctioned. Eventually the forest became an area of refuge for people who were evading the rules.

This scenario of tense and conflicting relationships between farmers living close to the forest and other Malagasy people living outside it repeated itself during the following decades and centuries; while the actors changed from time to time, the same patterns of tension and conflict arose repeatedly (Jarosz 1993; Serpentié 2007; Harper 2002; McConnell 2002; Rabesahala Horning 2004, Hanson 2007). Throughout, Malagasy farmers remained the object of focus with regard to deforestation problems.

French colonization succeeded the Merina Kingdom in 1895. This era, which lasted until Madagascar gained independence in 1960, was characterized by alternating periods of strict enforcement of the forest protection rules and flexibility towards these rules (Jarosz 1996, Kull 2004). In any case, the main interest in forest conservation during this period was economic. The French recognized the forest's value in terms of timber profits, and as in many places in Africa at the same time, they established rules to exploit this natural resource, for the profit of both the French State and its expatriates (Jarosz 1996; Kull 2004).

Kull (2004), in *Island of Fire*, gives an overview of the regulations that existed during the colonial period. The French administration tried to forbid fires on the whole island but, at the same time, the colonial inhabitants -- either French or those close to the French administration -- were granted authorization to exploit the forest and to settle plantations all over the island, in particular in the eastern rainforests, while access was denied to the Malagasy population. It was apparent to Malagasy people that the restrictions that governed them were not applicable to the French people.

The French, for their part, working in different regions, were well aware that fires were being used by local people to manage their environment. Kull (2004) quotes many Frenchmen as stating that fires were necessary in order to regenerate the soil and revive cultivation. The French also noted that farmers used fire to prepare the land for the cultivation. This slash-and-burn method, or *tavy*, in which the forest is cut and the land

burned to create fertile rice fields; fallow periods following each two or three years of fertility were used for the cultivation of other crops, such as cassavas, bananas, and coffee.

A second procedure used outside the forest, was the intentional setting of grass fires to prepare the land for cattle. Collectively these activities show that Malagasy farmers already had a system to maintain and manage the environment, using specific methods recognized for the benefits they brought to the everyday lives of the people. Fires are usually used during specific periods of the year, to meet the agricultural calendar. However, when fires are used around protected areas, they are seen as threats to the environment, and farmers who engaged in this practice were sanctioned. Prohibiting these fires became a symbol of repression, and farmers are blamed for harming the environment (see “The Discourse of Deforestation” below).

At the same time, especially in the eastern rainforest, another environmental threat was created by French plantations devoted to cash crops, such as coffee. The landscape of the eastern rainforest is still marked by this exploitation, as well as by timber exploitation. Today, of course, the country is not organized economically as it was in colonial times; when there were developed markets, and products could be sold not only in national markets but also abroad. Today’s farmers continue to produce coffee, but are unable to make a profit from it. Sometimes the price of a kilo of coffee is equal to the price of a kilo of rice, making its cultivation less rewarding than in colonial times. The creation of these French plantations was responsible for one of the two periods of severe deforestation, the second took place during the Marxist period in the 1970s (Serpentié 2007).

After independence in 1960, Madagascar adopted Marxism implying that the forest was considered to be a public good and “the property of the masses” (Rabesahala 2004). People exploited the forest intensively, and the number and extent of fires, for *tavy* and other purposes, increased proportionately. The country also became more isolated from the international community.

In the 1980s, with the end of the Marxist period and after the country had become bankrupt, Madagascar reopened its frontiers (Kull 2004). Along with this came, at the same time, the intervention of international economic and financial agencies such as the International Monetary Fund (IMF) and the World Bank (WB). The country was in an advanced state of poverty, with the Government incapable of managing its budget and its debt. A period of structural adjustment was therefore begun, during which Madagascar opened up to the international world and its organizations -- especially conservation organizations.

Meanwhile, the country was required, by the IMF and the WB, to make a concerted effort to revitalize its economy (Kull 2004). Foreigners started studies and programmes, based on scientific data, about the incredible richness of Madagascar's natural resources, and the major environmental organizations became increasingly interested in the country's forests. Thus, as had happened in the past, the forest and its economic value attracted widespread interest, no doubt intensified by the emergence, at about the same time, of the environment as a major world-wide concern (see chapter One). Many environmental conventions, programmes and projects came into being as Madagascar prepared to join the environmental agenda.

2. The Discourse of Deforestation

Definitions of forest are socially and politically constructed to the advantage of powerful people (Jarosz 1996:148).

The discourse of deforestation in Madagascar, originally linked with the conservation programmes that sprang up in the 1980s, was later challenged. It is now realized that definitions of deforestation adopted by conservation projects since the 1990s are a reminder of French colonial discourse in the 1900s.

This old discourse is being recycled to organize current conservation campaigns involving local farmers. In this discourse, farmers – the target of conservation programs - continue to be blamed for forest destruction. Almost all documents and proposals written for conservation purposes in Madagascar start with the same two phrases: “the Malagasy

forest is disappearing at an alarming rate because of the negative effect of the traditional practices of local people,” and “Madagascar is one of the poorest countries in the world, with a high rate of population increase that contributes to deforestation.” In two sentences, conservationists oversimplify the *curriculum vitae* of Madagascar, portraying the country as having a rich natural environment that is being destroyed by harmful farming practices.

This same discourse is also applied in the field, in the various environmental education campaigns targeting farmers: “your practices destroy the forest, you are responsible for deforestation, you should stay out of forested areas, you are forbidden to go into forests that are State property, especially protected areas.” This discourse is also used in Malagasy universities, for the Malagasy students who study the environment. If one is not familiar with the historical background presented here, one can easily come to believe this misleading discourse and the more wide-spread it is, the less likely it is that a new paradigm will be established.

Contributing to the problem is the fact that conservation agencies are usually aware of the historical background of this discourse, but continue to perpetuate it. Somebody has to be blamed for deforestation in Madagascar, but at the same time, economic and political interests remain the underlying impetus for conservation practices. The discourse of conservation in Madagascar and the necessity to preserve its biological richness is often used to attract funding, as well as to make political compromises between national authorities and NGOs that need authorization to continue working in the country.

It is typical in conservation projects that few studies are carried out to try to understand the local context in relation to forest and natural resource use. Nobody really asks what might be more effective ways to manage the forest and the land, including management by fires. Farmers who are directly dependent on the forest for their subsistence are aware of the way the forest should be managed, but when their access to the forest is denied, while others are benefiting from it, then fire and *tavy* become a means of protest and a manifestation of resentment.

Of course, as Kull (2004) recognizes, it cannot be denied that fires are also threats; they can rage out of control, and therefore become harmful to the environment. When they are used in a context of protest, they can also be very harmful to the environment.

3. New Threats to the Malagasy Forest

Today, other kinds of threats, related to globalization, also affect Madagascar. While logging activities and slash-and-burn fires are still of concern, especially at the “door” of protected areas, other major projects, such as mining, agroforestry and timber (Global Witness and EIA 2009; Randriamalala and Liu 2010), mainly implemented by foreign companies, also jeopardize the Malagasy environment, and sometimes on a larger scale. The threat posed to the environment is now well-known, such as the bigger impact of major projects as opposed to farmers activities, and the non-involvement of local people in managing their surrounding environment. But this is still not really challenged, either by the government or conservation agencies. Efforts to encourage management by local communities should be developed; indeed, programmes and projects encouraging such efforts have already begun (see Communautés Locales de Base, COBA, and Gestion Locale Sécurisée, GELOSE, in the next chapter).

Thus, there are two prices and two measures. Much funding has been invested in conservation and development in Madagascar. Most projects encompass a specific protected area, and each dollar invested is measured in terms of the number of hectares of land preserved. While industrial development programmes -- mining, agroforestry, or intensive logging by foreign companies have destroyed thousands of hectares, this destruction is ignored. Instead, more attention is paid to the few hectares affected by subsistence farmers.

Reasonably, conservation agencies should address all relevant problems. During the recent 2009-2010 political crisis in Madagascar, the destruction of the Masoala and Marojejy national parks (part of the Rainforests of the Atsinanana World Heritage site) was caused by logging companies, which took advantage of the political crisis and the subsequent weakness of local authorities to pursue logging in the parks. As in the case of

Ranamafana National Park, if conservation measures have been effective since the creation of the park, and if the logging rate has decreased considerably, it is not so much because farmers have stopped practicing *tavy* -- which they still manage to practice it somehow -- but mainly because the creation of a national park has prevented the intrusion of logging companies into the park.

Apropos of the mining problem, the Malagasy forest and soil provide important mineral resources, and in the past few decades multinational mining companies have begun to explore this potential. Some of the most important current projects are: (1) in Tolagnaro (in the south), the Rio Tinto company, with the QMM (QUIT FER) Madagascar company, established a mine for the extraction of Ilmenite (titanium dioxide), a \$US 1.9 billion project; (2) in the Moramanga region two hours from Antananarivo), the Dynatec project in Ambatovy opened a mine for the extraction of nickel and cobalt ; and (3), in the same region, a petroleum project was developed in Tsimiroro and Bemolanga.

Mining itself is not only threat to the environment. Although mines blight the landscape; even more significant is the supporting infrastructure such as roads and harbors. Moreover, displaced villagers and foreign laborers must be accommodated. The website of the Rio Tinto Malagasy project states that: “This project will be the catalyst for broader economic development of the country while providing conservation opportunities” (see www.riotintomadagascar.com). This website, the design of which makes it look very much like a travelogue, provides details about the conservation programmes, stating that 977 hectare of forest around the mine, and a total of 21,000 hectare of forest, have been placed under conservation action. The site does not, however, mention how many hectares were destroyed by building the necessary infrastructure. The website also mentions the implementation of development programmes, especially those targeting health and HIV, but does not provide information on the increased prostitution and resulting rise in sexually-transmitted diseases that appeared with the arrival of the mining labor force in Tolagnaro. When an initial environmental impact assessment was made by an international conservation agency, the first report that came out was highly

negative about the potential impact of the project on the environment, but a second report was authorized, by the same agency, which minimized the impact of the project, causing controversy in the environmental community. Now that the mining project has been approved by the Malagasy Government, another conservation dilemma has presented itself: if negative impacts on both the environment and the local population are to be reduced, there is no choice but for conservation and development agencies to be funded by the company.

During the Environmental Plan Phase 3, from 2002 to 2009, Madagascar's Ministry of Mines and its Ministry of Environment very nearly came to an agreement that no mining would be authorized for exploitation close to protected areas. The agreement also included the expansion of the six million hectare of newly-protected areas (see 2003 Durban Declaration, next chapter). Unfortunately, the stakes were different for each ministry, as mining is an important source of income and revenue for the country, and the agreement was finally terminated. Now the risk is that mining areas will spread around protected areas and, if no further action is taken, protected areas will be even more threatened, especially considering the minimal local capacity for surveillance and enforcement.

Agroforestry is also becoming a more serious threat to the Malagasy environment. Although at one point the World Bank wanted to develop projects for the production of bioethanol (but apparently gave up this plan in view of Brazil's very negative experience with the same idea), a new project was negotiated between the DAEWO company and the Malagasy Government in 2007. The agreement involved a geographical area equivalent to 1.2 million hectare (approx. half the size of Belgium, or half of the US state of New Hampshire) to produce oil and corn, to be exported to South Korea. This project promised not only to be harmful to the environment, due to the soil impoverishment it would cause. Moreover Malagasy people were to be dispossessed without benefiting from the oil or corn produced since these products; which were to be exported to South Korea. This agreement contributed to the 2009 political crisis, as it was signed by the previous president, Mr. Ravalomanana, and later used against him through accusations of

the destruction of Malagasy resources. The project is now on hold (Financial Times 19 March 2009).

One could argue that for a “poor” country like Madagascar such investments are important sources of both revenue and employment. However, for most such projects, including the aforementioned ones, employees are usually brought in from abroad. Neither the Government nor local people receive a fair share of the profits or the benefits from these projects.

Indirect threats due to deforestation include soil erosion and flooding, which has a significant impact during the rainy season on cultivation, and habitation. Erosion and floods can also isolate specific regions for months, due to the destruction of roads.

4. The Malagasy Forest: A Symbol of Exclusion and Repression

Deforestation is an aggravating factor in the case of poverty (Marcus 2001); if people are too poor to be able to make a living, the situation is exacerbated when they are also deprived of their source of subsistence. Malagasy farmers have for many years faced this situation with frustration and resentment towards an unfair system that privileges some and prosecutes others. In one instance, I saw a farmer sent to jail for three months in Mananjary for burning one hectare of *tavy*, while five kilometers away, a Malagasy national park manager was accused of being involved in illegal logging activities, but was never prosecuted. This kind of episode helps us to understand the current situation and the underlying political causes of deforestation – in particular, the specific relationship that has been established between farmers and foreigners, in relation to forest and natural resources use and management.

Typically, local farmers never get the opportunity to file claims to the land or to manage the forest close to their inhabitation. Instead, western ideas are imposed on local people without consideration of local traditions or opinions (Hanson 1997, 2007). Similarly, the opinions of potential advocates for local people – some of them sociocultural anthropologists, biologists, employees of ICDPs, or journalists -- are often

just ignored. It has to be noted also that at the moment there are few indigenous movements in Madagascar, compared for example to the situation in South America.

5. Relations between ICDPs and National Institutions

As for the administrative authorities, once again, the problem is complex. Projects planned for protected areas require authorization from the park authorities in order to be implemented and for staff to be able to work. Very often, collaboration is more or less made mandatory, and a part of the project funds must go through the Madagascar National Parks (MNP) institution. There is, therefore, some ambiguity and subjectivity in the way projects are implemented, whether concerning the choice of activities or the choice of villages for planned interventions. Most often, the choice of villages to be targeted with interventions is “oriented” by park authorities, who usually choose for political purposes. This subject will be further discussed in Chapter Six.

What is important here are the relationships established between projects and national authorities, and how these relationships impact the implementation of activities at the local level. While very good relationships can be established between a park authority’s staff and project staff in the field, distortions sometimes intrude at a higher level. A situation that occurs frequently is that an operational plan is discussed with a park manager, and is therefore based on local realities and needs, but senior staff then becomes involved at a higher level, which disrupts the positive relationship. The protected areas’ services headquarters in Antananarivo, for example, can be obliged to produce specific results that do not correspond to what is expected in the field. This problem of hierarchy in Madagascar, and the gap that exists between high-level considerations and local challenges, can jeopardize conservation efforts locally, and leaves local communities with a negative image of the concerns of the State. People working in the field for the Government do not have the necessary flexibility and freedom to act upon what is needed. The power remains in Antananarivo.

The fact that park authorities also lack the means to work efficiently (because of shortages of human resources and funds) may create misunderstandings and gaps between park and project staff. Project staff receive good salaries, better *per diem*, are

well-equipped, and have vehicles and drivers at their disposal. Park staff, on the contrary, have lower salaries (sometimes paid after a two or three month delay), are ill equipped, do not have vehicles, must walk for many hours to patrol the park, and may not even have tents for shelter during their patrols.

This situation not only leads to a tense relationship between park staff and project staff, but to corruption, which often occurs at the expense of locals. The reason is that payments are sometimes made to ensure that infractions are not prosecuted. This once again places the most disenfranchised people in extremely difficult situations.

Park service staff, confronted with these difficulties, often resign their posts in order to join projects, depriving national institutions of their best personnel. The park service represents the State, and therefore needs to be a strong, fair and viable institution. The mission of park authorities, representing the State, is to “protect the forest.” However, as noted above, very often the park staff is pressured into participation in illegal activities involving the use of natural resources. The inhabitants on the edge of the forest are aware of these illegal activities, for which they themselves might well be sanctioned. So on the one hand, arrests are made to enforce park conservation, but on the other hand, local elites, including park staff, are involved in illegal activities. This exacerbates the incomprehension and resentment of farmers.

6. Questionable Data and the Deforestation Discourse

Since the last century, the deforestation rate in Madagascar has been the subject of many discussions. The subject is of particular importance with regard to the general message delivered by conservation professionals – both the global information disseminated to the general public, and the message that informs most governmental and conservation agencies’ programmes and projects.

In order to estimate Malagasy forest cover over five, ten, or fifty years, scientists must rely on past studies and data which may not be reliable. The earliest data about forests, and the first maps showing forests, date from the 19th century – a time during which scientific methods were not always reliable (Serpentié 2007). Some recent studies

have therefore tried to reconstruct the past, by looking at maps and cross-cutting the information gleaned from them with what was described in naturalists' or travelers' books, or recorded in testimonies from the French administration (Serpentié 2007).

The first assumption that can be challenged is that Madagascar was, from the beginning, almost completely covered by forests, especially in the highlands in the center of the island (Ingram 2005; Serpentié 2007). Current maps show that -- if this heavy cover indeed did indeed exist at one time -- most of it has disappeared. The assumption about the broad extent of primordial forest cover thus influences the deforestation rate calculated over the last two centuries. The effect is to overestimate the rate (Ingram 2005; McConnell 2002).

One of the best known and most used publications on deforestation is Green and Sussman (1991) based on another, undertaken by Humbert and Cours-Darne in 1965, that was found to be unreliable (Serpentié 2007). Humbert and Cours-Darne included in their calculations fragmented forests as well as small tracts of forested land. The map prepared by Conservation International (CI) in 2000 is not only based on the Green and Sussman study, but also on the data of the *Inventaire Ecologique Forestier National*, or National Ecological Forest Inventory (IEFN) in 1994 -- data that also seem to be unreliable. Moreover, CI, in the calculations on which it based its maps, failed to differentiate planted Eucalyptus forests from natural forests (see below for quantification).

In 2001, the FAO estimated the annual deforestation rate of Africa at -0.8%, and in 2002, CI estimated the Madagascar deforestation annual rate at -0.9%. So instead of qualifying as "over-threatened," it appears that Madagascar is in fact quite representative of the African continent. For the specific eastern rainforest specifically, Green and Sussman (1991) estimated the deforestation rate at -1.5%, whereas other studies, such as Dufils (2003), estimated this rate at between -0.4 and -0.6%.

The French Forest Service estimated that forest occupied 12 million hectare (ha) at the beginning of the 20th century. CI estimated in 2005 that 9 million ha remained. Therefore 3 million hectares have become deforested over 100 years -- 28,000 ha per year. However, Green and Sussman estimated that in 1985, 34% of the original forest had

disappeared, with an annual average rate of deforestation of 111,000 ha per year, 4 times more than what was estimated by CI.

The actual deforestation rate is now estimated to be between 128,000 hectares and 200,000- 300,000 hectares per year (WCMC and IRD 2000, quoted by Géronimi 2006). It is generally accepted that the highest rate of deforestation - almost 50% - occurred between 1950 and 1985, during the colonial and Marxist periods (Kull 2004; Ingram 2005; Serpentié 2007). Since then, the rates of deforestation have declined.

These mistaken impressions promote the idea that the rate of deforestation is accelerating, and that soon there will be none. The alarming numbers associated with such misconceptions have had an impact on the level of emergency actions undertaken. (Given very pessimistic numbers, for example, proposed conservation actions can be neither postponed nor openly discussed; they are immediately operationalized.) If these “established” numbers are not challenged by complementary studies, then it is as if they are cast in stone. Unfortunately, all conservation agencies rely on these data in their communications with donors. In sum, the historical process and the discourse of deforestation have shaped and have been used for the design and the implementation of national environmental programmes and policies, as well as environmental projects, such as ICDPs, in Madagascar.

B. MADAGASCAR’S RECENT RESPONSE TO DEFORESTATION

Following the trend of creating and implementing various conventions and programmes -- the United Nations Conference on Environment and Development (UNCED) and the Rio conferences (see chapter One) are examples -- in 1968 Madagascar adopted the protected areas system established by the International Union for Conservation and Nature (IUCN). In accord with the IUCN strategy, Madagascar was the first country in Africa to define national environmental politics and to adopt, in 1986, a national strategy for conservation and development.

1. The National Environmental Plan (NEAP)

In 1990, a national charter for the Malagasy environment was signed by the government making the environment a national priority. Subsequently, various laws and texts were amended to include mention of the rights and responsibilities of local communities, or *fokonolo* (Henkels 1999 and Gaylord 2005). A year later, in 1991, the National Environmental Action Plan (NEAP) was established to implement a new conservation framework to consider a more global and integrated conservation of the environment and, in particular, the forest. It was conceived to include social and economic aspects of the environment as well as the participation of local people. The international community was involved in important ways, especially in terms of funding, and general international policies and programmes heavily influenced both this Malagasy environmental plan and subsequent policies and regulations.

A new forestry law, revising the forestry legislation, was adopted in August 1997 (Loi 97-017) and championed the protection and sustainable management of natural forest resources. Permits to cut wood were fixed by decree, and traditional use rights of *fokonolo* were recognized. Certain elements of the 1960 legislation were incorporated regarding slash-and-burn and other burning. Laws were also prepared in relation to renewable natural resources management.

In terms of time, the Malagasy Environmental Plan was mapped out to be divided into three five years periods: from 1991 to 1996, phase 1, with a focus on strict conservation activities; from 1997 to 2001, phase 2 with an emphasis on decentralization, territorial collectivities, and a regional approach; and beginning in 2002, phase 3 to allow the integration of an environmental perspective into all sectors of the country's activities: economy, population, health, and so on. Phase 3 included the preparation of the Durban Declaration to triple the surface of the national protected area system (Gaylord 2005). This third phase was supposed to end in 2006, but no official closure had been made as of 2010.

NEAP is problematic, because this initial 15-year plan, now in its 19th year, was a model for the environmental world. A fourth phase was discussed with the government

and donors, but difficulties encountered in past years, the slow implementation of expanding a network of new protected areas (see Section B-4, below), and a funding decrease meant that this option was allowed to lag, at least for the moment.

Before the implementation of the Environmental Plan (EP), only the Department of Water and Forests (W&F) was in charge of the environment and forest. This agency was created in 1896, soon after French colonization, and was based on the French model (see Kull 2002).

The W&F has always been composed of national civil servants. From the beginning, it included an intensive and repressive system of surveillance and patrols. The Department faced major problems of funding, human resources and equipment. Its mission is to protect the massive environmental component, but it has never been provided with the necessary resources. As mentioned, employees of the department -- especially those sent to remote and difficult places -- were very often faced with pressures not only from within their superiors but, above all, from the highest then authority, whether king, colonialism, or state). They had no capacity to fulfil their mission.

2. NEAP's Actors

In order to implement the Environmental Plan, new institutions with specific agendas were created, such as the Agence Nationale pour la Gestion des Aires Protégées (ANGAP), now called Madagascar National Parks (MNP). This is a private association, created in 1990 with the mission of establishing, conserving, and managing in a sustainable way a network of protected areas. Most of the staff is made up of previous W&F civil servants. This association was intended to be more independent and more administratively flexible than the department of W&F. However, it remained strongly influenced to the government. The network includes both national parks and natural reserves that incorporate the unique biodiversity and environment of Madagascar. The network now includes 47 protected areas, including 19 national parks.

MNP exists only to care for protected areas; it is not concerned with other types of

classified forest that are under the W&F jurisdiction. From the beginning, MNP received a good deal of funding from the Government as well as from various donors, such as the World Bank, USAID, French Cooperation, and conservation agencies such as WWF, CI, WCS, etc.). The problem was that MNP did not have authority enforcement, until very recently, as no written law existed regarding the management of protected areas existed. It was only in 2001 that the *Code de gestion des Aires Protégées*, or Code of Protected Areas Management (CoAP), was created. This is a framework that furthers an understanding of the mission of the park services, but still does not allow MNP to enforce the law. When dealing with miscreants, the MNP has to work with either the Department of W&F or the *gendarmerie*.

Early in the MNP history, its mission was expanded, to include, not only the management of protected areas, but also their buffer zones. Thus the MNP was in charge of both conservation activities in protected areas and development activities related to conservation in the peripheral zones. Its development work was funded by the revenues from fees collected from visitors for entering parks and reserves, *Droit d'Entrée des Aires protégées (DEAP)*, which were split in two: 50% was used to cover MNP recurrent costs, and the other 50% was used to support community conservation and development projects.

Very soon, however, it became evident that MNP -- because it did not have the means to work effectively in the peripheral zones of protected areas -- could not be in charge of both conservation and development, and should focus solely on conservation. The development aspect was subcontracted to NGOs. DEAP was also questionable, as the criteria used to identify and approve community projects did not follow any specific and objective procedures. Around Ranomafana National Park, for example, many villages did not benefit from DEAP.

It was expected that, in the long term, MNP would eventually become self-sufficient. Unfortunately, this did not happen, and for the last decade MNP has gone through intensive structural adjustment as a result of poor performance. Major donors felt that not enough staff was present in the field, and that headquarters was supporting too

many staff costs in Antananarivo. This, coupled with some serious management difficulties, led to a suspension of major MNP funding (by the World Bank and USAID) in 2006. Before this, salaries were frequently paid late, and local staff was discouraged and unmotivated. This had a profound impact in the field, especially regarding the implementation of activities, and employees who were unmotivated or unpaid sometimes left MNP to work for NGOs. Problems were also encountered involving the misuse of funds in the field, and several court cases have arisen in the past decade. All this led to frequent changes of MNP's local staff, which prevented activities from being conducted in a sustainable way. Each time a new director or team arrived, everything could be challenged in the operation plan.

MNP which had been considered a separate, independent entity from the Ministry of Environment at the time of its creation in 2008, was placed under the aegis of the Ministry of Environment, under the direction of the Department of Protected Areas, while at the same time remaining private. This decision was considered to be a step backwards in the overall EP process, as MNP— a private association -- was supposed to be able to act independently and with fewer administrative constraints than those of the Ministry.

Other important institutions born out of the NEAP were:

Office National pour l'Environnement, or National Office for the Environment (ONE). This is the institution responsible for the prevention of environmental risks in public and private investments, and for pollution surveillance. It is also responsible for the management of environmental information and the evaluation of environment status.

Service d'Appui à la Gestion de l'Environnement, or Support Service to Environment Management (SAGE) “that contributes to local development with a focus on the management of natural resources. Its activities target the efficient decentralization and the integration of environment in development. SAGE facilitates the realization of local initiatives and supports communities in finding adequate means to ameliorate their living conditions without wasting natural resources” (see www.madagascarsage.org). The association is, among others, responsible for the implementation of the programme *Gestion Locale Sécurisée* (GELOSE).

3. The Management of Natural Resources by Local Communities

a. Gestion Locale Sécurisée (GELOSE)

GELOSE (Loi 96-025) was born from past failures, including strong intervention and repression of the state, centralized legislation, and lack of capacity to patrol and enforce the law. It was deemed necessary to ameliorate the formerly tense relationships between the State and local communities, caused in part by an adopted environmental plan that did not include local communities as active participants to the management of natural resources. The legislation was also adopted based on the realization that during the first phase of the NEAP, protecting areas that covered only a small part of the lands that were under environmental pressure would not be sufficient to ensure long-term conservation (Bertrand 1999). This result necessitated implementing a system that covered other areas in addition to the protected ones.

Bertrand (1999) explains that GELOSE transfers the management of natural resources to local communities. It consists of two components: (i) the community is allowed to benefit from the managed natural resources; and (ii) there is a process of “partial” land tenure, although this does not include the entire designated territory. A GELOSE contract involves the Government, the local community, and the “commune” -- the elected local representation. Thus GELOSE effectively represents the transition from a naturalist/conservationist vision to a more local vision. The arrangement takes local communities' economies into account, and acknowledges the role of the community in promulgating a vision of the landscape that includes management and negotiation. It is therefore not imposed on people, but discussed with them. Early challenges to GELOSE included the implementation of operational structures, the definition of common objectives (especially in terms of long-term heritage), and the choice of “independent” mediators to establish contracts that were fair to all parties.

GELOSE received a positive welcome from communities, and in 2004, 500 contracts were established, covering an area of 500,000 hectares (the Resolve-PCP-IRD, quoted in Froger 2008). The results of several subsequent evaluations suggested room for improvement, including better follow-up from the state; a clearer understanding of the

initial preparatory step before signing the contract, in order for the community to really absorb and understand the terms of the contract; greater flexibility in the complex administrative procedures of land ownership that could guarantee the community some long-term benefits; more anti-corruption measures; and the assessment of a fragile consensus within the community itself on the choice of area and resource management (Bertrand 1999; Henkels 1999; Maldidier 2001).

As noted some contracts were entered into too rapidly. Unfortunately this was done at the expense of the community, indeed, the strict rules contained in the conservation aspect of the contract outweighed the privileges that were accorded to the community in return for their participation in environmental protection. The excessive haste was the result of numerous constraints in the face of urgent concerns, primarily deforestation. It was recommended that an increased appropriation be made at the level of the community, and that improved institutional and operational capacity-building be established in response to local needs, in order to respond to increasing demands from communities to have these contracts established (Maldidier 2001).

A good example was a GELOSE contract established around Andapa, close to the Marojejy National Park. A first contract, for one year, was established in 1997, with a community known for its motivation in protecting and managing its natural resources. The GELOSE contract replaced a previous ICDP that mainly focused on the conservation of protected areas. Between 1998 and 1999, the GELOSE process was expanded around Andapa, and in 1999, four other communities were involved in the process, at their request (Maldidier 2001). Subsequently, an alternative to GELOSE, *Gestion Contractualisée des Forêts*, was implemented.

b. Gestion Contractualisée des Forêts (GCF)

In 2001, some communities were organized into *Communautés Locales de Base* (CLB or COBA), following a national forestry policy that established a framework for contractual forest management (Raik 2008). This framework establishes the use and management of local forest land, or *Gestion Contractualisée des Forêts (GCF)* (Eaux et Forêts 2002). Preliminary assessments of these COBAs were carried out. The plan noted

that forest contracts were heavily restricted to the use of natural resources, at the expense of including other issues, such as education, policy awareness, and development, in order to contribute to the success of ICDPs (Blanc-Pamard and Ramiarantsoa 2008).

GELOSE and GCF are still in place, but few evaluations have been done. Success stories have occasionally been reported, but more failures have been noted. GELOSE and GCF, in order to succeed, must be implemented in a particular context in which certain conditions, political and environmental, must be met: political because political will is crucial in this process of negotiations and contracts, and environmental because, as Maldidier noted, initial contracts have to be implemented in a context where the community favors environmental protection and the wise use of natural resources.

In the case of failures, the main obstacle was a lack of sufficient timely technical supervision for communities because of a lack of staff and means, in particular for SAGE. When contracts were implemented by locally-based NGOs, more positive results were obtained. However, the concepts of GELOSE and GCF are a significant step towards the management of resources by local communities.

4. The 2003 Durban Declaration

Before Durban, only 5% of Malagasy land was included in the protected area system. In 2003, Marc Ravalomanana, the President of Madagascar, declared his intention to more than triple the amount of land under protection, from 1.7 million ha to 6 million ha over 5 years. This would mean that 10% of the country's land would be protected, as recommended by IUCN for all countries. Ravalomanana's declaration was prepared by the Durban Committee that included not only national governmental institutions, but also international conservation agencies. Behind it was the promise from donors to provide the necessary funding for this expansion.

A foundation to oversee the new protected areas was established by Conservation International (CI) and the World Wildlife Fund (WWF), based on a \$US 50 million trust fund by the end of 2008. In 2006, three years later, \$US 1.8 million had been secured,

and other funds had been promised by donors. At the end of 2008, with the financial crisis undoubtedly impacting this trust-fund, no information was provided about how much of the expected US\$50 Million had actually been collected. The Foundation for Protected Areas announced that capital in the amount of US\$22 Million was reached in December 2009. The recent change of the President of Madagascar might also impact this trust-fund, and in particular promised funds not yet allocated, as most of the donors have suspended their funding for Madagascar.

5. The Price of Conservation in Madagascar

During these years, and especially since the 1980s, a great deal of funding has been provided for conservation in Madagascar. Environmental Plan phases 1, 2 and 3 totalled about \$US 450 million (Gaylord, personal communication 2010), out of which \$US 171million was earmarked for EP3 (Moynot 2006).

With almost 80% endemic species, Madagascar is a “hotspot” (CI) country for biodiversity, and the international community is keen to protect it. However, protection cannot be successful without the involvement of the population. To date, no thorough evaluation of the impacts of international funds, positive and/or negative, has been made. Each donor has its own system for audit, transparency and public reports, and data are difficult to gather and very often based on what each organization chooses to bring to the attention of the general public or the conservation world. The only evaluation made in 2006, of all the conservation agencies involved, was organized by the World Bank, but the World Bank itself -- the first organization to provide funding to Madagascar for its environment -- did not participate in the survey. Moreover, the WB organized an evaluation that assessed how much money was spent, but no evaluation was made of the results of activities and their impact in the field.

After seventeen years of experience (1991-2008), obviously the way that natural resources have been managed in Madagascar would benefit from improvements based on lessons learned. The current trend in Malagasy laws and regulations, towards

conservation by the community and communities' right to "contractually" use natural resources, is encouraging.

This chapter has suggested that -- even if it has not been obvious -- important advancements have been made along the way, beginning with a strict conservation process for the benefit of a few and consistently trending toward a more equitable sharing in, and management of, natural resources with the local populations to which they belong.

CHAPTER IV
INTEGRATED CONSERVATION AND DEVELOPMENT PROJECTS (ICDPs)

**A. INTEGRATED CONSERVATION AND DEVELOPMENT
PROJECTS WORLDWIDE AND IN MADAGASCAR**

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A. INTEGRATED CONSERVATION AND DEVELOPMENT PROJECTS WORLDWIDE AND IN MADAGASCAR

1. Definition of ICDP

Integrated Conservation and Development Projects (ICDPs) evolved as early as the 1960s, in response to the failures of earlier conservation approaches, and have been common since the 1980s (Fisher *et al.* 2005). The first generation of ICDPs were developed, when high rates of deforestation occurred, prompting a search for integrated approaches. At that time, most ICDPs were implemented by the WWF, to address the problem of physically fencing off protected areas as a conservation measure (Hughes and Flinton 2001). Since the first ICDP was instituted in the Luangwa Valley of Zambia in the mid-1960s, \$US one hundred million have been invested (Gardnett *et al.* 2009).

ICDPs aim to reconcile global scale environmental objectives and local scale development needs (Sayer and Campbell 2004), thus combining two types of activities: conservation inside a protected area, and development – including the sustainable use of natural resources – outside this area.

The first generation of ICDPs had three goals: to reduce pressures on protected areas by strengthening park management, to provide compensation or substitution for people for loss of access to natural resources areas, and to encourage local socio-economic development of communities adjacent to protected areas. These goals were supported by five main action categories (Wells and Brandon 1992): (1) natural resources management outside the protected area (PA) (agroforestry, irrigation and water control, and wildlife); (2) community services (health and education); (3) tourism; (4) roads for market access; and (5) direct employment.

A number of different factors affect the environment and conservation, such as agricultural techniques and new technologies, population increase, poverty, local settlement patterns, local land tenure systems, access to markets, changes in the standard of living, etc. (Bradford *et al.* 1998). The idea of an integrated approach across different disciplines therefore provides a real advantage. However, the activities for each discipline

have to be designed and implemented very specifically; social scientists cannot practice ecology, and ecologists cannot practice development. This situation has been an ongoing and serious misunderstanding in the ICDP concept. Indeed, many components have often led to failures.

Factors External to ICDPs

a. The Local Context

Activities conducted within the ICDP framework are by definition carried out in a milieu of uncertainty, because they involve individuals, their history, their culture, their social situations, and the political and economic context, as well as different interests (Lammerink 1998:10). The historical context is particularly important, in order to understand how a community has been shaped through history. These events can be environmental, such as ecological disasters that can jeopardize a community's economic activities, but can also be human, including important events linking the village to the national history. Projects are also sometimes implemented in places where interventions have already taken place. If these interventions were positive, then the context is more likely to be favorable for new interventions; if not, there could be resistance or reluctance from the local population (de Sardan 1997:127).

In conservation projects, local people are more likely to be thought of in terms of their knowledge and practices than culture or values. But respect for traditional customs and cultural identity should obviously be incorporated in project design or protected area implementation. For example, the delimitation of a protected area sometimes includes places important, perhaps even sacred, since -- especially in forest ecosystems, people tend to use physical aspects of the environment as places for tombs or rituals. Such places are thought to be inhabited by spirits, are usually associated with taboos, and are thus "culturally" protected. Local populations may believe that outsiders will take over their sacred places and make use of them without their approval, or consultation. The remedy for this problem is for development workers to organize discussions with local people, who should have the right to accept or refuse the designation of their land as protected (Stevens 1997). Traditions are also dynamic; they are continuously reinvented, and

combined with elements from other cultures (Kleymeyer 1994:325). They should be taken into consideration during the lifetime of a project to ensure efficiency and chances of success.

People also often live in stratified societies, composed of different classes, castes, or groupings with different interests. Generally, higher groups exert socioeconomic power over lower ones, and lower who cannot challenge the position of higher groups (Mathur 1989; Lammerink 1998). Traditional societies are rarely egalitarian. Inequalities are expressed through ethnicity, gender, class (economic and social), and age, and structured in a particular cultural, economic, and political context (Gardner and Lewis 1996:79). These inequalities are important to consider in development projects, because projects can ultimately privilege certain groups over others. This situation tends to increase the gaps and inequalities within a community, and compromise the intended benefits for the people who were originally targeted by development activities. Therefore, it is important not to exclude groups or people or to disadvantage them.

Following from these observations, it is important for a project to include collective action, which promotes different groups' understanding of their common interests and provides an organizational framework for this understanding. Even if some projects are seen as beneficial by local people, this is sometimes not enough to induce them to become involved in a collective action.

In fact, local people accept projects in a selective way; typically they do not totally reject or accept them. They are usually more willing to adopt projects that incorporate a multi-disciplinary approach – for example, projects including health and education components.

In the interpretation of cultures, each community should be described in its own context, without any western extrapolation. False assumptions, when applied to local communities, have contributed to group isolation and exclusion. Long-term solutions to the biodiversity crisis, we must move beyond assumptions and stereotypes (Brandon *et al.* 1998).

Projects can be expected to have social impact on communities; interventions often promote rapid change and disequilibrium. Therefore, changes incorporated into development activities that can affect community values must be identified and evaluated in the design stage, before a project begins. At this early time, anticipated changes can be discussed with the intended beneficiaries, who can then be prepared for them (Saunier and Meganck 1995).

b. Local perceptions of the environment and the use of natural resources

"Unlike the situation in our own society, in simple-technology societies, relations with the environment are intimate, continuous, and involve a very short energy cycle." (Redclift 1987:115).

The environment for local people in developing countries is a question of survival. People rely on environmental resources for their food, habitation and medicine – as opposed to the industrialized countries, where the environment is perceived more in terms of "aesthetic" values. It is assumed that local people maintain their territories' biological biodiversity and ecosystems (Stevens 1997). In many cases, indigenes' knowledge of the ecosystem, and the species with which they are surrounded, have led them to implement particular models of resource management -- for example, by generally protecting rare or endangered species or places that are considered sacred. Resource distribution and use are also subjected to traditional customs, rules and inheritance systems. Finally, community resources are protected against the economic exploitation of outsiders by delimiting "territories" (Stevens 1997). It is common for local communities to exert some control over their resources by restricting access to outsiders. The access restriction to resources is therefore not simply a Western notion; it shows that indigenous people are conscious that resources should be managed (Ishwaran 1998). Therefore resources management in conservation projects should not be the exclusive province of developers; local people should be involved as well (Brundtland 1987).

Resources used in common should be identified. It is important to highlight community solidarity and common community action for the use of these resources; otherwise natural resources will be used on "a first-come-first-served basis" (Rich 1994).

It is also important to realize that indigenous people can adopt ideas if they can gain some benefits from it for their livelihood (Saunier and Meganck 1995).

Within communities, traditional rights may be exerted over water, forest, and land. There is also a recognized interdependence relationship between humans and nature (Brundtland 1987). Resources management is generally codified in social, economic and political systems, and conservation and development projects should integrate these dimensions in their planning processes and awareness campaigns. The knowledge that underlying conditions already exist inside communities in favor of conservation should be more efficiently used as a basis for conservation projects. However, how best to achieve acceptable and appropriate resources management is still a murky issue, meaning that for projects, resource management efforts should be mutually discussed and defined among scientists, development project staff, and communities.

An opposing view can be found in Oates (1999) who has some controversial ideas about ICDPs and their relation to local people. He argues that ICDPs do not contribute to conservation, and that conservation cannot be achieved through development. He also opposes the “myth” that local people are spontaneously natural conservationists (see also Krech 1999). But as Brechin *et al.* (2002) point out, this is not a simple question of “pro-nature or pro-people.” There need be no debate between the defenders of “people are natural conservationists” and the defenders of “people are not natural conservationists.” A middle ground can surely be found, so that conservationism and ICDPs, rather than insisting on either strict conservation alone or income-generating activities alone, can both encompass social justice (*Ibid.*).

Many indigenous movements have emerged around the world, and those involved in these movements want to assume control over their own resources (Ferguson 1990; Escobar 1995). They have often implemented a system of patrols, and have protested when outsiders have wanted to exploit their resources. These movements also encourage outside advocacy to obtain community rights over lands and use of resources.

In recent years, in discussions about nature and the way natural resources should be managed, two different conceptions have emerged about how nature should best be

interpreted and protected. The exponentially increasing scarcity of natural resources has led anthropologists to become involved in what has been called the anthropology of nature. This study points out that nature is differently conceptualized by different people, but argues that the differences occur mainly between westerners and local people. The traditional 1970s-1990s western conception of nature has finally been challenged by local people, particularly in regards to the destruction of the environment (Descola 2001). The challenge has led to discussions and to the bilateral exchange of ideas between these two groups. Descola states that for local people there is no distinction between culture and nature. These phenomena are only physically separated.

For local people the right to property and land tenure is inalienable. The idea stems from specific groups' belief that they have been linked to specific geographical areas from the immemorial, and also to ideas about patrimony and custom rights (Tioka and Karpe 1998). And traditional knowledge, use and practices are not distinct from community life. Local ecological knowledge, together with cultural knowledge, is part of cultural identity (Descola 1994), thus providing a link between conservation and development. These issues were included in the UN Convention on Biological Diversity in order to recognize the importance of traditional knowledge, and especially to ensure that it would be taken into account or purposes of economic development.

c. Protected areas and local people

A current trend in conservation assumes that this outcome should be made possible by encouraging human use of native lands and species. The extreme position contends that protected areas are not even necessary, and they should be opened to any kind of use. Costa Rica has tried this approach; since 1992, out of the 27 percent of the country deemed protected areas, 15 percent have been opened to resource use. But from the point of view of some conservationists, it is often too much to ask that people who are responsible for administrating protected areas be in charge of both conservation and development activities. At times, this dual responsibility has caused both ecological and social failures (Bradford *et al.* 1998).

The culture of conservation can be embedded in traditional societies, and some environmentalists see traditional societies as having integrated the concept of protected areas long before the idea of environmental conservation was born. Local populations, as in South America for example, understand the benefits and support they could gain in accepting the creation of protected areas around their territories and the implementation of conservation activities, but in addition they have understood that it was also necessary to attract the world's attention to their problems (in particular their resettlement concerns and land use rights), and to maintain "sovereignty" over their territories and natural resources (Stevens 1997:279). Escobar (1998) considers the example of the Andean Pact countries.

Land "ownership" by local people is generally not by deed, but rather by heritage, so this kind of ownership is therefore sometimes not recognized by government. The lack of an actual deed to land sometimes results in local people being disenfranchised when land is placed under governmental legislation to be protected. These lands can also be managed collectively, and specific rights are defined by the group, such as rights to hunt, fish, gather, and collect wood. Such territories are generally not marked by landmarks, but delimited by physical barriers. Such rights are not recorded or listed on paper; they are transmitted orally from generation to generation. Most of the time, the government decides to confiscate these lands to place them under protection, local populations are not even informed. They are suddenly denied the access to what used to be their gardens or the lands of their ancestors.

Components of ICDPs

a. The design of ICDPs

Projects are more likely to be successful when preliminary agricultural, ecological, sociological or economic studies have been completed and then intended beneficiaries of ICDPs can best identify what they need for their survival. Therefore, when proposing projects, it is important to take a target community's prioritized needs into account; to maximize the likelihood of project success, objectives should be clearly defined and stakeholders should be fully informed about these objectives and about

institutional roles. Developers have to define what the role of local people will be, and what they are expected to provide in return. The link between development activities and conservation goals must be clear to the local people. As Cernea (1998) points out, the consideration of people is the key to the successful social process of development.

Participation: the social actors of a project are communities, village authorities, rural families, farmer associations, cooperatives, schools, public organizations and NGOs. Project's strategies must be defined around these social actors, which means that social organizations must be identified. For project sustainability, it is important to define the different groups if possible, in order to enhance the potential of capital and human resources. The choice of which local people will participate must be made with reference to the existing hierarchical structure, people's willingness to participate, members' interests and responsibilities, and the implementation of conventions or contracts. The preparation of a project that integrates local communities should also consider the will to share information and work together (Gezon 1997). Discussions should be organized well in advance, and the community should also take the time to discuss the propositions, and to evaluate them.

Local participation implies the involvement of populations not only in decision-making, programme implementation, sharing of benefits, but also in the evaluation of these programmes (Lammerink 1998). The fact that each development organization has its own language, objectives, and criteria may also present a problem; when several agencies are involved on-site, it can be difficult for the intended beneficiaries to distinguish between those organizations, or to understand why they are not addressed the same by them, but rather have different ways of implementing activities. Therefore, an operational consensus should be formulated, in concert and in agreement with these organizations.

A balance also has to be found between traditional knowledge and inputs from new or outside technologies. Technologies can benefit local people if they are close to local people practice (Dudley 1993). Technologies must meet two criteria: (1) they must meet people's needs, and (2) be "culturally" appropriate. Before technological

interventions are introduced, it is important to foresee their impacts and consequences, and anticipate the questions people will ask, as well as the problems that may appear.

It has sometimes been assumed that, by bringing short-term benefits, ICDPs could establish a certain credibility. However, experience has shown that short-term credibility does not replace long-term participation, commitment from populations involved in projects, or sustainability. It has also been proven that even development activities that do not have a direct link with conservation can often play a valuable role in generating local popular support and future participation in conservation (Wells and Brandon 1992:32).

Local people and trade-offs: with the implementation of conservation and development activities, reciprocity must be created between local people and project staff through "a negotiated process of action and counter-action," following which "mutual obligations are established in return for services mutually rendered" (Richard and Dewar 2001:534). Mutual contracts and agreements must be defined between the project staff and communities before implementing or even designing a project. The goal is not just aid for development, or aid for aid; all the actors and participants should ensure the sustainability of their own benefits. It is also important to look at the particular conditions in which the local people live and – in many cases – struggle for survival. Populations should be considered as having the capabilities to identify their own solutions in regard to their problems (Chambers 1990, Gardner 1996).

It is important to assess the consequences of the implementation of protected areas on the lives of local people – not merely to see the benefits in terms of animal and plant species. People can be distinguished by their mode of subsistence; the relationship to the environment of hunter-gatherers is totally different from that of agriculturalists (Redclift 1987). The poorest people are the ones most likely to make use of communal lands, which are rarely sufficient and not always productive, since the most productive lands are often co-opted by privileged people. Another consideration is that indigenous people sometimes resist projects that bring too many changes in their daily lives. Most of the time, what they expect is simply to have enough for their daily subsistence. This perspective differs dramatically from the predominant view of developers (Kottak 1998).

Any or all of the above realities may impact project success, which relies on the abilities and the willingness of local people to recognize, accept and continue the programmes they have been offered (Wright 1992).

It was pointed out earlier that the first ICDPs were based on many unrealistic assumptions, and therefore trade-offs had to be found to optimize project activities' successes (Fisher *et al.* 2005). A common criticism in recent analyses of ICDPs has been their failure to acknowledge the scarcity of win-win situations and the need to address trade-off situations as part of conservation and development integration (Robinson and Redford 2004).

b. The ICDP framework

The ICDP framework is composed of different elements which are defined at the level of an ICDP's design. These components which play a significant role in future chances of success for any given ICDP, are the time-schedule, location, funding, the composition of project staff, their recruitment, evaluations made during the course of a project, and the institutions, usually NGOs, in charge of an ICDP's implementation.

Time-schedule and location: ICDPs are usually realized in a short period of time, whereas social process and acceptance of changes at the cultural and social levels take much longer. In addition, projects may be restricted to small areas or to small numbers of villages but absorb considerable funding; they cannot usually therefore not be replicated on a larger scale. Instead of defining a global approach that would include several or all villages in a specific area, some ICDPs choose sites in a different way. Since the choice of implementing activities in one village rather than another can lead to intense conflicts, it is sometimes better to plan a large-scale project at a regional scale, involving the largest number of people, after having tested the proposed activities on a smaller scale.

Funding: money can always buy "gratifying and politically expedient short-term success" (Dudley 1993:4). "A key measure of a donor agency's success is whether it has succeeded in spending all of its allotted money within the financial year (*ibid.*).” A significant portion of a project's funds are usually allocated to officials and consultants,

for whom the benefits of the project take the form of imported vehicles, salaries, and fees. Too much dependency on a project, on the part of its intended beneficiaries, is also a risk for future sustainability. Project funds can create the illusion that everything is possible. Money itself does not guarantee sustainability; sociocultural factors must underpin the continued beneficial effects of development efforts.

Project staff: "Government programmes and NGO projects and personnel often bring with them an array of attitudes, assumptions, goals, and procedures that indigenous peoples may find inappropriate, offensive, and dangerous" (Stevens 1997: 288). Project staff and personnel may be considered, by local people, as outsiders who are there to deprive them of their goods and property. For this reason, therefore, project administrators have found that it may be preferable to make use of the expertise of national and local institutions, not only because they have knowledge of local conditions (ecological, economic, or political), but also because they can often communicate better with local populations (they know the languages, traditions, taboos). Regional or local staff are often more effective, especially when cultural or ethnic identities are varied and strongly marked. They are advocates for technical and scientific knowledge, but can also act as mediators.

Project evaluation: evaluations are of two kinds: they are process evaluations when they are undertaken part-way through a project to gauge its success so far and to see if changes need to be made, and they can be summative evaluations when they are undertaken at the end of a project, when its full impact can be assessed.

Evaluations vary from one ICDP to another. Some ICDPs do not even have evaluations. Usually these assessments are defined at two levels. First, they may be specific to the donor's indicators, and can include annual progress and final reports. Second, they may also be defined as performance measures and based on specific indicators specified in the operational plan. They usually include sequential indicators (reflecting success in terms of time) and performance indicators (reflecting success in terms of products). Other evaluations, such as audits, can also be conducted at the

demand of a government or donors: audits are usually not planned in advance but are required when problems appear.

Problems are encountered with evaluations when they are either too general or too specific. Evaluations of ICDPs should involve an assessment of the benefits rendered by the project outside of the protected area, a survey of the surrounding biodiversity over the time period since the implementation of the project, and the way both conservation and development activities have benefited from each other. It is important for an evaluation to assess whether changes can be attributed to project activities or to external factors. Donor agencies should be flexible regarding project outcomes, understanding that there are many parameters to take into account, that the success of a project is not always guaranteed, and that project designs are susceptible to modification and adaptation. Projects should also be evaluated on their ability to face unexpected circumstances, and their capacity to encourage community participation.

Unfortunately, evaluations are sometimes undertaken in hope of securing further funding. They may present only successful activities, and objectives that have been met. This may be far from reality. Reports often show "a cosy scene of gratitude and money well spent" (Dudley 1993:12). This arrangement obviously supports what has been called "artificial success." Since the 1990s, following some negative evaluations and the wider recognition of failures in development projects, a trend toward more accurate reports based on lessons learned has begun.

The Involvement of NGOs: in environmental conservation, NGOs have often been perceived as using more people-oriented approaches than governments (Wells 1995). This may be particularly true when NGOs are national, as opposed to international. This approach should be considered as a part of the empowerment process for developing countries (Crewe and Harrison 2000). National NGOs, as noted above, are likely to have a knowledge of the national, regional, and local situation, and are well-placed to emphasize needs and propose solutions to resolve problems in a social and cultural, and political context. NGOs represent a balance in projects, especially in relation

to top-down governmental approaches, and can express the concerns of, and speak for local people.

NGOs are capable of more flexibility because of their relatively small scale of their projects in comparison to those of the big multilaterals, the degree of participation of the people they work with, and the easier replicability of their activities. NGOs can be said to have a more bottom-up approach, as opposed to the common top-down approach of international agencies (Gardner and Lewis 1996). In recent years, international agencies and policy-makers have increasingly involved NGOs in development projects. At present, governments appear to be learning more and more to work with NGOs. It has also become important for policy-makers to increase the capacity of national and local NGOs.

4. Examples of ICDPs

This section, which exemplifies both unsuccessful ICDPs and projects recognized as having been successful, suggests the range of what ICDPs have and have not accomplished in the years since their implementation in the '80s. Each ICDP described should be considered a case study illuminating both positive and negative effects of ICDPs and the potential of past ICDPs to suggest recommendations for the future.

a. Unsuccessful ICDPs

The first two cases provided by Gardner and Lewis (1996):

The Mali Sud Rural Development Project illustrates inequality between communities. \$US 61 million was invested between 1977 and 1983 on this project, the objective of which was to increase the agricultural potential of its target area. This was to be accomplished by introducing cash crops, such as maize and sorghum; by promoting village associations; and by increasing the well-being of the local population through health services and water supplies. Some 3500 villages were involved. However, credit and technical assistance were offered only to the wealthier villages, and project committees were present only in these villages. Therefore, villages where there was no committee were not involved in project activities. In addition, only farmers who had

capital sufficient to back up loans were granted access to credit. Instead of supporting the poorest people or villages, therefore, the project had the effect of widening the gap between the wealthier and the poorer villages.

In Bangladesh, IFAD (the International Fund for Agricultural Development, a UN agency), implemented the Women's Credit groups Programme in 1977. Under this project, credit was to be extended to rural Bangladeshi women, but the money was given in the form of credit to women was confiscated by husbands. The female recipients, who claimed that there was nothing they could do to prevent this, were therefore unable to repay their loans. A solution was found by asking the women's husbands to sign the loans instead of the women themselves.

Langtang National Park, Nepal, was a project marred by a preservationist approach and non-access to resources for populations (Knight 2000:11). The project was established to protect the wildlife of the park while ensuring economic opportunities for villagers. Unfortunately, local populations did not benefit at all from the park's entrance fees, and access to resources was strictly limited. Local populations therefore responded by poaching illegally in the park, or by collecting forest products. This lack of linkage between the indigenous population and those tasked with managing wildlife and local populations made the local people hostile to conservation in the long term.

A Global Environmental Facility (GEF) project in 1985 was intended to protect endangered primate species along the Tana River in Northeastern Kenya (Rich 1994:312). To achieve this goal, a resettlement of local people was planned. However, the project did not take into account a previous study made by the East African Wildlife Society, which showed that the endangered primates and the human populations were living in harmony; moreover, primates were even more numerous around human inhabitations as a result of this harmony. The upstream construction of dams and irrigation systems has contributed to even more environmental degradation of the Tana River ecosystem and primate habitats.

b. Successful ICDPs

In the world of conservation and development, the Annapurna project in Nepal (Wells 1994; Lama and Lipp 1994; Stevens 1997; Brandon 1997) is widely considered to be a successful example of an integrated approach based on local people's participation, and could serve as a role model for other similar projects.

The Annapurna multiple-use area project was implemented in Nepal over a three year period beginning in 1986. Intended to benefit local people, especially the poorest, through conservation based on a grassroots approach, the project assumed that "the conservation of nature is oriented to supporting economic activities." Development activities focused on increasing subsistence cultivation, creating new opportunities for market sales of agricultural, pastoral and forest products. Not only would small enterprises, especially those supporting tourism, thrive; wood, previously people's only source of fuel, would be replaced and reforestation promoted.

The project area covered 460,000 mainly rural hectares, encompassing 40,000 villagers in 300 villages. An attractive tourism venue, the area had attracted migrants who proved to be destructive for the social life and customs of the local people, as well as the environment.

With the idea of linking tourism, economic development and conservation, the King Mahendra Trust for Nature Conservation (KMTNC), a private organization created in 1982 and supported by the King of Nepal, conducted surveys in villages before the design and implementation of project activities began. The project team, seeking active community participation, spent six months in the field talking to the villagers. Local people seemed to be aware of environmental degradation in the area, but at the same time wanted to benefit from the economic incentives offered by the project.

Initially, local people were reluctant to participate, because a previous project in the same area failed to include them, but the multiple-use area project overcame this problem, and the problem of park authorities' reluctance to establish a new management system, by securing new legislation granting the management of the project to NGOs for

a period of ten years. If the project succeeded, it would be expanded beyond the original area. The new legislation allowed hunting, collection of forest products, allocation of visitor's fees for development activities, and a system of management at the village level. Traditional forest and pasture management systems were encouraged, and nurseries were created. Project staff consisted mainly of Nepalese, including locals.

The co-management of this project has proven to the local people that the project was not there to impose activities on them or to disenfranchise them from their lands and resources. "Fundamental to this process has been respect for local culture, self-determination, and empowerment" (Stevens 1997:258). The project staff gained the approval of people through "communication, cooperation and trust" (*ibid.*). The Annapurna project is also a good example of the way populations have shifted from a rather reluctant position to "participation, responsibility, and enthusiasm" (*ibid.*). Still ongoing, this project has great potential for use as a model for other conservation and development projects.

According to the authors mentioned below, other successful ICDPs include the following:

In Amboseli, Kenya (Western 1994:15), an integrated conservation and development project employed a successful bottom-up approach was used in order to get the Masai to participate in project activities and benefit from fees from tourism activities while preserving their natural resources.

A sustainable way of meeting basic needs for natural resources was implemented in an Eastern Indian forest management project (Poffenberger 1994:53). Thanks to new policies that fostered collaborative forest management, between 6,000 and 8,000 villagers began to patrol and protect hundreds of thousands of hectares of degraded forest. These actions were supported by education campaigns to engage the villagers in reforestation programmes.

In the Reserva Comunal Tamshiyacu-Tahuayo, in the Peruvian Amazon, a project successfully linked conservation of the Amazonian forest and community programmes for game meat, fish and non-timber plant products (Bodmer 1994:113).

Local initiatives and rewards for conservation promoted the improvement of economic returns from subsistence farming in the Crater Mountain Wildlife management area of Papua New Guinea, while taking into account traditional customs involving inheritance and shifting cultivation (Pearl 1994:193). The project also implemented beneficial activities such as "cultural tourism."

Other examples of successful ICDPs are described in Wells and Brandon's *People and Parks* (1992), Western and Wright's *Natural Connections* (1994), Stevens' *Conservation through Cultural Survival* (1997), O'Riordan *et al.*'s *Biodiversity, Sustainability and Human Communities* (2002), Terborgh *et al.*'s *Making Parks Work* (2002), McShane and Wells' *Getting Biodiversity Projects to Work* (2004) and McNeely's *Friends for Life* (2005).

5. The Second Generation of ICDPs: Lessons Learned

Local people live at the periphery of the global economic system, and therefore do not always accept domination (Ishwaran 1998). Local realities are often far from being recognized in the world economic system, and rules and regulations that applied to this system are unfamiliar for them; at the very least they are not a part of it. So when decisions are made at the international level, these decisions do not always correspond to local realities and therefore cannot be imposed on people. Local people see what is going wrong in projects, and what is not appropriate; they cannot be fooled about their own development, and they try to maximize the effects of project efforts that they see as helpful to answer their problems (Dudley 1993).

In ICDPs, many different categories of people interact; they come from different contexts and have different goals; their behavior is dictated by different logics. To succeed, a project must be placed in a more global context. Regional policies are shaped by national policies, which are themselves shaped by international policies (Brandon

1998); all of them include few considerations of local realities. Rural communities should be able to advocate for their rights and this should be included in regional, national and international planning. Local communities are part of a more global landscape that includes several dimensions (politics, economics, social relations), and understanding their relationships with this landscape is “critical” (Saunier and Meganck 1995).

As mentioned, sustainable development has three pillars: biodiversity conservation, social development, and economic opportunities. However, the first generation of ICDPs was not concerned with sustainable use of natural resources (Fisher *et al.* 2005). No monitoring for impacts on biodiversity was implemented in these early ICDPs, and in addition there was a lack of specific targets for social development. There were almost no achievements, not only because of the lack of comprehension of the social dimensions of conservation, but also because of a lack of inclusion of traditional knowledge and the effective participation of local people or other stakeholders. Economic opportunities, incentives or alternatives were not sufficient, and there were some problems in satisfying livelihoods and sharing benefits equitably among the intended beneficiaries.

It was confirmed by a numerical analysis of 28 selected ICDPs associated with protected areas, based on 150 published papers, that ICDP failures are due to the lack of consideration of four issues: (1) poverty and conservation are regulated by different policies that cannot be integrated; (2) conservation will not succeed if poverty is not alleviated; (3) for ethical reasons, conservation should not undermine poverty reduction; and (4) poverty reduction itself depends on the conservation of living resources (Brooks *et al.* 2006, Adams *et al.* 2004 in Garnett *et al.* 2007).

Second-generation ICDPs were designed to try to integrate different recommendations made from the first ICDPs’ evaluations (Hughes and Flinton 2001; Wells and Brandon 1992; Wells and MacShane 2004; Fisher *et al.* 2005; Brooks *et al.* 2006):

At the project level, these recommendations include: Simple, clear goals and objectives, and explicit targets in the project design that rely on local knowledge and

experience; sociological studies linked to the local people's social, economic, and cultural characteristics, and adequate to rural development planning; interventions at different levels (local, policies, etc.); a minimum of assistance provided by outsiders; fewer constraints imposed by the project structure; more gathering of empirical evidence; the measurement of success against a set of ecological, economic, attitudinal, and behavioral parameters; reinforced monitoring and adaptive management based on local conditions and context, and supported by donors; evaluations done on a regular basis throughout the project; and longer time commitment integrating effective monitoring and evaluation.

At the community level, recommendations are: local participation of homogeneous communities at all stages of projects; use of new technologies that are available and appropriate; capacity-building and strong local institutions to strengthen communities' capacities; false assumptions about poverty reduction minimized; trade-offs in response to initial false assumptions; equity issues and share of benefits taken into account; integration of communities in wider markets; consideration of all stakeholders' interests.

At the national level, recommendations include strong government commitment to the project; a recognition that national policies exist but can be challenged; the implementation of site-based programmes and policy initiatives in order to address multi-scale problems.

Based on these recommendations, the definition of ICDPs has therefore be expanded for the second ICDP generation, so that projects are now described as "...approaches to the management and conservation of natural resources in areas of significant biodiversity value that aim to reconcile the biodiversity conservation and socio-economic development interests of multiple stakeholders at local, regional, national and international levels" (Franks and Blomley 2004).

These recommendations helped in designing and implementing the ICDP considered in this dissertation. The research reflected here can be considered as the implementation of a second generation ICDP, twenty-five years after the first ICDPs

were implemented around the world in the 1980s, and fifteen years after the first generation of ICDPs were implemented in Madagascar in the 1990s.

The present research was based on both the available literature and on the examples provided above. Successes and failures related in these examples have been used in order to elaborate activities in concordance with the local context but also by using a methodology that involves local participation.

B. INTEGRATED CONSERVATION AND DEVELOPMENT PROJECTS IN MADAGASCAR

ICDPs were first implemented in Madagascar at the beginning of the country's Environmental Programme (1991-1996), and were envisioned as lasting for at least 3-5 years each. The results of these ICDPs have considerably influenced national policies, as well as the orientation of conservation agencies' programmes. Among them, six ICDPs were associated with the USAID-financed Sustainable Approach for Viable Environmental Management (SAVEM) programme (Gezon 1997, Swanson 1997, Peters 1998): the Amber Mountain Complex (WWF), Masoala (CARE), Zahamena (CI), Andasibe (VITA), Ranomafana (ICTE), and Andohahela (WWF). Eight other projects were funded by German, Dutch, Norwegian, UNESCO, WWF and other partners (Swanson 1997).

The SAVEM Programme, for example, was given \$US 29 million for six ICDPs in the 1990s to cover a period of about 10 years, and \$US 33 million for programmes and \$US 9 million for projects in 1992. The 6th ICDP received an average of \$US 500,000 to \$US 750,000 each year (Peters 1998).

An extensive bibliography exists for ICDPs, proposals, ICDP progress, and final reports, but relatively few evaluation reports have been made available to the general public or to the conservation world. Most of these reports have been internally retained by their respective organizations. They were submitted to donors, but rarely have they been shared either with the Malagasy Government or conservation agencies.

Even if some of these reports can be accessed, by transmission between

colleagues or through informal discussions, most of them probably do not accurately reflect the real problems encountered in the field. Most are written at the end of a specific period in the life of a project:-- either at mid-term, when a project has typically encountered problems and seeks reorientation, or at the end point, when reports often focus on obtaining additional funds to start another phase. It is therefore important for these reports to emphasize project's successes and outstanding performance, not their failures or problems.

For this reason, I have elected to base what follows not on project reports, but on published documents analyzing the results and performance of ICDPs. Unfortunately, project reports are sometimes typically "reports on paper" that do not adequately reflect realities in the field. The situation is unfortunate, because many of these evaluations could have served as lessons learned, and could therefore have been used to expand projects or create new ones focusing in new directions (Gezon 1997).

I have had direct experience with the projects that will be discussed here, and was actively involved with one of them, the Ranomafana project (RNM). I repeatedly visited some of the others, such as Marojejy, Masoala, Andringitra and Andohahela, in conjunction with my work on the nomination of the eastern rainforest to the UNESCO World Heritage Committee. Most of these site visits took place during the IUCN evaluation mission that was held in August, 2006.

In this chapter, I will address my Ranomafana experiences during the time I worked there as a student. (My return to Ranomafana as a UNESCO employee will be discussed in the following chapters, to provide a comparison between the Ranomafana project and the project implemented in Midongy National Park). I will first cover issues relating to the design and preparation of ICDPs, such as the choice of communities targeted by project activities, the composition of park staff (including local recruitment of agents), individual commitments made to the project, and the allocation of project funds. Later, I will consider the two main components of ICDPs, conservation and development, in terms of the impacts – successful and not -- of their activities.

Specific examples from various ICDPs will illustrate these different components.

Thus this chapter will allow me to identify similarities or differences between these projects. I do not wish to sit in judgment of other ICDPs, in comparison to the ICDP reflected in my research for this dissertation, but only to highlight some of the successes and failures of ICDPs in different contexts. As noted by Brechin *et al.* (2003), ICDPs have been criticized, but to date, they still represent the best way of dealing with integrated conservation and development components, and implementers of ICDPs have learned from their experiences. Other alternatives, such as landscape regional approaches (Gezon 2003), have been designed, but they fail to address the local context, for which ICDPs seem more adequate.

1. The Choice of Communities targeted by the Project

A crucial element in any successful ICDP is the choice of local people to be targeted by project activities (Cernea 1998, Marcus 2001, Brown 2003, Pielemier 2005). First, a selection must be made from among the communities surrounding the protected area. This choice should be based on objective criteria that relate to the conservation and development goals of the ICDP; communities located in areas of environmental pressures, for example, would be obvious choices (Gezon 2003). Unfortunately, the best choices are not always made. In the Amber Mountain ICDP, for example, many villages were located along “practicable and accessible” roads, but were not close to the protected area, thus making activities easier to implement. But in the long run, participants were not particularly concerned about conservation in the protected area, as this area was a long distance away; thus intended beneficiaries were not closely involved with the environmental pressures impacting this protected area (Gezon and Freed 1999).

I observed a similar situation first-hand in Ranomafana where most of the target villages were located along roads, and some villages were not implicated in the environmental pressures impacting the park. In one village, the president of the *fokontany*, when asked about the park, told us that the park was far away and villagers would not go there. Nevertheless, these villagers were the recipients of project interventions and funds from the Droit d’Entrée des Aires protégées (DEAP), discussed in the previous chapter. DEAP has often been criticized. Peters (1998 :40), who saw it as

an excellent opportunity for people to be involved in project activities and in environmental conservation, would be very disappointed to see the results.

Committees that decide on the allocation of funds are often composed of people chosen either by park management or the international NGOs, and funds are typically not allocated objectively. In RNM, during my survey, many Tanala villagers told me that they had never benefited from DEAP, and had never been asked to participate in the selection process, which led to tensions between communities. This was especially true when communities belonged to different ethnic groups.

Some projects operate at the community level, but for specific activities it is necessary to identify individuals. Generally speaking, it is the best-educated, and members of the village elite, who fulfill these individual functions. They may be recruited by the project as conservation, education or health agents, or chosen to serve as mediators between the project and local people, or they may simply be project beneficiaries, but it is they who gain the most benefits.

This of course distorts the social fabric of communities and contributes to resentment. A villager might interpret his non-involvement as a result of not being a member of the elite, or being uneducated, and feel that he/she would never achieve high status vis-a-vis the project. Despite the fact that this is a well known and widely acknowledged phenomenon, projects routinely continue to favor a minority of the local population at the expense of the majority -- who should be the first ones to participate in such projects. There is obvious evidence that people should be integrated in the design-making process of a project, but there is little evidence that this is efficiently done, as many are excluded.

Some argue that it is preferable to choose better-educated or wealthier villagers as project participants, and to encourage small business enterprises, with the hope that others will follow these examples. However, in Malagasy society, succeeding where others fail is frowned upon. Following the principle of *fihavanana*, a concept of solidarity among Malagasy people, a certain balance must be found inside a community, and everybody should benefit equally from opportunities created by projects.

Stille (2002) notes that the village of the guide chosen for the RNM project, in which the project management “overturned the structure” of the village. Even a village elder felt that he was no longer respected, and left for another village – a surprising turn of events, considering the place that *raiamandreny*, or elders, occupy in Malagasy society. Stille recalls that guides sometimes paid people, behind the backs of project staff, to undertake slash-and-burn activities (*tavy*). I personally observed significant changes in the behavior of these privileged guides who made more money than other community members, and were acquainted with new technologies, which set them apart from others.

2. Project Staff and Local Participants

Another problem that can affect the relationship between local people and a project is the fact that all foreigners, including nationals from other parts of the country, must introduce themselves to local administrative and traditional authorities when first arriving in a community. In the case of traditional authorities, this is certainly justified. But administrative authorities, based in town, are seen as local elite. This creates false assumptions, from the beginning, that staff members are associated with this local elite, and creates a credibility gap between project representatives and local people. The effect is that the project staff is associated with the political group in place at the time.

Project staff must get along with local people. It is important for local people to feel that the project staff is aware of their traditions and respects them. It is also important that project staff remain neutral when it comes to ethnic or political questions; that they refrain from arrogance; and that they adapt themselves to the local context. ICDPs incorporate humanitarian components, and should attract people not only because of the relatively high salaries and status they offer, but also because of their humanitarian mission. Ethnic group membership may result in simple stereotypes in Madagascar and can strongly affect people’s attitudes. This is the case in RNM for the Tanala people, and creates false assumptions about project objectives. For these reasons, it is better to recruit project staff locally or regionally and, if possible, to include representatives of different ethnic groups. In this way, sensitivity to community

standards can be maintained.

The question of attitudes points to one of the most essential elements of ICDPs. ICDPs are about people, not institutions. Projects tend to be located in remote places where everything relies on a few people. When individual participants are both competent and careful, they can succeed; otherwise, they can fail badly – and the impact of failure is more profound than the impact of success.

Unfortunately, the attitudes of certain individuals can compromise the image of their institutions. This is true for all institutions involved in the project, ranging from the park management to representatives of national and international NGOs. In some cases, people can be corrupt; in others, they may favor certain groups; or they can personally misbehave. The image of their organization is affected in any of these instances.

3. The Conservation Component: The Emphasis on Biodiversity Conservation

Very often, the emphasis has been put on biodiversity conservation at the expense of development. This is especially the case in RNM, about which it has been said that « lemurs come before people » (Perlez 1991 and Meek 2008). Peters (1998) details the funds that were allocated for a three-year project to three SAVEM ICDPs, one of which was Ranomafana: the Andohahela ICDP received \$US 2.1 million, the Amber Mountain project received \$US 2.7 million, and Ranomafana received a total of \$US 5.9 million -- 3.2 million for the study phase (1990-1993) and 2.7 million for the implementation phase (1994-1997). Out of that total, 37% went back to the US in the form of expatriate salaries, 18% was spent on university overhead, equipment and travel, and only 2% went to village projects (*Ibid.*).

Ranomafana NP was created in 1990. The rate of deforestation in RNM was apparently minimal at this time, although at the same time the forest of Mikea, in the western part of Madagascar, was disappearing at an alarming rate (Serpentié 2007). Still, funding priority was given to the categorization of a new species, and subsequent funds were allocated for the creation of the RNM national park.

Another common failure found among almost all ICDPs in Madagascar is

encountered between villagers and park management services. The previous chapters have made it clear that Madagascar National Parks (MNP) represents the State. Not infrequently, however, MNP is perceived locally as a foreign institution, intent on stealing the land of the ancestors and making a profit from it. The question of boundaries and the limits of protected areas is always a key point in the relationship between a park and local people. It has been observed for some ICDPs that local people respect the limits of protected areas not because they champion conservation, but because they are afraid of breaking the law (Marcus 2001). This attitude countermands a basic principle of ICDPs, which aim to change the attitudes and behavior of villagers from “deforesters” to “conservationists.”

In the case of RNM, for example, project management has repeatedly argued that boundaries were discussed with all local villagers prior to the establishment of the park. However, even before the new park’s official boundaries were established, *tavy* farming existed close to the protected area (Peters 1999, Stille 2002). Indeed, people were living within the area that would become the park.

Corruption among local authorities – including the MNP -- is an additional problem. If park staff commit violations, it is important for the individuals involved to be removed quickly. However, the MNP headquarters typically fails to act rapidly, which creates confusion among the local population. Alternately, if park staff establish good relationships with a local population but are then replaced or transferred to another park, there is a disruption not only of activities but also of the trust that had previously been established. This trust is difficult to regain, and its lack can affect the project. At Ranomafana, there were many instances in which park staff, after establishing positive relationships with the local population or other staff were removed for administrative or personal reasons.

Some authors, such as Oates (1999) and Terborgh (1999), criticized ICDPs because of the fact that too much emphasis was put on development at the expense of biodiversity conservation. This criticism initiated a movement in which conservationists tended to return to more strict conservation approaches, thus making two steps back in

the process of opening the scope of conservation to more human involvement in resources management.

4. Development as Compensation, a False Assumption

In ICDP evaluations, it has been noted that villagers are never really compensated for the denial of access to the natural resources that once provided their subsistence. Many, especially Ferraro (2002) and Ferraro and Simpson (2003), have questioned the enormous amount of money that is spread around for conservation, yielding relatively few benefits to the people whom conservation disenfranchises.

The key questions ICDP implementers should ask themselves were summed up by Swanson (1997: 4-1), in his evaluation of Environment al Plan 1:

“What development are we talking about, who should be responsible for conservation and development, which institution can pursue project activities after an ICDP: a public or private institution, who are the people of the peripheral zone, who is responsible for environmental pressures (locally, regionally and nationally)?” “Projects that provide what people desire have a higher success rate than do those that propose solutions to problems local people have neither recognized nor embraced” (Kottak 1991, quoted by Gezon 1997).

When designing an ICDP, the most difficult part of the task is not designing conservation activities, but rather development activities. Numerous failures have been attributed to the fact that development activities, intended to abet conservation, were not thoroughly thought out, but simply included as a project component to justify conservation. The lack of attention and priority given to development activities and local people’s needs has been a frequent cause of ICDP failures (Rabetaliana and Schachenmann 1999).

Projects typically include an initial survey requirement, to ensure that people’s needs will be taken into account. Yet the subsequent choice of development activities does not always correspond to people’s needs. At Ranomafana, surveys were made to

justify the inclusion of certain activities, but according to Hanson (2007) the survey data were later ignored. Marcus, in his 2001 evaluation of ICDPs, notes that in general, the impacts on socioeconomic life were minimal in RNM; only modest impacts were realized in Masoala, thus compromising conservation efforts. Sometimes, needs are defined by the project but do not really correspond to actual local needs. In Ranomafana as elsewhere, definitions of development are constructed by the project, and activities are imposed on local people (Hanson 2007).

The problem is that local people do not always apprehend the link between conservation and the development activities in which they participate (Gezon and Freed 1999; Marcus 2001; Meek 2008) and may view it as a “luxury they cannot afford” (Marcus 2001). There is often a lack of communication between projects and local people, a failure to explain how development activities can benefit villagers while addressing specific conservation issues that are also beneficial to them (for example, ecological services such as medicinal plants, watershed protection for drinking water, prevention of soil erosion).

Swanson (1997) exemplifies beekeeping. If this activity does not target the people who go into the forest to collect honey, then there is no point in developing this skill, because the environmental threat is not displaced from the protected forest to the peripheral zone and transformed into an income-generating activity. Gezon (1997) provides the additional example of agroforestry and tree planting in Amber Mountain and Ankarana, where people have not seen that the planting of nurseries by the project may potentially answer their future needs for fuel and construction wood. This situation, too, is the result of a lack of communication between the project and villagers.

“Over-development” is also a threat to local people and the environment. In 1997, Swanson foresaw this threat for RNM, pointing to the potentially out-of-control development in the town of Ranomafana. Tourism and the cost of living had both grown explosively there. Due to the presence of many tourists, the prices of local products had also increased considerably, rendering the local market inaccessible to the majority of the local population. Heavy tourism can have negative consequences. Migrants arrive

from outside and gain benefits from tourism, but local people cannot afford exponential economic growth (Wells and Brandon 1992, Western and Wright 1994, Newmark and Hough 2000, Marcus 2001). Moreover, such development activities are not sustainable so these activities are abandoned when funds run out.

A main component of many ICDPs is health. It brings immediate and tangible benefits to communities. Meek (2004) compared her experiences in Andohahela and Ranomafana, working on the health component at each site. She notes that her experience in Andohahela was more positive than in RNM, where not only was the implementation of health activities unsuccessful; the collaboration with MNP -- representing the conservation component -- was non-existent. In Andohahela, in contrast, all organizations working for the project -- such as MNP, WWF, and ASSOS, the NGO in charge of health -- worked together.

However, according to Meek's description of Andohahela, even if development activities are successfully implemented, locals still do not establish connections between these activities and conservation. She suggests that solutions might include more education and more emphasis on the link between conservation and development. Projects should be clear about their objectives, and adequately communicate this link to local people.

In 2002, Janice Harper (2002) was a researcher living in a Tanala village, called Ranovao, close to RNM. On her very first day in the village, a death occurred, and during her stay almost 10% of the population died of various diseases, mainly dysentery and respiratory infections. At one point, she wanted to alert the project leaders to the situation, as Ranovao was targeted for health activities and visited frequently by the project health team. Questioning what had been done to preclude a high mortality rate in the village did not endear her to the project management team, who asked her to refrain from creating negative publicity about the project (Harper 2002). When the same village was visited a few years later (Stille 2002), the villagers spoke of their dislike of the project. The health situation remained the same.

According to Peters (1998), the RNM ICDP renders the poor even poorer than

before. People who were accustomed to a certain standard of living are presented with new technologies, false assumptions, and promises. Farmers are engaged in trying to improve their standard of living, but are not given the means to accomplish this. The disruption in their way of living ultimately renders them even poorer.

RNM activities were usually planned by expatriates, and were not only poorly adapted to the local context but also required modern techniques and unaffordable tools (Freudenberger 2007). A Tanala inhabitant, showing me his land, told me that an international NGO, working under the auspices of the ICDP, asked him to prepare his land to test some new techniques associated with new and heavy farm machinery. Two years later, representatives of the NGO still had not returned.

In RNM, one could sometimes find engines that had been abandoned in the village, simply because a piece had broken and villagers were unable either to find a replacement part for it or to pay for its repair. On the one hand, the project was asking villagers to adopt new techniques of agriculture, but on the other, it was unable to adapt these techniques to the local context and render them sustainable.

Meek also mentioned that in Ranomafana, promises had been made by the project that had not been kept, creating tension and disappointment among the local population. The question of promises has frequently been raised in connection with RNM. Typically, numerous promises are made during the short visit of researchers, but once they leave, the project staff does not have the means to fulfill them (Stille 2002). This leads to two negative situations: (1) the Malagasy project team is seen as a group that either does not respect the wishes of the PI or simply does not have the means to fulfill them; and/or (2) false expectations on the part of the population are created, who then become suspicious about the project in general.

The main criticisms of ICDPs in Madagascar center on the fact that they tend to be based on biodiversity as a priority and development as a minor objective. The tremendous richness of Madagascar's biodiversity (almost 80% endemic species) is, of course, the underlying explanatory factor since Madagascar was thoroughly explored by biologists and other natural scientists, who published their data widely, a context was

forged in which the protection of the environment and the prevention of deforestation was considered to be of the highest priority. However, as pointed out, the discourse of deforestation has been imposed on local people, especially those living in and around protected areas.

The fate of ICDPs in Madagascar was therefore already sealed even before they began. ICDPs were implemented for the sole purpose of conservation, but they were sharply criticized, for good reason, which led to many recommendations for how to mitigate failures and problems. As one of the main goals is conservation, biologists involved in ICDPs also had to design and implement development activities. Socio-anthropologists, who have either evaluated or criticized ICDPs, should become more involved in the design of ICDPs, and then should have been given the opportunity to apply their ideas and recommendations in the field.

The most important challenge is to make it possible for project implementers to take recommendations and criticisms into account by sometimes ignoring the pressures exerted by donors, rather than by trying to obscure mistakes for which they are not systematically responsible. Natural scientists and social scientists should work together, without competing over whose approach is better. Steps have been taken in this direction (see Harper 2002:220, quoting emails exchanged between groups of biologists and anthropologists), but ultimately, nothing has changed. Local populations, meanwhile, do not understand why they are urged to follow principles over which project implementers disagree. In order to succeed in effecting the necessary compromises between people's lifeways and biological diversity protection, conservation needs to be seen as a coordinated and efficient tool, and local people must be seen as a part of biological diversity. Peters (1998:17) appeals to ICDP implementers and researchers "to focus on local education, organization and discipline to promote self-determination and self-reliance among resident peoples of protected areas. »

The first ICDPs left important footprints in Madagascar. Whether successful or unsuccessful, they considerably influenced the concepts of conservation and development and the way they are integrated in current national programmes and

policies. Madagascar is one example of the importance of ICDPs for environmental planning, but Madagascar's ICDPs share much in common with other ICDPs worldwide. As a result of early lessons learned in Madagascar and elsewhere, contemporary ICDPs are constantly readapted to new constraints and new environmental contexts, such as climate change.

Many criticisms have been made of ICDPs, both positive and negative, but believe there are no better judges of ICDPs than ICDPs' implementers themselves. If the implementation of an ICDP has not been experienced from inside, and on a daily basis, then it is difficult if not impossible to appreciate how complex a task it is to transform an ideology into concrete application in the field, and vice-versa.

PART TWO .THE MIDONGY-BEFOTAKA ICDP IN THE SOUTHEASTERN
RAINFOREST OF MADAGASCAR

CHAPTER V. METHODOLOGY

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CHAPTER V
METHODOLOGY

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The research reflected here consisted of designing, implementing and evaluating an ICDP project in the southeastern region of Madagascar, around two integrated components in particular: the conservation of the Midongy-Befotaka National Park; and the development of the surrounding populations. The research relied on lessons learned from earlier ICDPs, in order to implement a “second generation” ICDP. The design and implementation of the project were based on my own experience in Madagascar and other places.

A. RESEARCH APPROACH AND DESCRIPTION

For ICDPs, the real challenge has always been the implementation of the concept “integrated.” In the early ICDPs, if an attempt was made to reconcile both conservation and development, the two institutions involved, even when their representatives were working at the same site, had their own agendas, staffs, and procedures. Local populations tended to view the two institutions as separate from one another, which meant that the necessary synergy to optimize results was often absent.

The approach adopted in the present research was based on the conviction that sites of “Outstanding Universal Value” in terms of biodiversity should be protected in full collaboration with surrounding communities. Those living in these communities should enjoy favorable living conditions, based on economic, social, and ecological sustainability, while, at the same time, the value of the site was protected. The well-being of local populations is essential if they are to fully apprehend the concept of heritage, appreciate their own national and world heritage, and protect it.

Very often, people working for a specialized agency tend to remain within their field of study, without taking into account the constraints associated with other institutions. From the beginning, it was decided that equal importance would be given to conservation and development, and that activities would be undertaken in a way that would preserve the natural resources of the park for the populations themselves. The project established a unique operational plan, for which goals and objectives, outputs and outcomes, had to be the same for all partners. Links between staff responsible for activities specific either to the conservation or the development aspect of the project were

established. For example, if an education team needed to visit a village to provide its population with environmental messages, the park service also participated by providing information on the park and its rules and regulations.

In fully integrated projects, it must be recognized that some agencies are viewed negatively by local populations, such as the Park Service or others working for conservation, whereas others – those that bring development to people and convey immediate benefits - are welcomed by local people and can work with them more easily. For this research, development institutions were therefore asked not only to work hand-in-hand with Madagascar National Parks (MNP), but also to advocate actively for the protection of the park and to work under a single agenda with the MNP.

Within the project's overall plan, several micro-projects were identified, and three sets of focal activities were designated: education, health and agriculture, and conservation. All initiatives had the goal of protecting the park's natural resources for its surrounding populations. Main conservation activities were implemented by Madagascar National Parks (previously ANGAP). Overall activities were coordinated between institutions by the UNESCO coordination team in Antananarivo, and locally by site coordinators (in Midongy and Befotaka). The involvement of the Ministry of Environment, Water and Forests locally in Midongy Befotaka National Park (MBNP) was also very important. Development activities were implemented by the UNESCO Education For All programme and the Tany Meva Foundation, together with the NGO PENSER (see "project partners", below).

Studying integrated conservation and development involves many disciplines, from biology to social studies. Each discipline has its own methodology and way of evaluating projects. In the 1990s, when development projects started to encounter some difficulties, the role of social scientists and anthropologists became more important, and their work helped in integrating a more social-science approach into projects and encouraging the fuller participation of local populations in projects were intended to benefit them.

Methods used in development studies have been criticized by Escobar, Ferguson, Cernea, and Chambers, among others. Many criticisms appeared in the 1990s, but since then very few publications have evaluated the research done in the context of development studies. Most research has been undertaken in the context of applied anthropology.

Research on development was initiated during the 1930s and 1940s out of the involvement of anthropology in colonial administration (Gardner 1996). In the 1960s, a decade during which a number of former colonies gained their independence, research on development increased. In the 1970s, international institutions, rather than individual countries, began to sponsor some development research (Guichaoua 1993). The World Bank, in particular, hired anthropologists to conduct this research. The general approach tended to be top-down, and there was a gap between theories and field realities. In the 1980s and 1990s, funds for development were often wasted. At the same time, it was recognized that more attention needed to be paid to the social, cultural, and demographic characteristics of populations of intended beneficiaries; in order to anticipate the potential negative impact of development and to verify that projects were acceptable to local people.

Anthropologists take into consideration the historical context of local communities, as well as social and political changes. In recent years it has become increasingly important to look at the cultural and social effects of development, and why it sometimes fails. Gezon (1997) adds that anthropologists should – in addition to local populations – also study the relationships that exist between project host countries and the agencies or expatriate individuals in charge of their implementation.

Anthropologists have been some of the sharpest critics of development. Cernea (1998) complained that development research had not produced any theory, and that there should be more applied research. Escobar (1995) wrote that development anthropologists were failing to respond to changes, especially changes induced by politics, and that they were too much embedded in the development discourse; they are, for Escobar, therefore ethically compromised. Ferguson (1990) added that when anthropologists' reports did not fit within the institutional discourse or were too critical, they were not taken into

consideration or acted upon. Ferguson and Escobar both called for the support of grassroots movements and community-based or indigenous movements.

Populations are not homogeneous and anthropology can help to differentiate community groups and to distinguish among development agents (sometimes accused of being contemptuous) and local people (sometimes mistrustful) (de Sardan 1997). Chambers (1990), often labeled a « populist » considered it important to listen to peasants, women, and neglected minorities. He insisted that there was a gap exists between developers and intended beneficiaries and believed that local people were in the best position to know how their society functioned. Therefore, local people, instead of being research subjects, should be actors in their own development. They need to be informed and supported by development workers so that they will have the necessary tools to define their needs, as well as the kind and extent of development they want (Dudley 1993). Even when development workers act out of the sincerest motives, they are never free from the responsibility of their choice.

In the domain of anthropology, de Sardan (1997) emphasizes the complexity of development work that involves multiple actors, different stakes, and different systems of constraints on both sides. De Sardan is in favour of the adaptability, operationality and simplification of ethnographic research. For purposes of the present research, I have leaned heavily on his advice.

Gardner (1996) emphasizes the role of anthropology in development not as an academic field but as an applied discipline. While noting that anthropology does not have all the answers, he questions the efficiency of development projects. Gardner favors the increased involvement of anthropologists in the design, implementation and evaluation of development projects: this, he feels, would help produce more useful critiques.

Given my particular background in both biology and social anthropology, I was influenced, as I planned my research, by different methodologies and combined them in the design and conduct of this research.

The methods primarily used, such as direct observation, interviews, and surveys with questionnaires, were inspired mainly by anthropology but other procedures, such as

the use of GIS, were inspired by ecological sciences. I saw myself not as a neutral anthropologist who came to evaluate a specific project, but as a project insider.

I was recruited by UNESCO as the manager of the Midongy-Befotaka ICDP (MB ICDP) with the duties of designing a specific operational plan, and to report on the project's achievements. I was also in charge of identifying partner organizations and recruiting project staff.

For UNESCO, it is standard for an evaluation to be performed at the end of a project. However, it was obvious to me that it would be necessary, before beginning the MB ICDP, to implement a process of self-evaluation, by incorporating specific indicators - ecological, economic and social – to be monitored along the way. The goal of this ongoing self-evaluation project, to be accomplished through regular surveys, was to be able to modify activities that were not working well. It was important to me that the MB ICDP project should not mirror most other UNESCO projects, in which a sole evaluation at the project's end is undertaken too late to make changes . Ideally, evaluations should be done by individuals who are external to a project, to ensure their objectivity. However, in the case of this research, surveys were at first conducted by the project's staff to follow up on specific indicators. The results of these surveys yielded important information on the way the performance of the project was trending.

B. ACTIVITIES DESCRIPTION

Activities were implemented both by UNESCO and project partners identified by UNESCO. UNESCO played the role of coordinator between these partners.

1. Conservation Activities

The park had been created in 1997, but MNP administration was not implemented until 2005. The project supported the work of MNP's staff through the construction of the Park facilities (buildings), and also provided MNP with certain materials (SSB radio or SSB – Single-Side Band modulation, electricity generators, computers, and uniforms for the Park staff and rangers). Training sessions were also organized for the local staff; staff

from the regional office participated in conferences and meetings, and some were even provided with training outside of Madagascar.

Environmental information centres were established in order for the local population to have access to specific information about their region and about the importance of the environment, as well as to inform people about MNP activities. These centres were also intended to function as literacy centres.

Regional orientation committees were established composed of public and private institutions with interests in the environment and its protection, particularly in support of MNP. These committees, composed of both governmental and traditional authorities, village communities, NGOs, associations of women, and peasants, permitted a flow of information for better collaboration and synergy. Reference documents and rules and regulations were circulated, and used as supports/tools for better management of the protected area.

Biological inventories in MBNP were carried out in order for stakeholders to have a better knowledge of the protected area - in particular its biological diversity and threats to the environment. The resulting improved level of information on biodiversity helped in designing and implementing the necessary measures for conservation, and identified threats to the protected area.

A conservation plan was designed, based on the information provided by the biological and threats inventories. In addition, a development plan was created based on socio-economic information provided by various surveys.

The delimitation of the park's area, for purposes of the development activities, was prioritized to focus on zones of high environmental pressure. This constituted an important step to support the work of the park service.

2. Education Activities

Education and development activities were undertaken around MBNP to support the protected area management unit, and to establish a firm link between conservation and development for the benefit of local authorities and populations. These activities

brought immediate benefits to the local populations, and oriented them by increasing their awareness and sensitivity towards the surrounding environment, the need for its protection, and the benefits of a high level of biodiversity.

It is widely recognized that development activities cannot be achieved in the absence of literacy and education. Activities promoting literacy and environmental education sessions were implemented around MBNP, first to respond to the demand from local people for informal education, and second to support the implementation of other activities. People targeted by these activities were mainly those who never attended school - mostly young adults and adults of the working population.

As a follow-up to literacy activities, complementary technical and professional sessions were made available to students of income-generating activities, such as agriculture and sewing, so that they could put their skills in reading and calculation to use. This training targeted young adults and was intended to encourage the creation of small business enterprises. Local community associations were also created to sustain these activities inside each community.

3. Development Activities

Quantitative and qualitative surveys (see Appendix 1), based on the local social, economic and sanitary situation, were conducted to collect data necessary to define local needs, both for authorities and local populations. These data were used to design development activities and integrate them into the daily life of the project's intended beneficiaries.

The surveys were based on a questionnaire I designed using a combination of two earlier ones: one used by Kightlinger around Ranomafana National Park in 1991, and the other used by the World Health Organization (WHO). I added some specific questions related to environment and conservation issues, including questions about the national park. Some partners, such as JSI/PENSER, the health NGO, also asked to add some questions in order to complement national information on health. These were not of direct relevance to the research, but some of the results are presented in chapters Six and Seven.

Around Midongy, the physical context was assessed in conjunction with the need of local populations for more land, and specific areas were identified to be expanded for agriculture. Moreover, a water system in the region was studied in order to provide cultivable lands with an irrigation system. In some instances, the construction of micro-dams was necessary. Most of these actions were undertaken in order to make use of formerly unploughed land and to avoid the environmental pressure of slash-and-burn cultivation on new areas close to the forest and park limits.

Meetings were organized in villages in order to discuss survey results and provide information on the future project. Objectives to be achieved, based on local needs in the areas of health, population and environment, were determined in conjunction with the communities, and contracts were signed between these communities and project institutions. Individuals in each community who were to be in charge of implementation were identified, and follow-up committees were established.

Training sessions were defined and tuition was given to communities and community volunteers as appropriate. Community members and farmers were trained in various areas of health, population and environment, such as disease treatment (especially diarrhea), immunizations, respiratory diseases, nutrition, malaria, family planning, awareness of sexually transmitted diseases and AIDS, income-generating activities, intensive rice cultivation systems and improved rice cultivation, small-scale cattle and poultry breeding, vegetable gardening, composting, and reforestation.

In the health arena, activities to promote hygiene were undertaken, as was the distribution of various sanitary products (water disinfection pills, mosquito nets, contraceptive products, etc.). Health centres (or Centre de Santé de Base, CSB) were provided with management tools and medical materials, and communities were provided with agricultural equipment and seeds.

So that the activities of the various project partner agencies (such as EPT and TM/PENSER) would not overlap, preliminary discussions were held with representatives of these agencies, and plans were drawn up to ensure that they would implement complementary activities in villages.

C. PROJECT PARTNERS

The role of UNESCO consisted of the coordination to ensure their effectiveness and impact on local populations. In this partnership, UNESCO played the role of catalyst to leverage project funds. In coordination with the Malagasy Government, UNESCO established agreements with the partner organizations, each including an operational plan, a budget and a detailed description of potential technical partners. UNESCO then served as coordinator and facilitator, establishing contracts with national governmental and non-governmental institutions to implement both conservation and development activities.

In 2005, UNESCO designated a site coordinator for Midongy and worked with project partners who had field teams both in Midongy and Befotaka. In 2007, with the project having expanded, UNESCO added a site coordinator in Befotaka, and teams of two people each (one agricultural technician and one social-organizer) in Midongy, Befotaka, and in Vatanato (Vangaindrano district). These teams were permanently assigned their field positions, as the partners' staff.

As noted previously, Madagascar National Parks (MNP) was a major partner in the MB ICDP. Project activities supported the work of MNP in the field -- especially the work involving mediation with the population in preparation for the re-delimitation of park's limits. However, MNP was going through a period of restructuring, which limited its capacity for implementing project activities.

The Joint Programme for Education was a UNESCO/UNDP implemented programme for education and literacy under the trusteeship of the Ministry of Population in Madagascar. Although it was the first time that a programme of education and literacy had been involved in a conservation project, the important inputs and outcomes from this programme brought out a very crucial issue in all development projects: illiteracy of the rural population. The activities of the PC/EPT involved literacy training, followed by local capacity building efforts in the management of small businesses and the implementation of small economic activities. These activities were geared to improving household incomes and – in the long run – to alleviate pressure on natural resources.

The Malagasy foundation Tany Meva "beautiful world" is a local NGO specializing in health and development projects. Tany Meva adopts a community-based approach in conservation, and participates in financing some innovative social, cultural, and economic activities related to protection of the environment. In the case of the MB ICDP, the Tany Meva Foundation was affiliated with a national NGO, PENSER Madagascar, which was in charge of implementing activities in the field. PENSER has long-standing, nationwide field experience in reinforcing local capacity in health activities and in searching for alternatives to slash-and-burn agricultural practices. The concept of "Champion Communities" (a concept developed by the John Snow Institute, which was involved in a USAID programme) aims to promote innovative approaches to a better livelihood through the improvement of health status, agricultural yields, and household income.

In Midongy, there was one representative of the Ministry of Environment, Water and Forest (MINENVEF) in MBNP who had been living in the region for a long time, and had established good relationships with villagers.

D. RESEARCH VILLAGES – SUBJECT POPULATIONS

Project activities were designed to respond to the threats caused to the environment. The choice of project areas and villages was established on a map, provided by MNP, that showed the most environmentally-impacted areas. These areas were also confirmed by a GIS study that identified, in link with the evolution of the forest cover, areas that were the most adversely affected. Due to budget limitations, project designers decided to concentrate on highly sensitive areas rather than to work on all villages around the Park. A strategy was therefore adopted that would focus activities for greater efficiency, instead of dispersing project efforts across too many areas and activities. The decision was made to conduct the research in the environmentally-threatened areas of Ankazovelo, Midongy-du-Sud and Befotaka.

These different activities were mainly implemented by volunteer community members who were trained by the project. The five surveyed *fokontany* were: Maroangaty and Bekofafa in the commune of Midongy du Sud; Ankazovelo in the

commune of Ankazovelo; and Ambondro and Ambohimahasoa in the commune of Befotaka. These village's histories are based on the 2005 JSI report (JSI 2005).

1. Commune of Nosifeno

Midongy is locally called “Nosifeno”, which means “well-inhabited village” was the first in the area.

The *fokontany* of Maroangaty is located 7 km to the east of Midongy. It has an area of 3180 m² and a population of 1025 inhabitants (fokontany documents). It is composed of three villages: Betsipanga (Mahela, Morahariva, Tsaramandroso, Fenoarivo); Analapary (Besavoa, Bekofafa, Tsiloakarivo); and Mahela (Beharena, Behova, Ihasy, Maromby). The name of the fokontany comes from the local word for snails - called “*angaty*” - which are common in the surrounding streams.

Bekofafa is located 12 km to the north of Midongy, on the road to Ranomena. It has an area of 760,000 m² and a population of 319 inhabitants. The population used to live in Fenoarivo, but had to be displaced to Bekofafa because of floods. It is composed of three villages: Bekofafa, Tsitove, and Menatraka. The Itomampy River and its streams, the Manandroy and the Fieta, cross its land but these waters are infested with bilharzia. Nevertheless, they are still used by the population for drinking and clothes washing.

2. Commune of Ankazovelo

The name of the *fokontany* comes from the presence of a sacred tree (hazovelona) that was planted in the north-east of the village, and was a cultural symbol of traditional festivities. Ankazovelo is located 8 km from Midongy, on the road to Befotaka. It has an area of 5000 m², and a population of 2163 inhabitants. It is composed of 10 villages: Mandrirano, Bekaraoky, Behajiny, Andranolava, Manombo, Ankazovelo, Mahanoy, Sahavoay, Mahasoay and Marondonaky.

3. Commune of Befotaka

One *fokontany* is Ambondro, located 6 km to the south of Befotaka. This village was called Ambondro due to the presence of grasses used for mats. The population goes

to Befotaka by foot or dug-out canoe. It is composed of 17 hamlets, and has an area of 150 km² with 352 inhabitants.

Ambohimahaso, previously called Bekofafa, is a another *fokontany*. The population was displaced into two areas after a plague in Tsaralera and Ambohimahaso, so-called because of the good health that came back to the population. Its area is 36 km², accommodating a population of 200 people in 15 villages.

E. HYPOTHESES AND VARIABLES

1. Goals and Objectives

The aim of the study was to evaluate the factors impacting the effectiveness of Integrated Conservation and Development Projects (ICDPs), both in terms of benefits to people living near protected areas and the attenuation of pressures exerted on the environment. To this end, the successes and failures of development activities implemented over a two-year period in the context of a specific project, and in particular its impact on the local population, was assessed, in order to determine whether or not such activities enhance environmental awareness among members of local communities and encourage environmental protection within a two-year time frame. In evaluating indicators of success or failure within the first two years of a project, the study primarily took into account project design and implementation as decisive factors in the eventual success of projects. Therefore, an additional objective was to develop recommendations for the design and implementation of future projects.

Major problems of ICDPs find their origins in the design and implementation phase of the project cycle. It is therefore important to identify, during the project design phase, issues that could affect the project's goals, such as community participation, technical input, government support and policies, human and institutional capacity, funding, and donor priorities (McShane and Newby 2004:50). These factors can be assessed and monitored from the very beginning of a project, and subsequently, a flexible and adaptative management can help to optimize the benefits gained from the project.

The study tested the assumptions that:

- ICDPs do not automatically lead to mutual and reciprocal benefits for both conservation and development activities; and
- The success of an ICDP rests mainly on the degree to which its implementers understand the national political, economic, social, and legal frameworks and the degree and effectiveness of the participation of villagers surrounding the protected area.

2. Research Plan and Hypotheses

In 2005, conservation-based development interventions were implemented in villages surrounding Midongy National Park, for the purpose of addressing threats to the environment of the protected area. The present study aims to evaluate the effectiveness and short-term impacts/effects of these interventions, and to identify variables that can be evaluated for immediate benefits to the community, with the ultimate goal of designing effective programmes for the proposed UNESCO World Heritage Area.

Two hypotheses were tested in the following manner:

Hypothesis 1: Interventions by external agencies can positively impact local development by increasing the well-being of local populations.

To test this hypothesis, the study assessed two kinds of variables, included in the study questionnaire. It first specified the qualitative variables relevant to the measures of ICDP success: pre-existing conditions, such as historical and ecological factors; internal factors unique to particular groups, such as ethnic, social, and political factors; and external factors, such as the geographical location of villages, people's relationships, both formal and informal, with local, regional, and national authorities, and the way development activities are implemented and degree of success. The study then identified specific (and interrelated) quantifiable variables and indicators of well-being relevant to the hypothesis, chosen from among the Millennium Development Goals (United Nations, 2003); the amount of newly-bought land under cultivation as the result of the ICDP; the

number of beneficiaries; an estimation of the amount of additional local income that could be attributed to training intended to increase economically-sustainable activities; the literacy rate; the number of project-related associations created; changes in infection/disease rates; changes in immunization rates; and the number of newly-implemented sanitation measures.

Following Freire (1970), it was assumed that local people living in the surroundings of Midongy National Park are not passive bystanders to aid projects; they are aware of what is inappropriate or unsuccessful, and capable of taking an active part in efforts to modify their behavior or status. Indications of participation in project activities, such the number of beneficiaries and the number of associations, helped in assessing the project's sustainability.

Hypothesis 2: Development activities can have a positive impact on the environment in protected areas and their peripheral zones. In particular, local people who are offered alternative economic activities and opportunities will become less dependent on the use of natural resources from a protected area.

The hypothesis was tested, like the first hypothesis, by examining both qualitative and quantitative data. Qualitatively, the study evaluated the changes that occur when local people (a) are made aware of protected area regulations and of benefits that could accrue to them through ecological services (*e.g.*, sustainable use of natural resources, watershed management, drinking water availability); (b) understand that the existence of a protected area is not incompatible with the realization of short-term benefits, such as increased income and improved well-being, as a direct result of development activities; and (c) receive assistance in managing their resources more wisely and efficiently than before the implementation of research activities.

Specific quantitative variables and indicators relevant to this second hypothesis are: an estimation of decreases in the consumption of natural resources collected inside the park; the number and perceived efficacy of environmental education and awareness programmes implemented to increase the local population's awareness about the need to protect the environment; changes in environmentally-related ideas and behaviors, such as

perceptions of the benefits brought by the park; and increases in production and/or income in response to implemented activities.

3. Tools

Participatory Rural Appraisal/Assessment (PRA) is a set of field methods (Mukolwe *et al.* 1995, Gardner and Lewis 1996, Lammerink 1998) that allows development workers to get an overview of a population within a relatively brief period of time (typically between 1 and 3 weeks). It includes the participation of the local population. Local people are presented with information, specific to their context, pertaining to a proposed research project, and are asked to give their opinions. Next, the local population, with the help of the development workers, defines what it views as desirable objectives of the work. PRA also includes the implementation of activities designed to fulfill the project's initial objectives. Benchmarks are employed during the study's implementation so that planned project activities can be coordinated with events that might occur during the research period or the following evaluation period (Mukolwe *et al.* 1995).

PRA is used to facilitate the work to be done with local people rather than to control it. It offers the opportunity for local people to express their needs: the role of development workers, at this stage, is to provide technical support fostering the achievement of results by local communities.

In the case of this research, it was obvious that I should use participatory methods. I was not advised to choose any specific method or methods for the research, nor was I directed to evaluate results in any particular way. It was my own decision to use an initial questionnaire, the result of which would serve as a baseline from which to monitor the implementation of the project's activities and to evaluate them. I felt it was important to highlight both positive and negative results, in order to learn as much as possible from the study.

In one instance during my work on the MB ICDP, a UNESCO agricultural technician presented me with the agenda for a mission to be undertaken in 2009, together with various project partners. According to this plan, villages were to be visited, but I

realized that most of the villages to be visited were among the most successful villages in the project. I therefore asked that the visits also include villages in which problems had been encountered, plus villages that were not participating fully in the project's activities. I felt it was vitally important to assess what had gone wrong in these villages, and to discuss villagers' problems openly with them. In most cases, it turned out that the problems were not insurmountable, and could be fairly easily resolved. (An example would be problems involving technical capacity). The more difficult problems to resolve were linked to relational and political problems, especially conflicts between villagers and MNP.

My research was quite atypical considering its double background. As noted, I was influenced by a scientific ecological background, but I also wanted to include a social and anthropological dimension. Using this integrated approach, in combination with PRA methods, helped considerably in linking and adapting activities in the specific fields of environment and development, and also helped in responding to some of the gaps that critics of development have pointed out in the development research literature.

Methods included note-taking; participant observation; structured questionnaires; community meetings; informal conversations; censuses, and documentation from national, regional and local administrations. These data were collected both before and during the implementation of the ICDP. They come from various sources: personal observation, project and partners reports, meetings, informal interviews (national and local), and questionnaires.

As a project manager employed by UNESCO, and responsible for the project in Madagascar, I had been involved in many meetings and missions to the field. This involvement was also at the heart of the design and implementation of an ICDP project, which is the core of this research. I was therefore an internal observer of the project. At the same time, however, I was able to take an outsider view, thanks to my responsibility to evaluate the actions of other actors who played a part in the project.

I was also involved in environmental and development networks and meetings, which gave me the opportunity to learn about the activities of other programmes and

projects, as well as to support, working with other governmental or non-governmental institutions, the design and implementation of policies of the Ministry of Environment, Water and Forests. This wide involvement was important, as fieldwork results could be included when considering general policies. Many meetings were also organized in the field with local authorities, both governmental and traditional. Since the project was concerned with all of the villages around the Park, I did not spend an extended period of time in any particular one. During these meetings in villages, stakeholders could express themselves about activities that had been implemented through the project, and the problems encountered as well as positive results obtained. In addition, informal meetings took place with community members, such as the members of associations of farmers, literacy groups, women, or traditional leaders. Local people were very communicative and keen to discuss successes and problems encountered in and around the project. In addition to meetings, a number of interviews, both formal and informal, were conducted with colleagues involved in the environment and development world. In the field, I also interviewed local stakeholders (representatives of local institutions, local authorities, or business groups such as local groceries store owners), and villagers. These interviews also offered me the opportunity to collect specific information on policies, and to make comparative assessments with the approach and results of other institutions.

The Participatory Rural Appraisal or Rapid Rural Appraisal was conducted using a survey team that was generally composed of 10 surveyors supervised by one coordinator. These results were discussed with various groups of the population, including men and women of diverse socio-economic groups and professional categories.

The questionnaire was based on general household types developed by the World Health Organization (WHO). In addition, open questions, specific to the research, were added. These open questions probed informants' knowledge of and opinions about the existence of the Park, such as advantages and disadvantages caused by the Park's proximity, types of resources extracted from the Park, and conservation activities of potential interest to the household and the community. The questionnaire was initially written in French and then translated into Malagasy.

Surveys were conducted in 2005, 2006 and 2007, in five administrative districts or “communes” including 17 *fokontany* and 59 villages, totaling about 31,103 people. Three surveys were first undertaken in each of these three years.

The first, in 2005, established the local context (economic, social, and environmental) in which activities were to be implemented. It helped provide the data necessary to assess the context, to define needs, and to design appropriate activities. Data were collected on different issues: socio-demographic and cultural data; health and sanitation; economic activities and agricultural practices; natural resource use; protected area knowledge (in terms of regulations and laws, and advantages/disadvantages); and infrastructure development (mainly governmental institutions).

The second survey in 2006, was undertaken in order to evaluate the effects of implemented activities; therefore complementary questions were added to the 2006 questionnaire: adoption of new behaviors and/or good practices, production techniques, links between health, population and environment, lessons learned and added values, what did not work and why, and recommendations for improvement.

The third survey was conducted in order to compare results with the 2005 and 2006 surveys. It was intended to assess the local context in villages that were added with the extension of activities in 2007. The expansion of activities was based on written requests from villages to expand project activities to more groups and more areas.

Table V.1: Number of villages and households involved in surveys

	2005	2006	2007
Number of :			
Communes	3 communes	3 communes	5 communes
Fokontany	5 fokontany	6 fokontany	17 fokontany
Villages	51 villages	40 villages	60 villages
Number of people	(JSI 2005) Nosifeno: 12,120 Ankazovelo: 9,025 Befotaka: 6,246		(UNESCO 2007) Nosifeno: 15,800 Ankazovelo: 9,025 Befotaka: 6,278 Vatanato: 10,149 Antaninarenina: 3, 810
Number of households surveyed	206 households	198 households	493 households

Households were chosen at random, but in the case of non-participating households, questions were asked about the eventual participation in project activities, and which activities they would like to participate in.

F. TIMEFRAME

The research started with the beginning of the project in 2004. An operational plan on general objectives was drawn up, areas for interventions were defined, and potential partners contacted. In February 2005, surveys were conducted in targeted areas, and the results were discussed with the relevant local populations. After the survey results had been studied, the operational plan was completed to include specific activities and indicators. Activities were implemented in 2005 and 2006. In May 2006, a second survey was conducted, in order to assess the preliminary results of the activities that had been

implemented. In mid-2007, the first phase of the project ended, and - based on positive results and on demands from local communities for the expansion of activities – a follow-on plan was submitted to donors. Another phase of the project was then designed, which reinforced and expanded previous activities. Another survey was conducted in July 2007, to assess results and also to gain information on the local context of new areas. At the end of this second project phase, a final survey was conducted in December 2009.

G. DATA ANALYSIS

As mentioned, both quantitative and qualitative analyses were undertaken. Quantitatively, data collected via questionnaires were analyzed using SPSS and EXCEL software. Qualitatively, results were analysed in light of experiences acquired during the project implementation (meetings, administrative and technical supervision, external evaluation realized at the end of the project). Data analyses take into account the 2005 and 2006 surveys for areas included in the first phase of the project in Midongy and Befotaka. A fourth comparative survey is currently being conducted in the field and data are not yet available.

H. LIMITATIONS AND CONSTRAINTS

Initially, local inhabitants were reluctant to participate in the survey, as they were disappointed and unhappy with the Malagasy Government, which they considered responsible for their daily problems. Another reason for their reluctance was a visit by researchers in 2003, from which no development activities resulted, despite the many promises that were made. This reluctance represented a major problem, especially in areas not yet targeted by development projects. Local people are naturally inclined to view development work in a positive light, but when they feel they have been deceived, or when promises appear to have been broken, they become mistrustful as well as disappointed.

In Midongy and Befotaka, this is something the research was very attentive to: to discuss problems with the villagers, to plan activities that not only answer their needs but are actually achievable, and to demonstrate that the success of activities depends also on

their active participation. Other surveys in 2006 and 2007 were greatly facilitated by the fact that activities had indeed been implemented.

Designing a questionnaire was difficult. First, it had to be comprehensible locally, even though some of the questions, especially health questions, were relatively technical. The culture of the intended beneficiaries also had to be considered, as some questions might touch on sensitive matters and thus be inappropriate to ask. In order to avoid these mistakes, the questionnaire was prepared in collaboration with people native to the study region. Particular attention was also paid to the survey team, by choosing people from within the region who could understand the local dialect and customs. The survey team was asked to establish, as much as possible, a friendly, casual, relationship with the individuals surveyed, and to present the questionnaire as if it were an informal conversation, instead of rigidly following the protocol “question by question.” For the question regarding income, precise responses were difficult to get, since villagers often do not know details such as the exact area of their lands.

Questions were added to follow-up questionnaires in order to get more information. In addition, technical reports, containing detailed data, were used in support of these questionnaires to render them more precise. For example, information about the geographical area of land, or about production, could sometimes be answered with reference to these reports. It turned out that conducting surveys on a regular basis was very important, since multiple surveys reflected changes from year to year.

A confounding factor in the research approach was combining the work of different agencies under the umbrella of a single operational plan. Institutions do not always have the same capacities, both in terms of experiences, administrative procedures, and flexibility. EPT and TM/PENSER were prompt in adapting to certain conditions, such as the presence of outside NGOs. MNP, as a governmental institution, was less prompt, since it was obliged to conform to certain procedures, both administrative and operational. But the fact that EPT and TM/PENSER supported MNP, and the fact that all activities and visits to villages were made by representatives of all these groups together, helped in attenuating these obstacles.

To measure the impacts of the project field activities in and around Midongy National Park, the project did some socio-economic surveys at the start and the end of these field activities, in the communities where the activities took place. The period in between the first two samples (2005 and 2006) was only slightly more than one year, which is a very short timeframe in which to achieve measurable changes in behavior. Nevertheless, the first survey results were very helpful, as none had been obtained before this survey on the local context. This really helped in defining the needs of the populations and designing project activities. On the other hand, the testing done on some variables showed that some activities had resulted in no impact whatsoever.

The specific methodology used to implement the Midongy-Befotaka ICDP was influenced by anthropological field methods, specifically the methods used in applied anthropology. Since different disciplines were included in this research, from conservation to development, the methodology had to be used in a flexible way, in order to gather as much information as possible and to allow the presentation of the following quantitative and qualitative results.

CHAPTER VI

THE STUDY AREA

A. THE ENVIRONMENTAL CONTEXT

1. The Midongy-Befotaka National Park (MBNP)
2. Environmental threats and human pressures
 - a. Natural disasters
 - b. Slash-and-burn activities
 - c. Illegal logging
 - d. Poaching
 - e. Honey collection
 - f. Invasive species
 - g. Mining

B. THE PEOPLE OF MIDONGY AND BEFOTAKA

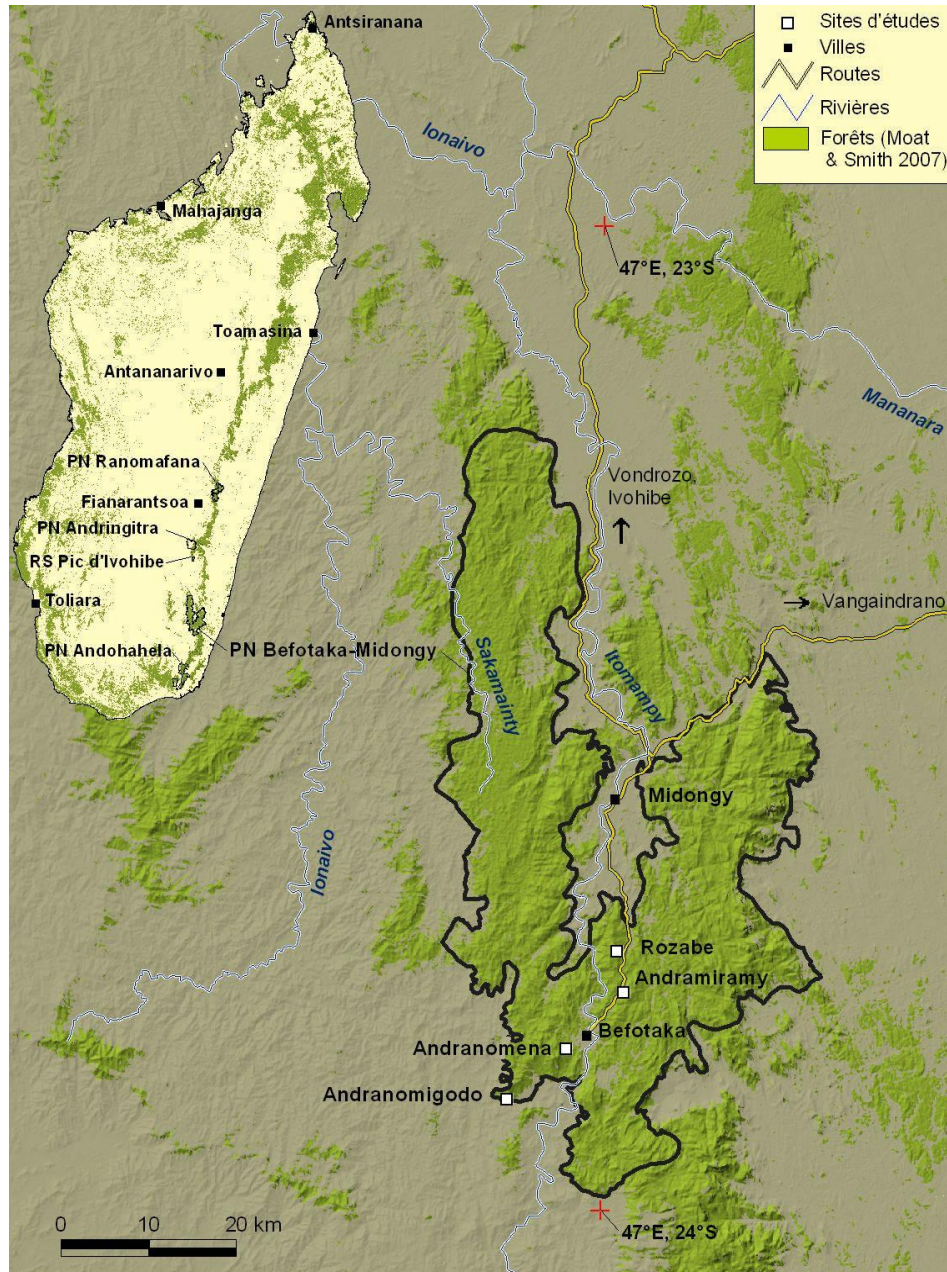
1. The Antesaka: Rice Cultivators
2. The Bara: Semi-nomadic Pastoralists

C. THE PHYSICAL AND ADMINISTRATIVE CONTEXT

1. Midongy (Nosifeno)
2. Ankazovelo
3. Befotaka

A. THE ENVIRONMENTAL CONTEXT

The region around Midongy-Befotaka National Park is part of the eastern humid forest of Madagascar. It is located in the southeastern part of a long band of humid forest that stretches from the north at Marojejy National Park to the south at Andohahela National Park. Both parks were inscribed on the World Heritage List in 2007 as a part of the “Eastern Humid Forests of Atsinanana”.



Map VI.1. Vegetation map of Midongy-Befotaka National Park (Moat and Smith, 2007).

The relief is varied and composed of steep hills. These are separated by narrow valleys and a rich hydrological network, rendering the region adequate for agriculture, which – along with extensive pastoralism - represents the main economic activity.

1. The Midongy-Befotaka National Park (MBNP)

Midongy-Befotaka National Park (MBNP) is one of the 46 protected areas of Madagascar, and covers an area of 192,198 ha, making it the second largest national park in Madagascar after Masoala National Park (230,000 ha). It was created by decree in 1997 (decree 97-1451), but it was only in 2005 that MNP became involved there. MNP infrastructure and facilities were funded through the UNESCO Midongy-Befotaka ICDP as a part of its conservation activities. The Park's altitudes vary between 400 m and 1600 m. The ecosystem is typical of the humid forest with altitudinal subdivisions. Very little low altitudinal forest remains, because of human pressures exerted on the environment, such as extensive slash-and-burn cultivation. Forest at high altitude is also minimal, due to the very steep topography in the forested areas of the region. The main remaining forest cover is therefore located at 800 m and 1300m.

The ecological and environmental data on the Park derive from two reports, one by Orgasys in 1997 and the other by Vahatra, a national association of biologists, in 2008. The region is poorly known in terms of its environment, and few studies have been made locally. The Vahatra inventory is the first that is quite complete and specifies the relative threats to the Park. However, a lot of data still await description in future studies. While altitudinal areas are steep, resulting in a discontinuous distribution of the vegetation cover, areas of low altitude that are located on the low slopes are subjected to intense human pressures.

Vahatra described a rich and heterogeneous biological ecosystem. For some species, the endemism is even greater than at two of the closest protected areas, Andohahela and Ranomafana National Parks. If the area's flora and fauna are equivalent

to those found in other humid forest areas, the Park shelters species rarely inventoried in other areas.

Table VI.1: Distribution of Flora and Fauna (Vertebrates) in the Befotaka-Midongy National Park

Taxonomic group	Number of species censused	Endemism	IUCN Status	Pressures and threats
Amphibians	60	99% endemic of Madagascar and 13 endemic of the eastern humid forest	10 of which 4 threatened and 6 almost threatened	Degradation of the natural habitat because of fragmentation, uncontrolled fires, slash-and-burn, selective logging of big trees, etc.
Reptiles	51	100 % endemic of Madagascar (9 endemic of the southeastern rainforest of Madagascar)	3 of which 1 threatened and 2 vulnerable	Degradation of the natural habitat because of fragmentation, uncontrolled fires, slash-and-burn, selective logging of big trees, and cattle straying
Birds	77 (3 aquatic and 74 terrestrial)	63 of which 46 endemic of Madagascar and 17 endemic of the region (Madagascar, Comoros, Seychelles and Mascareignes)	7 species of which 1 threatened, 1 vulnerable and 5 almost threatened	Degradation of the natural habitat because of fragmentation, uncontrolled fires, slash-and-burn, selective logging of trees, and forest resources collection Poaching and rat infestation in Andranomigodo.

				Invasive specie of Ancathaceae or Velatra in undergrowth forest
Micromammals	25 of which 15 non flying and 10 rodents	23 of which 15 <i>afrosoricida</i> and 8 rodents	7 species of which 1 threatened, 1 vulnerable and 5 almost threatened	Destruction of habitat, poaching, infestation of rats in Andranomigodo, etc.
Primates	6 observed of which 2 diurnal and 4 nocturnal		6 of which 2 vulnerable, 1 almost threatened and 3 for which data are insufficient	Deforestation and destruction of natural habitats
Flora	488	270 (or 55.32 %) Angiospermes and Pteridophytes of which 11 families are the most diversified	8 of which 1 threatened, 6 vulnerable and 1 almost threatened	Slash-and-burn or <i>tavy</i> , logging for honey collection, logging of small trees (diameter <12 cm) for wild pig traps. Cattle straying, palm logging of genus <i>Ravenea</i> for the fabrication of oil, logging for houses and handcraft, invasive species

Considering its biological importance, UNESCO anticipated that the park would be included among those with the highest value in the eastern rainforest of Madagascar. The criteria on which sites are selected are based on three components: (1) sites' biodiversity has to be endemic, and found nowhere else in the world nor in other parts of

Madagascar; (2) sites must be properly managed by the authority in charge of their protection; in this case, Madagascar National Parks (MNP); and (3) sites must demonstrate a certain integrity, with few pressures on the environment.

Midongy-Befotaka National Park incorporated the necessary elements for Outstanding Universal Value (OUV) for its biodiversity, but problems relating to its integrity and management prevented it from being inscribed on the World Heritage List. IUCN (International Union for Conservation of Nature) recommended that improvements should be made if the park were to be added as an extension of the World Heritage cluster later. These recommendations sum up the problems encountered by the park in terms of conservation. It is recognized that MBNP is one of the richest parks in the world, but pressures exerted on its environment threaten its very existence, and thus also the subsistence of local populations who rely on its natural resources.

The research highlights a major challenge the park faces *vis-à-vis* the local populations, a challenge that is probably at the origin of conflicts that arose between villagers and MNP, Madagascar National Parks (MNP, formerly ANGAP): the delimitation of the park. In the study made in 1997 by Orgasys, researchers described what should be the limits of the park, including the areas with the potential to be “occupied,” *Zone d’Occupation Contrôlée*, or ZOC, and areas with the potential to be “used,” *Zone d’Utilisation Contrôlée*, or ZUC. This delimitation was created as a proposition to the Government to elaborate the park’s limits before its creation, taking into account the presence of local populations. It was acknowledged at that time that some populations were actually living in the park, and could use and benefit from these areas.

When the project started in 2005, one of the first conservation activities to be implemented was the delimitation of the park, MNP was in charge of implementing this activity. MNP then proposed a delimitation, outlined on paper by its GIS department, which was different from the one proposed by Orgasys, and which would exclude all zones of use or occupation in and at the borders of the park. Various MNP teams were

involved, and they did not want to endorse this previous agreement. When MNP started to enforce the limits, it came into strong disagreement with the population involved in the 1997 negotiations. This constituted a major obstacle for the conservation of the Park and its delimitation. A compromise was reached through the MB ICDP, with the cooperation of both MNP and the populations, to define park's limits and to propose a new decree (charter) for these new limits.

2. Environmental threats and human pressures

In the region, the main threats affecting the environment are of two kinds: natural disasters, such as cyclones and floods; and human pressures, such as slash-and-burn activities or *tavy*, illegal logging, wandering of zebus in the forest, poaching, honey collection, invasive species, and mining.

The east of Madagascar -- in particular the southeast -- is regularly hit by cyclones of major or minor impact. The region of Midongy-Befotaka was particularly affected by the cyclone Geralda in February, 1994. Floods, too, impact Midongy on a regular basis, it is located in a land depression, so when rainfalls are extremely heavy, the streams of the Itomampy River, located north of Midongy, swell to create significant floods. Such flooding constitutes a real disaster for the region and its inhabitants, as the water level may rise above the houses and destroy them. Local people have frequently had to rebuild their houses in successive years.

The main human threats to the environment are slash-and-burn activities, practised in valleys and on low slopes close to the forest limits. Around Midongy and Befotaka, the forest is fragmented, and plantations of maize and rice can be encountered at the heart of the forest.

Illegal logging is carried out with the main purpose of obtaining trees to built houses. This activity is not pursued for commercial purposes, because access to the Park -- and even access to areas outside the Park - is very difficult. In a sense, this poor access is a natural protection against intensive logging. It has been noted that some wood has been cut along the river, with the felled trees transported by the river, but, at the same

time, due to transportation conditions in general, it is still difficult to get cut wood outside of the region. Illegal logging is thus mainly due to the use of wood to build houses, or for charcoal.

Occasional cases of poaching have been reported, mainly for micro-mammals, but also, from time to time, species of large birds. Apparently, lemurs are not affected by poaching. Traps have also been found to catch wild pigs.

Honey in the park is collected for household consumption and – more rarely -- for the local market. In order to harvest the honey, villagers have to cut down trees, since hives are located at the tops of trees.

Invasive species of both birds and flora have been reported. Non-native species are attracted to areas of cleared forest. These species subsequently compete with the original species, in some cases not only disturbing the original ecosystem but actually destroying it.

Domesticated zebus, which constitute an environmental threat as well, are also found in the forest.

Another threat is mining, especially in the south of the park. Mining is usually conducted by foreign companies that employ local workers for low wages. This activity has only infrequently been reported, but might increase in the future as protected areas remain a target of those who seek minerals and precious stones. The relation between the Ministry of Environment and the Ministry of Mines in Madagascar has always been a difficult one, as their interests' conflict. An agreement between the two ministries was reached in 2006, and authorizations for mining exploitation around protected areas were suspended. However, this agreement ended in 2007, and therefore exploitation permits around protected areas are now allowed, constituting a real threat to the environment.

It should also be noted that even if the area's biodiversity did not suffer direct threats, indirect threats, in the form of deforestation or logging, might affect species' habitats and, in the long term, the species themselves. Logging, like mining, is typically conducted by foreign companies which employ local workers.

The threats to the forest detailed above are frequently reported, but there have been no monitoring activities carried out to quantitatively estimate their impact. The MB ICDP therefore tried to implement activities that would help MNP, which still lacks the manpower and funding to patrol a 192,000 ha park to estimate the nature and extent of threats to the Park. In 2005, MNP had a director, three programmatic chiefs (conservation, development, and finance), two sector chiefs (one for Midongy and one for Befotaka), and eight rangers in charge of park protection. As will be discussed in chapters Seven, the project therefore tried to support activities that would organize the local population into committees in order to protect both the park and its natural resources in a sustainable way.

B. THE PEOPLE OF MIDONGY AND BEFOTAKA

The island of Madagascar is home to about twenty ethnic groups shaped by a specific way of life in a particular environment. All, however, recognized that they are Malagasy, and although there are various dialects, all can communicate in one language.

In his study of ethnicity, Barth (1969) considers that local groups are not discontinuous or culturally isolated from one another. He explains that ethnic identity does not constitute a group's culture, but is rather a characteristic of the group's social organization. Ethnic groups are in fact a product of historical, economic, and political factors, as well as interactions between groups. Barth thus believes that ethnicity, defined in terms of these factors, provides a group with its social organization and defines its cultural boundaries. A group's ethnic identity is therefore defined not by outsiders but by group members themselves (Barth 1969), and cultural differences between groups are the means by which groups mark their differences – the way they separate themselves from each other.

In considering the social history of the Waswahili, Arens (1975) supports Barth's contention about ethnic identity. He argues that ethnic groups rarely coincide with a specific geographic territory and that most groups in Africa were labeled and defined by colonial administrators.

Ethnicity is not fixed, but is continuously changing (Arens 1975). Individuals can move from one ethnic group to another in response to political, economic, and ecological experiences. Barth (1969) adds that cultural differentiation is linked to environmental adaptations, as well as access to natural resources. When outside actors (such as the State) try to control the access of local groups to natural resources, this might then affect or even create an ethnic identity.

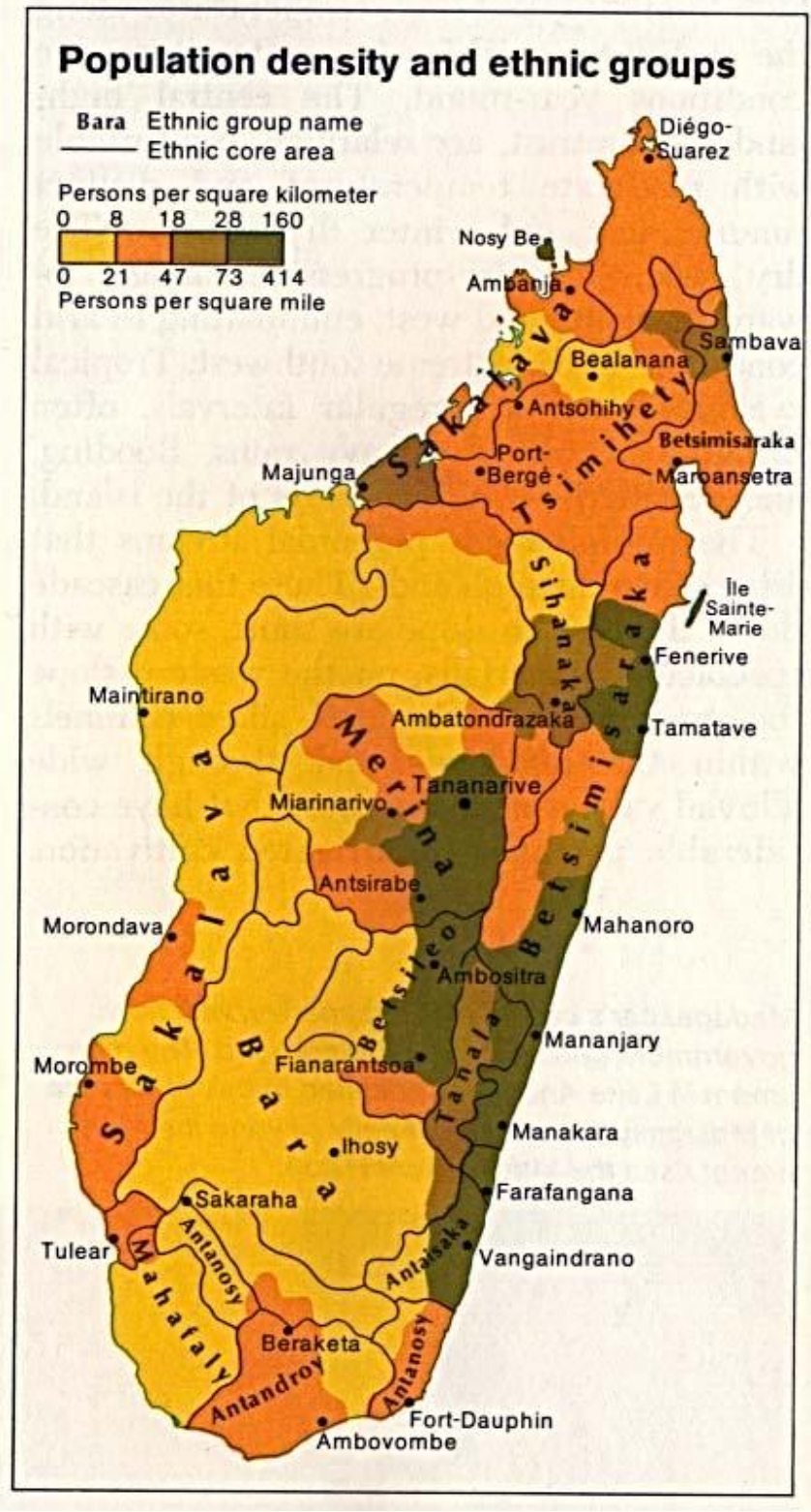
The discussion above contradicts Deschamps (1961:96-97) earlier colonial perspective of ethnicity in Madagascar. According to Deschamps, the Antefasy are the ones who live with taboos, the Antemoro are the ones who live on the coast, the Antesaka are the ones who comes from the Sakalava lands, the Antambahoaka are the descendants of the Rabevahoaaka, the Antakarana are the ones of the rock county, the Antandroy, are the ones of the thorn-bush county, the Antanosy are the ones of the island, the Merina, the ones of the Highlands, the Sakalava, the ones of the spacious valleys, the Tanala, the ones who live in the forest, the Tsimihety, the ones who are not submissive, the Vezo, the people of the sea, and so forth.

Social distinctions exist in all ethnic groups in Madagascar, but there is an important economic and political distinction between people living in the centre region of the "High Plateaux" (the Merina and Betsileo), and people living on the coasts. The High Plateaux have been colonized by migrations from Indonesia; and the costs of Madagascar have been colonized by migrations from Africa. Distances and conflicts between these two groups – coastal and inland -- were emphasized during the colonial period, between 1885 and 1960. The French administration, in order to gain control over colonized territories, reinforced the differences between groups by hiring people from the High Plateaux and giving them certain privileges. After independence in 1960, differences and conflicts remained, creating tensions among groups (Beaujard 1983).

In Madagascar, individuals' origins determine almost everything about them: the places where they live; the locations of their tombs, their access to education, resources, and job opportunities, power relationships; and where they stand on political and economical issues (Beaujard 1985). Of all these defining factors, the most important reflection of cultural identity, for Malagasy people, is the tomb. The tomb represents the

continuity of one's ancestors' lineage, which occupies an important place in the daily life of Malagasy people. Ceremonies that unify Malagasy people and reinforce group cohesion are organized around the symbol of the tomb (Bloch 1971). A Malagasy individual can be a descendant of several groups, and at the time of his or her funeral, can be buried in any tomb representing ancestors. In addition to tombs, however, a Malagasy individual's native land and residence location play a very important role (*ibid.*).

Water is also a vital element in Malagasy culture. It is a symbol of blessing (or *tsoadrano*), and spirits in most Malagasy regions (Bloch 1971; Huntington 1988). The zebu is also symbolically important in the life of Malagasy people. This animal accompanies a human life, it represents pride and wealth, and is placed at the centre of all ceremonies. It is not a sacred animal as such, because zebu can be used for difficult tasks, such as pulling plows in rice fields. However, in the past, it could not be slaughtered without a religious motive (Dubois 1938).



Map VI.2: Population Density and Ethnic Groups (source unknown)

Most of the ethnographic material presented here is bibliographical, in order to give a succinct description of the two groups most prevalent in the ICDP area and to introduce some of their customs in relation to activities implemented by the research; no ethnographic study was conducted, as this would have gone beyond the subject of this research.

Two main groups of people live in the region of Midongy and Befotaka: the Antesaka, who are mainly rice cultivators, and the Bara, who are semi-nomadic pastoralists. The Bara have been living in the region for a long time, whereas the Antesaka settled there more recently, having come from the west of Madagascar in response to the region's high demand for labor (Trouchaud 1964).

My surveys show that the population of the Midongy-Befotaka area is about 2/3 Antaisaka and 1/3 Bara; other "ethnic groups" represent a tiny minority. Bara people are predominant in the south part of the park, in the commune of Befotaka. Survey results show that the Bara are decreasing in numbers in the commune of Befotaka, while the number of Antaisaka increases. This has been caused by the Antaisaka cutting the forest towards the south and pushing the Bara further south or east.

1. The Antesaka, rice cultivators

Antesaka people, in contrast to the Bara, described below, are a small group that has only rarely been studied. Deschamps, a colonial administrator, studied them between 1934 and 1939, and Suzanne Vianès co-authored a publication with Deschamps about them in 1959. The publications of these authors are no longer available, and very little information on the Antesaka was found for this research.

The name Antesaka is a contraction of *antesakalava*; the rice-cultivating Antesaka people are derived from the Sakalava group. Prince Sakalava Andriamandresi was the founding father of the group. The Antesaka are famous for their funeral rituals, for which they can spend most of their incomes, especially on the construction of a mortuary house. Group members are buried in collective tombs (*kibory*). They work exclusively as family groups, and all their gains are given back to the family (Trouchaud 1964).

Antesaka people are mainly located on the eastern coast of Madagascar and in the province of Fianarantsoa, close to Vangaindrano. Before their settlement in the region, they were migrant people (*mpiavy*). Their migrations into the region occurred at three different times (Trouchaud 1964):

- old migrations before the 16th century (no information provided on the origin of these migrations);
- a conquering immigration that came from the south and southeast during the 16th century and that made up the current ethnic groups described as autochthonous: the Sakalava, Masikoro and Vezo;
- more recent immigrations during the 17th and 20th centuries, which led to the establishment of foreign groups: Antesaka in the southeast, Betsileo in the centre and the south, and, even more recently, Mahafaly and Tandroy in the extreme south, from the South coast in the Fort-Dauphin region.

As early as 1901, a labor force was needed for the construction of the Fianarantsoa railroad. In 1903, 1,000 Antemoro and 8,000 Antesaka immigrated from the centre of the island; 30% of them did not return to their villages. People earned better wages working on the railroad than they did from working in the fields, and in 1915, the chief of the district of Vangaindrano complained about the fact that the rice fields had been abandoned because of these out-migrations. In the 30s, Antesaka migrated to serve as a labor force for the gold mines of Diego Suarez, and in 1909, to work on the vanilla plantations in the northeast and the construction of the Tamatave harbor. In 1917, almost 50% of the male population had migrated. Thus, the migrations that shaped the current cultural landscape were mainly undertaken for economic purposes (Randrianja 2001).

Valleys, hillsides or shallows provide most of the irrigated land for Antesaka rice cultivation. The pluvial rice of the hills and the irrigated rice of the valleys coexist and are complementary, as in the Mekong Valley (Locatelli 2000). For the Antesaka, the cultivation of a particular plot of land during several consecutive years gives a rice farmer a definitive right to the property. Besides agriculture, Antesaka also breed cattle (Fauroux 1997).

The Antesaka people arrived in waves, and began to occupy the lands close to the forest that once belonged to the Bara people and to establish cultivation areas there. Today, the Antesaka, like the Betsileo, are better adapted than the Bara to modern agricultural techniques. In addition to rice (in terraces or in valleys), they also cultivate manioc, sweet potatoes, saonjo (arum) and bananas (Anonymous, sous-gouverneur de Ranomena 1933). These are an opportunistic people, who can apparently adapt easily to new customs. Early into their settlement of the area, they were acknowledged for their knowledge and capacities in water and irrigation techniques for rice cultivation, and were becoming rapidly integrated into other groups. In exchange for their work, they were often given the lands they cultivated, and even given the status of relatives by the original landowners (Trouchaud 1964).

2. The Bara, semi-nomadic pastoralists

The Bara are located in a vast rural area in the central southern region of Madagascar. Their territory is delimited to the south by the Mangoky River, to the north by Beroroha, to the east by Midongy-du-Sud, and to the west by Sakaraha. These are a pastoral people, who maintain close connections with both their ancestors and their herds. The traditional chief is called the *lonaky*. At the beginning of French colonization, the Bara were divided into four kingdoms, each further divided into clans. The clans (*raza*) are composed of different lineages. For the Bara, the local group shares control over rice fields, cattle, women and the tomb (Huntington 1974).

The first people to mention the Bara in the literature were British missionaries in the 1880s (Rabesahala Horning 2008). Together with the Sakalava, the Bara are recognized as the most efficient pastoralists in Madagascar (Faublée 1954).

As Saint Sauveur (2001) points out, Bara practices, values, rules and institutions can play a role in the management of natural resources. Modern resources management is usually undertaken by individuals, rather by the community, but among the Bara, management is done collectively. This management covers cultural landscapes spanning large territories. Therefore, inside a community, each individual is responsible to the others for the control a specific territory. The location of cattle not only determines the

space to be controlled but also the pastoral area of the village and its land tenureship. Two main characteristics of the Bara, like other nomadic peoples, are a social organization based on lineage, and the necessity to move to exploit fluctuating resources (Saint Sauveur 2001).

These aspects are very important, as stress is put on the whole community rather than on individuals, particularly when designing an aid project and identifying beneficiaries within the community. Of course, members inside the community are different from each other, and some can play a leadership role, but all groups of the community are emphasized, in order to serve as leverage to sustain minority groups (such as women or the poorest people in the community). Benefits are shared among all members. Sometimes poor minority groups can benefit from less expensive products sold at prices established by the community as opposed to local market prices.

Most of the time, incomes generated by agriculture are invested in cattle (Saint Sauveur 1998). Bara, besides their main activity of cattle breeding, also use the forest as forage for their cattle, as well as to hide them from potential theft, especially in areas with a high threat to security. One of these areas is located in the southwest of Midongy-Befotaka National Park, and forest use causes difficulties in implementing activities with villagers. If, paradoxically, the wandering of cattle inside the forest prevents slash-and-burn activities, and a priority is given to zebus rather than cultivation, this can also negatively impact the forest by destroying the undergrowth (Vahatra 2008).

Zebus for Bara have a very symbolic place in the community, as sources of wealth (Saint Sauveur 2002). When a Bara dies, a ritual is performed consisting of killing all his zebus, as his wealth is buried with him. In the Bara areas, one can see tombs with zebu horns fixed atop. Zebus are perceived as very close to the ancestors, and therefore are closely associated with the family lineage tombs (Saint Sauveur 1998). Another ritual related to zebus is for young men to fight with zebus to prove their bravery and manhood. Faublée (1954) mentions that before his circumcision, a male Bara is referred to as a female. Once a young man can fight a zebu, then he becomes a man, and can get married. In some regions, another part of this ritual is that the young man has to steal zebus from a neighbor; most of the time, the stealing is acknowledged by the community, and allows

the exchange of zebus from one cattle group to another for genetic purposes. Cattle exchange in the past was also a means of economic exchange, as it took place among the members of the same group reinforcing group cohesion as in many African pastoral societies.

Among the Bara, the land tenure system and use rights (*usufruct*) are usually believed to have been given by the nature spirits through a specific alliance (Saint Sauveur 1998). Nature can then be exploited, but must be shared among humans and zebus. The transfer of land through the lineage is legitimized through the share of wealth in the group. In case of conflicts, reconciliation is preferred to the imposition of sanctions (*ibid.*).

The spatial unit of production for Bara people is the *vavarano* or “the access to the river” (Mahatsanga 1977). This unit includes the valley and its rivers, a space centered in the *ranon'draza* (*rano* is “water”, as opposed to *tanin'draza*, “the land of the ancestor”). It is the river of the ancestors that allowed the clan to expand its lands, provided drinking water for both humans and zebus, and permitted use of the lands for rice cultivation. For Malagasy people, to drink the water of a certain area links one to the land for life. There is also an institutional link between villages whose members drink the same water; this is seen as a pact of non-aggression (*troky*) (Saint-Sauveur 2002). This pact implies that the groups involved will not fight with each other or steal each other's zebus. This fraternity among Bara people is effective in Andringitra National Park, where villagers are organized into patrols and control posts to regulate the access to pastures. The pool of associated villages is also in charge of protecting the valley. If a space is not occupied by cattle, then it is considered to be abandoned unless pasture fires are made to maintain land tenureship.

For the Bara, the status of *tompontany* prevails; *tompo* means “the owner” or “the master,” and *tany* means “the land.” This indirectly implies the notion of property and the way this property is managed (Moizo 2003). This right does not apply to individuals, but to the whole community, and is relative to the alliance made with the nature spirits. But this right is not unlimited, and if the clan does not respect the taboos, then the rupture of

this right is expressed by troubles that appear inside the community. If too many problems appear, then the clan has to move away from the land (*ibid.*).

This status of master of the land is also strongly linked to power and wealth. The clan must respect particular obligations in regards to a moderate use of natural resources, fidelity to the ancestors, and respect for prohibited things, as dictated by the nature spirits. These obligations serve the purpose of transmitting values and resources to the group, and reproduce a certain way of life. On the other hand, it is the role of the *lonaky*, the head of the clan, to ensure that wealth benefits the whole community. The forest is a collective patrimony that is managed by the chief of the lineage. The *lonaky* also looks at the sustainability of the cattle stock and the economic viability of the agricultural system (Rajaonson 2005). Thus, among the Bara, status is determined by wealth, and wealth is determined by the number of cattle owned by any given member of the clan.

An interesting example of the sustainable use of natural resources is provided by a Bara proverb which states: “during the dry season, it is forbidden to collect reeds in stocks located close to the village; if so, a downpour of hail will appear over rice fields during the rainy season” [thus destroying water collection and jeopardizing the subsistence of the village] (Rajaonson (2005)). When analyzed, this proverb is self-explanatory, both economically and ecologically. Economically, during the dry season reeds are a source of income for women -- especially the poor, those with many children, or widows. These women do not have enough land to feed their families, and must exchange products they make from reeds for food such as rice, manioc or maize. Ecologically, stocks of reeds are located in humid zones, and preserving them prevents the drying up of the water source. Moreover, reeds render the area cool, with adequate fresh water for fish, which is an important source of protein for the group. Rajaonson (2005) therefore argues that Bara have a certain consciousness of the way natural resources should be preserved in a sustainable way, and what might affect stocks of natural resources, thus contributing to the group’s cohesion.

These behaviors should be taken into account as fundamental to the implementation of any kind of development activity. They were taken into account in the design and implementation of the Midongy-Befotaka project. For example, Antesaka are

known to use slash-and-burn activities more intensively at the edge of the forest, while the Bara focus their activities on cattle, and – except for allowing their cattle to wander in the forest -- rarely use its natural resources.

These cultural elements are of considerable importance in defining adequate development activities, and ways of implementing them. The position of the Bara as “masters of the land” gives them the responsibility to protect resources (Rajaonson 2005) and allows them to enjoy certain privileges over the migrants and outsiders who do not respect the alliance with the nature/forest spirits.

The land was once “mastered” collectively, but today, due to the scarcity of natural resources, this pattern has tended to change in terms of perceptions and uses. Where collective management, and a long-term vision of sustainable use of resources once predominated, behaviors today foster immediate and short-term profits from natural resources (Moizo 2003). As Fauroux (1997) expresses it, in the past, Bara perceptions of the forest were based on divine origin; the abundance of resources was considered infinite, with specific obligations attached to different resources; and access to and use of the forest was governed by clear rules. Pressures on the forest were minimal, and most forest products, if used in the village, had to be given back, in one way or another, to the forest (Ruud 1960; Fauroux 1989; Randrianantenaina 1995, in Moizo 2003). The forest also existed to protect the zebus, and in exchange, zebus were sacrificed to the forest.

Today, however, conflicts arise over the access to and use of scarce natural resources, and Bara people believe that if foreigners can go inside the forest, it must be because the spirits have left it. This belief also explains why, in order to regain this area, the Bara put zebus -- known to attract spirits -- in the forest. The economic system of the Bara is based on extensive cattle breeding, and it is only very recently, over the last 40 to 60 years, that forest pastures have been used (Fauroux 1989). Bara nowadays place their herds in the forest in order to transform this area into forest pastures and to prevent agricultural people from occupying this space. Sometimes, they can also gain wealth by authorizing migrants, from the North and the East, to cultivate lands at the border of the forest. In some cases, the forest has also become a place to hide stolen zebus for exchange (Rejela 1987). Paradoxically, this both allows better protection of the forest,

since the presence of zebus indicates that the area is “occupied,” and, at the same time, further degradation of the forest, since straying zebus have a negative impact.

Unfortunately, this system of natural protection of the forest, out of respect for cultural obligations, is declining, and, with the arrival of migrants who do not respect the rules and regulations of the indigenes, some of the Bara have left the forest, giving free access to everyone and jeopardizing their traditional conservation scheme. Bara are also tempted to adopt agricultural practices, but their gardening skills are weak, and they lack a labor force to become cultivators. Moreover, in the Bara tradition, the use of pastures for agricultural purposes is frowned upon (Moizo2003).

Despite the fact that the tradition of cattle stealing for the Bara seems to be less important nowadays, their relationship to cattle remains very important. One reason may be that the Bara are mainly found in a remote location, and are therefore adhering more tightly to traditions. I noticed that Bara people were more hesitant to adopt project activities, as most of the villages in their region had never been approached by conservation or development agencies. Moreover, the link between the project and MNP was a problem. The few previous contacts they had had with MNP involved sanctions and punishments. The first time I went into the Bara villages to explain our project, accompanied by MNP agents, the elders refused to meet with us. A subsequent meeting with the agricultural technician went more smoothly, and Bara villagers finally became engaged in the project’s activities.

In the field, it is quite noticeable that Antaisaka, who live close to roads and towns, are – at least initially -- much more open to innovation than the more isolated Bara. Both populations can be easily differentiated by the way they dress, but also by the way they address outsiders.

As mentioned previously, the two groups have different ideas about the forest ; the Bara have a history of protecting the forest, and the Antesaka have a tradition of rice cultivation and slash-and-burn techniques, which transform the forest into agricultural lands. This difference has jeopardized the practices of the Bara, who today

act individually, cultivating the land at the expense of the whole group, which has led to the breakdown of clan and lineage rules and obligations.

In the context of conservation projects, the land is a way of maintaining collectivity, and each tract of land is allocated to a specific group of community members. If a Bara is asked to abandon a plot of land, the process is not reversible, and he is never again able to regain his plot. Ideas about and tenureship differ between indigenous groups and the government, and this difference greatly affects the traditions that once proved relatively sustainable for the society (Rajaonson2005).

C. THE PHYSICAL AND ADMINISTRATIVE CONTEXT

The administrative context aids in understanding the conditions in which the research was planned and implemented. Indeed, most of the activities of the project were designed with this context in mind.

Midongy du Sud and Befotaka are both in the southeast region, and are among the most remote places on the island of Madagascar. During the rainy season, it can take two days to access Midongy from Vangaindrano (92 km), and two more days to reach Befotaka (134 km). Missions carried out during the project often had to be postponed due to the difficult access to the park, which is limited to seven to eight months a year.

Administratively, postings to Midongy and Befotaka are seen as disciplinary. This means that administrators are rarely motivated; moreover, they often come without their spouses and children, because of the lack of modern facilities and the difficult climate. Aid projects face the same hardships; there are no permanent aid institutions, as the implementation costs for a project in Midongy are high, in terms of infrastructure, adequate materials, and transportation. Neither is there any public transportation to the closest market; villagers have to walk 42 kms to reach the market in Ranomena. The trip is time-consuming, taking two days to go to and from Ranomena and two additional days for Befotaka. The sale of their products barely covers their basic needs, Midongy and Befotaka have very small markets, and there are small grocery stores in Midongy. At the beginning of the research, the market in Midongy was not big enough for the villagers to

sell their agricultural products. This relative isolation increases the pressures on the environment, as farmers must get most of what they need locally around the park.

The economy of both Midongy and Befotaka-Sud is agro-pastoral. Population growth and poverty oblige the residents to intensify their cultivation and expand their cultivable lands at the expense of the forest. These activities have two consequences: cleared land fails to produce as much, and soil erosion causes sand to encroach onto rice fields. This situation is worsened by controlled burning at the end of the dry season by pastoralists.

1. Nosifeno (Midongy) and Ankazovelo

The *Fivondronampokontany* (sous-préfecture) of Midongy du Sud is located in the *faritany* (province) of Fianarantsoa, in the southeast region. The *Fivondronampokontany* is composed of six rural communes -- Midongy, Ankazovelo, Andranolalina, Maliorano, Lavaraty, and Soakibany – which are divided into 48 *fokontany*.

With an area of 2,694 km², the *Fivondronampokontany* is delimited by its sub-prefectures: in the north by Ivohibe, in the south by Befotaka, in the east by Vagaindrano, and in the west by Iakora. The local population is estimated at 37,842 inhabitants, with a density of 10 inhabitants per km², living mainly off agriculture and pastoralism.

a. Topography and Climate

There are two different sub-regions: the mountainous east covered with dense forest and characterized by a rainy climate, which is favorable to agriculture and cash-income agricultural activities; and the mountainous west, more sparsely inhabited, characterized by a dryer climate, with vast pastures favorable for pastoralism.

The region lies in an intermediary position between the highlands and the eastern littoral. Forested mountains dominate the landscape. Among the most important are the rocky mountains of Midongy on the occidental side, with an altitude of 1,100m. Valleys crossed by small rivers descend narrowly towards the west.

The climate is similar to that of the highlands, with two different seasons: a dry season, between April and September, characterized by intermittent cool spells, during which the temperature can go down to 10°C with occasional light rains; and a hot season, between October and March, with a temperature that can reach 27°C. This season is characterized by continuous rainfall.

b. Soil and Hydrology

The soil is fertile for growing rice, manioc, sweet potatoes, and oil-yielding ground nuts. Arable lands are abundant on argillaceous soil and in forested areas.

The main rivers are the Ifanodiha in the east and the Itonampy in the west. The latter rises at the foot of the Anosy Mountains and crosses the district of Befotaka and Midongy towards the north to join the Mananara River, which often causes floods in the overall region.

c. Administrative Structure and Institutions

The population of Midongy is estimated at 12,000 inhabitants (Administrative census, rural commune of Nosifeno, 2004). The annual rate of population increase is estimated at 2.6%. This rate is not influenced by immigration, as there is almost no migration from outside the area. Among governmental institutions and representatives in the commune, there are: a representative of the local people, a representative of the Education Ministry (CISCO), a representative of the gendarmerie (a branch of the army associated with police functions), a representative of the health sector (SSD, or Service de Santé de District), a representative of the Water and Forest Department, a representative of the agricultural sector, and a veterinarian.

The commune's budget is provided solely by government grants. This financial situation is unsatisfactory because there are no investments; all funds are expended in operational costs of the commune. Despite this, there are still no unpaid salaries. There is no tax collection, because the government made no fiscal census. Therefore, activities in the region rely mainly on external project funding.

Nosifeno has an elementary school and a non-functioning high school. Most of the children, numbering 2933 in 1999/2000 (CISCO Midongy) leave school early or do not attend at all, in order to help their parents look after the zebus, or to work in the fields. There is usually a ratio of one teacher to 47 pupils.

Midongy has a hospital, a CSBII or Centre de Santé de Base (health centre category II), and there is a CSBI (health centre category I) in Maroangaty. In 1999, there was one medic for 1000 inhabitants. The population is subject to transportation problems and the insufficiency of staff in emergencies, and at risk of severe disease when there is a need for sanitary evacuations. People who need surgical interventions or intensive care have to be taken to Vangaindrano, but there is no means of public transportation to get there.

As opposed to Ankazovelo, Midongy has a penitentiary, a gendarmerie, and a telecommunications centre with a radio. Only the town of Midongy has public water and electricity, managed by the national company JIRAMA. Since 2009, Midongy and Befotaka have been equipped with a public telephone. Phone companies, such as TELMA and Orange, have initiated a mobile phone network in Midongy.

2. Ankazovelo

Ankazovelo had a total population of 9,000 inhabitants in 2004. The basic administrative structures are located in Midongy, 8 km away. There is only one elementary school and one health centre (CSB). There is no drinkable running water, no electricity, and no telecommunications. Ankazovelo was one of the main communes targeted by project activities.

Agriculture, pastoralism and poultry breeding are the main economic activities in the region. For the year 2000 (Agriculture Service, Midongy District, 1998, 2000), there were 1,600 head of cattle and 600,000 head of poultry. The production was: 1422 tons of paddy rice (41.2 Kgs per inhabitant and per year), 44 tons of maize, 7150 tons of manioc, 4280 tons of sweet potatoes, 568 tons of saonjo (taro), and 568 tons of ground nuts. The presence of the agricultural department has not impacted the nutritional insufficiency of the region, nor the traditional practice of slash-and-burn.

The forest department, with the support of WWF and MNP, is in charge of the environment and forest protection, especially in the National Park, delimited in 1995, as well as the buffer zone.

3. Befotaka

The sub-prefecture has an area of 2,940 km², and is composed of seven rural communes subdivided into 45 *fokontany*. It includes 37,239 inhabitants, for a population density of 13 inhabitants per km². The road to the sub-prefecture is impassible for seven months of the year, and 75 bridges must be built with beams, one at each vehicle passage, in order to reach the town of Befotaka by car.

a. Topography and Climate

The Befotaka region has two distinctive areas. The east and northeast area is characterized by a mountainous topography and dense forests; temperatures are between 15°C and 27°C; rainfall is between 900 mm and 1200 mm/year. The main activity is slash-and-burn rice cultivation. The second area, the west and southwest, consists of a mountainous topography covered with a pseudo-steppe with two different seasons. The main economic activities are cattle breeding and rice cultivation. The highest summit is Mount Papango, which is about 1,570 m high; valleys are narrow, preventing the extension of arable lands. The climate is characterized by a cold season from April to September and a dry season between October and March. The mean temperature is between 15°C and 27°C, and can go down to 10°C. Rainfall is 1100 mm during the rainy season and 900 mm during the dry season.

b. Soil and Hydrology

One part of the district is favorable for agriculture, whereas the other part has pasture (the communes of Marovitsika and Ranotsara Sud). There is also the presence of a natural forest reserve of 54,193 ha towards the northeast, which is rich in marketable tree species. The Itomampy is the main river, contributing to a rich hydrological network.

c. Administrative structure and institutions

Like Midongy, Befotaka is a chief district and is composed of eight *fokontany*. Its population is composed of many migrants, most of them Bara and Antesaka (as in Midongy), but the area is not as thickly inhabited. The 2004 census records 6,246 inhabitants for the whole commune.

Governmental agents and institutions are: a population representative, a representative of CISCO, a gendarmerie, and a category II health centre (CSBII), which is smaller than Midongy's CSBI. In comparison to Midongy, there is a higher threat to security because of cattle-stealing, a phenomenon called *dahalo*. Unfortunately, the available information regarding the financial situation is unreliable. For education, Befotaka has nine elementary schools (CISCO and SSD, Befotaka, 1999-2000): 40.4% of the schools are functioning; there were 1421 pupils in 1999/2000, and the ratio is one teacher for 42 pupils.

These numbers indicate that education-wise, Befotaka is among the least-advanced districts in the country. Parents are generally not literate, and school is not a priority for children who have to work to help their parents, and often marry young (13-14 years old).

In the health sector, Befotaka has only one CSBII. A single doctor is in charge of 40.4% of the local population, which is very insufficient.

Cattle breeding is important in the communes of Ranovitsika and Ranotsara-sud. The agricultural situation in 1999 was as follows (Service Agriculture, Befotaka district, 1999): 35,572 tons of paddy rice (125 kg per inhabitant per year), 17 tons of maize, 6870 tons of manioc, 4295 tons of sweet potatoes, and 515 tons of saonjo. Slash-and-burn rice cultivation is predominant over valley rice cultivation. The technique of water irrigation is not known by the slash-and-burn cultivators.

These data reflect official government figures; however, there seem to be some discrepancies in numbers due to different methods of collecting data, and perhaps also due to differences among census-takers.

The administrative details provided in this chapter are intended to convey some idea of the local situation, as well as to demonstrate the difficulty in assessing reality in these remote areas. This difficulty makes including such data in an overall country profile problematic.

These figures will be elaborated in detail in chapter Seven from data collected during the research surveys. It is hoped that the Midongy-Befotaka project's results will help the local administration to get more data about local communities. More importantly for present purposes, the differences between local groups, detailed in this chapter, will help in understanding, in the next chapter, how these groups reacted differently to project activities.

CHAPTER VII

RESULTS AND IMPACTS

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A. . STATISTICAL RESULTS

A landscape approach, integrating the national park and its surrounding areas -- including villages -- was adopted to ensure the relevance of the planned development activities. Simple and schematic land use maps were developed, combined with socioeconomic surveys in the peripheral zone of the National Park in August, 2005. These surveys and land use maps, which made it possible to design appropriate agricultural and economic activities in support of the conservation of the National Park's biodiversity, were linked with the socio-economic surveys.

Simple agricultural techniques adapted to the local situation were promoted, one month after the first survey and continuing until the end of the project, to provide local communities with alternative options to promote rice field expansion while at the same time ensuring the Park's integrity. To measure the impact of the project's field activities in and around Midongy National Park, the project did some socioeconomic surveys at the beginning and end of the field activities in the impacted communities. The surveys sought information about the level of public awareness of the existence of the park and its regulations, and provided indicators on the economy and on health. For all sites, the project was innovative in that it constituted the first main intervention in terms of conservation and development together. Even the notion of a villagers' association was novel in the region.

For this section, the results presented are mainly from the 2005 (February and March) and 2006 (May) surveys. Results are also available for the 2007 survey, and these results show how the variables evolved and confirm certain trends. These 2007 results will subsequently be integrated into the analysis, and will serve as a basis for the following section's consideration of the impact of the research on conservation and development efforts.

The results of the surveys will be presented both quantitatively and qualitatively. Quantitatively, results have been compiled in tables or graphs, followed by descriptive analyses, and will provide an overview of the situation in surveyed villages.

Table VII.1 – Sample characteristics

Commune	Fokontany	Villages surveyed		Surveyed households		Commune population	Fokontany population
		2005	2006	2005	2006		
Ankazovelo	Ankazovelo	9	8	69	67	1913	1913
Befotaka	Ambohimaso	13	11	34	32	3681	95
	Ambondro	9	10	25	29		134
Midongy	Maroangaty	8	3	55	48	3902	1615
	Bekofafa	4	3	23	22		1011
Total		43	35	206	198	9496	4768

Due to the variability of samples in each commune, and between each survey (2005 and 2006), only variables presenting congruent results will be highlighted. Results obtained from the 2005 and 2007 surveys seem to agree. Some results found in the 2006 survey appear to be inadequate. Teams that were engaged to carry out surveys were usually students, and therefore it was difficult to get the same team each time. Some questions were added to the 2006 surveys. Certain variables will not be used unless they are of specific relevance for purposes of the study.

After the survey and following the rapid assessment method, discussions were conducted with the local populations in order to review the survey results and establish mutual objectives. According to the local people involved in these discussions - if inputs were provided to them, such as agricultural supplies, health products, and reinforcement of capacity through training and supervision sessions -- they felt they would be able to fulfill the objectives in terms of health indicators and increased production. However, the abandonment of slash-and-burn activities remained an open-ended question at the time of

these initial discussions. At the end of the discussions, the project team explained the programme and presented information on its potential to change certain factors in support of local communities.

Results will be presented in different categories, and there are both qualitative and quantitative (statistical) variables: education, development (including agriculture and health), environment and conservation. As pointed out earlier, qualitative results were mainly taken from the project's reports, and quantitative data from the surveys.

1. Variables related to Education

a. Qualitative Results

Literacy – an important basis for development -- tends to promote positive outcomes in development projects. One important contribution of literacy training is that it empowers women. In the case of the Midongy-Befotaka are, the social organization of both the Midongy and the Befotaka is patriarchal; women are usually secondary beneficiaries of economic activity. As result of the project and especially its literacy component, there are presently two women's associations in the area. These are an association of neo-literate women who conduct tailoring activities, and an association that developed fish farming activities in Maroangaty (FIVEMA).

Literacy booklets were produced by the project. They focused on themes of conservation of biodiversity and natural resources, and were later used by WWF and WCS in other protected areas in the country.

Literacy activities were implemented in six *fokontany*, and twelve residents were trained as teachers. Three hundred and three people previously excluded from the education system were given access to the activities. The average age of participants was 29, and the majority of the participants were a part of the working population. Out of the 89% of people who succeeded in the final tests, more than 35% were women.

Seven associations of neo-literate people were created, and have benefited from training sessions on fishing, creating a community rice granary, and establishing tree nurseries and poultry farms. Professional sewing training was offered, and 94 people

were trained for this activity (mainly women, but also men in smaller groups). 75% of these people reached the professional level. Professional training -- complementary to the training implemented by other partners like TM/JSI - was also offered for both agriculture and pastoral activities. The areas covered included: production management, rice cultivation, bean cultivation, , land development, beekeeping, coffee cultivation, tree nurseries, and fishing. Fifteen newly-literate people constituted the first group at each site, but other people joined the activities, and ultimately 44 groups were created.

As a result of the literacy efforts, written communication with the local communities is now possible, through posters and flyers. Three centres of post-literacy were set up to reinforce these results. The Centres serve as rural libraries of books and documents on different thematic areas: civil society, health, agricultural methods, environmental and Park protection, etc. These centres are crucial not only to sustain but also to improve the education level over the long term, as well as to reinforce the capacity of local people to sustain the project's activities.

b. Quantitative Results

The level of education of both males and females was calculated based on attendance at school and on literacy. Higher grade levels could not be calculated as there were few people who reached these levels.

In 2005, 70% of men and 52 % of women had at least some schooling. The following table presents these results:

Table VII. 2: Distribution of household head's men and women following the level of education (2005)

	household head					
	Male		Female		Both	
	n	%	n	%	N	%
went to school	97	69,3%	34	52,3%	131	63,9%
did not go to school	43	30,7%	31	47,7%	74	36,1%
	140	100,0%	65	100,0%	205	100,0%

The literacy level is indicated by the fluency of people in reading newspapers or magazines. In 2005 and 2006, results were as follows:

Table VII. 3: Illiteracy of household heads based on gender (2005)

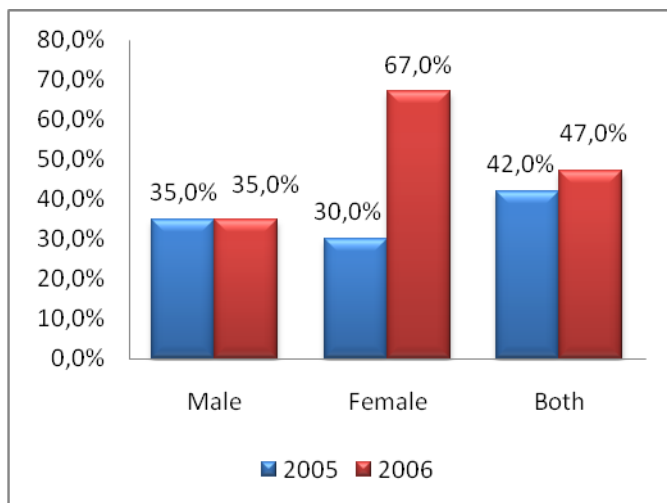
	Household head					
	Male		Female		Both	
	n	%	n	%	N	%
read easily	67	47,90%	20	30,80%	87	42,40%
read with difficulty	24	17,10%	9	13,90%	33	16,10%
does not read	49	35,00%	36	55,30%	85	41,50%
	140	100,00%	65	100,00%	205	100,00%

The following table shows that no positive changes were observed in terms of literacy. This situation might be explained by the fact that the interval between surveys was short. It was clear that this activity should be further expanded, as it was popular with local people.

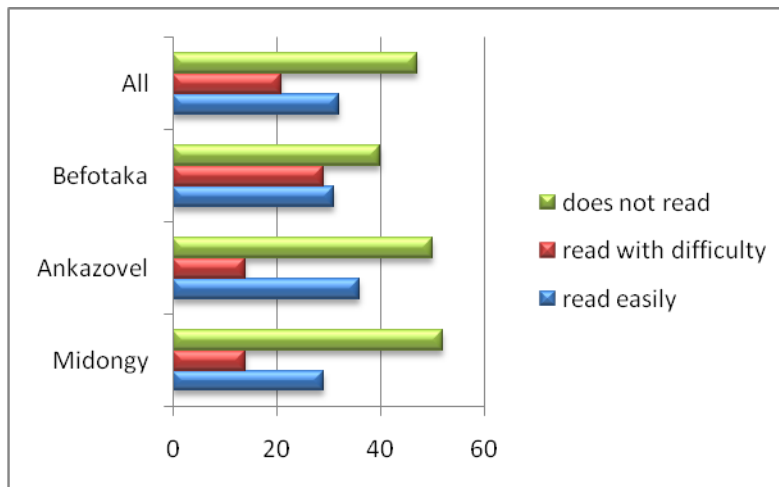
Table VII. 4: Illiteracy distribution (2005 and 2006)

	2005	2006
Both	42	47
Men	35	35
Women	30	67

Graph VII.1: Reading fluency in 2005 and 2006



Graph VII. 2: Lecture capacity according to communes in 2006



The proportion of people who cannot read is highest in Midongy, at 52%, compared with 40% in Befotaka. In 2006, 36% of all local people were able to read a journal or a letter easily in Ankazovelo; these results were encouraging as Ankazovelo was the *fokontany* for which the implementation of education activities was the most intense.

c. Access to media

The radio is the main means of communication in the survey area. Among all households, half (49.75%) have access to a radio. The proportion of men listening to the radio is 82.36%, against only 17.64% of women.

Table VII. 5: Proportion of households that have access to media, based on gender and time of day

	Household Head					
	Male		Female		Both	
	n	%	n	%	N	%
Listen in the morning	23	27,4%	6	33,3%	29	28,4%
Listen at noon	10	11,9%	2	11,1%	12	11,8%
Listen in the evening	41	48,8%	8	44,5%	49	48,0%
Listen during the night	10	11,9%	2	11,1%	12	11,8%
	84	100,0%	18	100,0%	102	100,0%

As the area is remote, the radio is very often people's only contact with the external world. It also reinforces the local population's apprehension of sensitization (awareness) messages.

As a feature of the project, about 50 radios were distributed in the three communes. Where 49.75% of the surveyed people listened to a radio in 2005, 58.5% of the people listened to the radio in 2006, of which 68.6% were men and 43.2% were women. People in Midongy listened to the radio more (64%) than the 58% in Befotaka and 54% in Ankazovelo who did so. In 2005 and 2006, the hours of radio listening were mainly in the evening, and Radio National Malagasy (RNM) is the station most listened to by more than 90% of the population across the whole country.

Table VII. 6: Distribution of household according to listening hours (%)

	2005	2006
Morning	28	27
Noon	12	15
Evening	48	39
Night	12	17

2. Variables related to Development

a. Qualitative Results

At the beginning of the project, volunteers were identified in local communities to support the implementation of project activities. These community volunteers were termed community moderators (AC), agents for basic community services (ASBC), popularizer farmers (PV) and members of follow-up committees (CS).

ASBCs were charged with informing, mobilizing and sensitizing the community about good practices for health and environmental protection. 65 volunteers were identified among communities and trained in message delivery, children's and mothers'

immunization, malaria prevention, respiratory infections, habitation hygiene, waste treatment, compost techniques, afforestation, family planning and AIDS. Their actions were complemented by supporting materials including health notebooks and agricultural technique datasheets (SRI/SRA/ beekeeping, etc.).

PVs ensured the training of local communities in modern agricultural techniques and alternative activities. Twenty-one volunteers were identified based on the “farmer to farmer” approach, which consists of involving farmers who were trained to train other farmers in specific new techniques: SRI/SRA, market-gardening cultivation, beekeeping, fishery and composting techniques.

At the level of each commune (Midongy, Ankazovelo and Befotaka), a follow-up committee was implemented. Each one was composed of twenty representatives of different stakeholder groups: traditional and governmental local authorities (mayors, chiefs of villages) and governmental technical services (representatives for agriculture, pastoralism, Water and Forests, and Education). The committee ensures that there will be a monthly follow-up of implemented activities. Sixty-three persons participated in these committees.

Demonstration sites (one per *fokontany*) were set up in order for villagers to receive training in new techniques and then be able to replicate these techniques on their own lands. These sites were mainly devoted to market-gardening products, such as potatoes, carrots, beans, cabbages, leeks and peppers. Areas for rice cultivation (SRI/SRA) were established on individual cultivation lands. Materials, such as spades, watering cans, pitchforks, ploughs, and seeds, were provided to the associations. In Befotaka, for example, forty market-gardening sites were set up and ninety-five households started SRI activities in the three communes; thirteen households were involved in beekeeping, with seventy-seven beehives. Five tree nurseries were planted. The number of associations members doubled over this period, from 271 to 579. Community members also sent letters of request to the project coordinator, in the hope of expanding these activities to new members and new communities.

Agricultural activities – vegetable growing, in particular -- proved to be an acceptable compromise, and resulted in an increase of foods produced to fight malnutrition and to provide supplementary incomes for families, especially during periods of food scarcity. One kilo of potatoes sold for 1,000 Ariary (0.40 Euros) after the December 2005 harvest.

Six associations, encompassing 525 members, were created, and have benefited from training, including rules, status, and organization of meetings. Participants were also supported by the opening of accounts nearby at the local post office, which also play the role of a bank in Midongy. This was done in collaboration with the Education For All programme.

Table VII.7: JSI – Results of interventions by commune (2006)

	Ankazovelo	Befotaka	Midongy	Total
Population & intervention areas				
Number of inhabitants	9025	1375	1563	11963
Number of fokontany	8	8	14	30
Number of targeted fokontany	1	2	2	5
Number of targeted villages	10	34	18	62
Associations				
Number of associations created	1	3	2	6
Members	65	210	250	525
Identified community voluntaries				
ASBC/AC	13	30	17	60
CV	24	17	22	63

PV	4	8	9	21
Alternative activities				
SRI/SRA				
adopting members	13	8	9	30
Surface (m ²)	289	n/d	1154	1443
adopting Non-members	26	n/d	39	65
Beekeeping				
association	1	3	2	6
Adopting members	4	2	7	13
Bee hives number	23	11	43	77
Market-gardening cultivation				
Adopting members	n/d	40	n/d	40
Surface (m ²)	n/d	138	n/d	138
Afforestation				
tree nurseries	1	2	2	5
Eucalyptus plants	360	240	240	840
Vetiver	72	80	48	200
Implementation of waste containers				
Adopting people	all 18 villages	n/d	1 per village	

b. UNESCO's support of activities

The UNESCO team contributed to training sessions and demonstration activities, and conducted the follow-up and coordination of all partners' activities. UNESCO also built two micro-dams to intensify agricultural production. This activity was originally

planned to be implemented by MNP, but as a result of difficulties in the implementation, it was decided to shift responsibility to UNESCO.

The two micro-dams were constructed in the peripheral zone of the National Park, at Ankazovelo. A private firm was hired for the construction. The Commune of Ankazovelo was deemed to have tremendous economic potential for irrigated rice cultivation. However, local farmers kept practicing extensive agriculture on the hills through slash-and-burn activities, resulting in deforestation in the National Park. A preliminary study by the project showed that the agricultural surface could be increased to 600 hectares instead of the initial surface area of 50 hectares. The study also showed that the number of beneficiary households could be multiplied by 12 or 13 (for a total of some 1175 persons). The mean area for a plot of land owned by a villager was 0.5 hectares, but the increased land would amount to 4 hectares per owner. The two micro-dams are entirely managed by local community associations, which have acquired a legal status. Beneficiaries participated actively in the construction by transporting materials from the main road to the construction sites, 15 km away.

This involvement greatly enhances the communities' sense of responsibility and ownership. The location of the dams was decided in a participatory way, with the whole community, and the construction was done by local people in partnership with the private company. Communities were not paid for this contribution, but they received food rations in exchange for their work. Communities were also supported through capacity-building and training in intensive rice and cassava cultivation techniques.

The dams and the extension work have had a significant impact on the micro-economic context of Midongy and Befotaka. The area is progressively incorporating local markets and is developing a cash economy. 18% of the local population benefited from the extension of their agricultural area within the project period. Complaints about the insufficiency of agricultural land because of the prohibition against using the National Park have diminished considerably.

c. Quantitative Results

Rapid population growth is made evident by a mean household size of 6.08 in 2005 and 6.18 in 2006, which of course created increased pressure on the environment. This demographic growth is a result of early marriage, at an average age of about 16 years (17.1 years for males and 16.1 years for females).

d. Living conditions

In 2005, less than 1% of the population had electricity (0.97%) and none had a TV, a refrigerator or a phone. 61.5% of households lived in one room, 30.2% in two rooms, and 8.3% in three or more rooms. Construction material was wood for 50.3% of the people, while 45% used palms or bamboo with raffia for the floor. Other alternatives to forest products, like cement or soil, were used by only 4.87% of the surveyed people.

In 2006, on average, the living space of six to seven households consisted of one room (62% in 2005 and 68% in 2006). The proportion of people in three rooms decreased to 2% in 2006 from 8% in 2005. In both 2005 and 2006, 30% of households lived in two rooms. To live in one room is more common in Ankazovelo (72%), followed by Befotaka (68%) and then Midongy (63%). There was no significant increase of this variable between 2005 and 2006.

e. Hygiene conditions

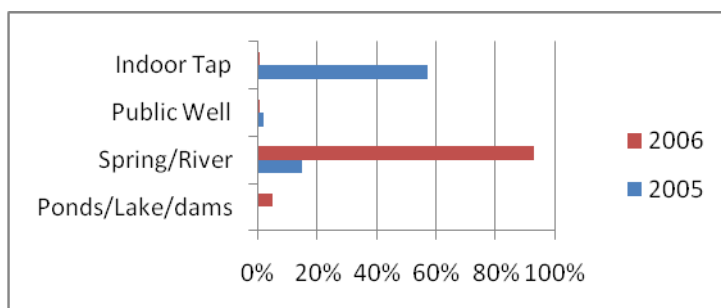
Table VII. 8: Distribution of houses following the use of natural resources, hygiene and living conditions (2005)

	Households	
	n	%
use of wood for the floor	103	50,3%
use of bamboos or palms	92	44,9%
use of ground or sand	5	2,4%
use of cement	5	2,4%
All	205	100,0%
tap water	117	57,1%
public water well	5	2,4%
spring or river water	30	14,6%
tap water and river	53	25,9%
All	205	100,0%

use of latrines	30	14,6%
no latrines	175	85,4%
All	205	100,0%

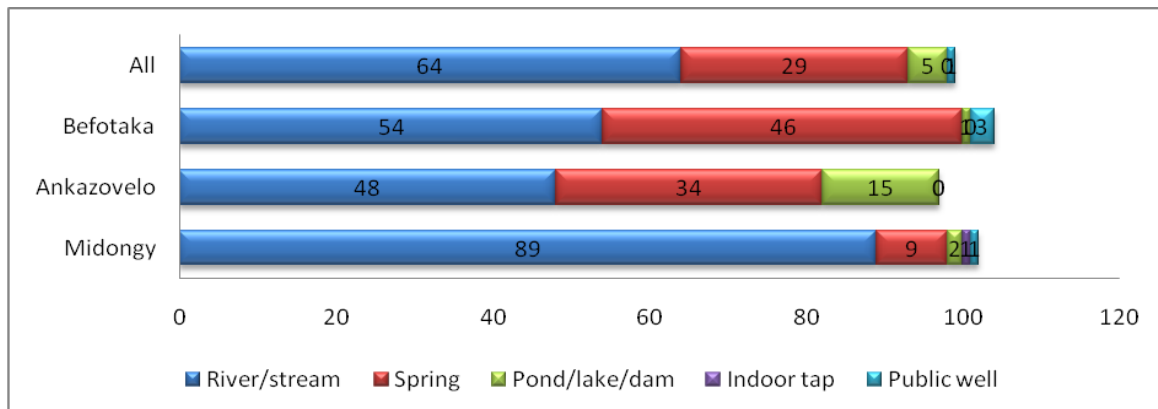
In regard to drinking water and latrines, in 2005 more than 57.1% of households used the JIRAMA (the national company for water and electricity), 25.9% used both tap water and rivers, and only 1% of people had their own latrines. In the same year, 57% of people had access to drinking water via a tap inside the house or from a well. In 2006, only 1% of the households had access to clean drinking water. This is probably due to weather problems that destroyed water installations in 2006. Therefore, in 2006, almost all households were accessing water from unhealthy sources, mainly the river, followed by streams and then springs. This situation rendered the implementation of hygiene measures more difficult, and required even more effort from the project to face these unforeseen problems.

Graph VII. 3: Source of water in 2005 and 2006



Women and children fetch the water (72.1% of water-carriers are women), usually spending about 15 minutes for this task. In 2006, it took an average of about 16 minutes to get water, : 17 minutes in Befotaka, 16 minutes in Ankazovelo, and 14 minutes in Midongy. No changes were observed in this important variable to assess life conditions.

Graph VII. 4: Water source per commune



f. Water treatment

In 2006, after the sensitization activities had begun, 48.7% of households used some treatment for water -- 50.0% in Befotaka, 52.3% in Ankazovelo, and 44.3% in Midongy. Among them, 71% boiled their water (compared to 4% in 2005), and 24% used Sur'eau pills (compared to 0% in 2005). Significant changes were observed in terms of hygiene conditions and disease prevention. The project has promoted boiling water over consumption of Sur'eau pills, because people cannot afford these pills. However, boiling water is an activity that consumes more wood.

g. Waste management

In 2006, following the activities of sensitization and supervision, 91% of the households were using simple waste pits, and 9% were using compost pits (the former only in Midongy).

3. Variables Related to Alternative Economic Activities

a. Income use

Whether for women or men, agriculture remains the main source of family income. In 2005, incomes were primarily used for food (71.70%), then health (46.83%), children's education (20.97%) and lastly for agricultural inputs (3.41%) (the total is over 100% as results were based on first choice response). In 2006, there was an increase in

incomes and more income was used for food, health and education because of the awareness raised by the project of the importance of these household budget items.

Table VII. 9: Utilization of household income by the population

	2005	2006
Food	72	91
Health	47	67
Education	21	82
Agricultural inputs	3	

b. Land tenure.

In 2006, 80.2% of the households held a plot of land between 100 and 500 acres (or 0,5 hectare) in size; 14.06% held less than 100 acres, and 5.72% held more than 500 acres. The following table sums up the development of cultivable land per commune and surface area:

Table VII. 10 – Surface area of lands owned by households (2005)

	Befotaka	Anakazovelo	Midongy	All communes
< 50 acres		1	2	3
50-100	5	11	8	24
100 –500 (0,1-0,5 hectare)	42	45	67	154
500- 1000 (0,5-1 hectare)	4	1	2	7
1000 and more	3	1		4

54	59	79	192
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In 2006, the mean distance from homestead to farm plot was 3 km. The following table summarizes the development of cultivatable land by commune and surface area:

Table VII. 11: Distribution of households according to land ownership (%) (2006)

	Befotaka	Anakazovelo	Midongy	All communes
< 50 acres	1		2	3
50-100	11	5	8	24
100 –500	47	44	67	158
500- 1000	1	4	2	7
1000 and more	1	3		4
	61	56	79	196

Between 2005 and 2006, changes in trends were not observed. These results will have to be compared with the 2007 survey, but also with technicians’ reports, as local farmers do not always have a precise idea of the surface area they cultivate.

c. Types of economic activities.

In 2005, for about 90% of the population, the main economic activity was agriculture. For secondary activities, people were involved in pastoralism (50.24%), handicrafts (19.2%), marketing (18.54%), fishing (4.88%), and forest exploitation (2.93%).

Table VII. 12: Distribution of households according to economic activities (2005 and 2006)

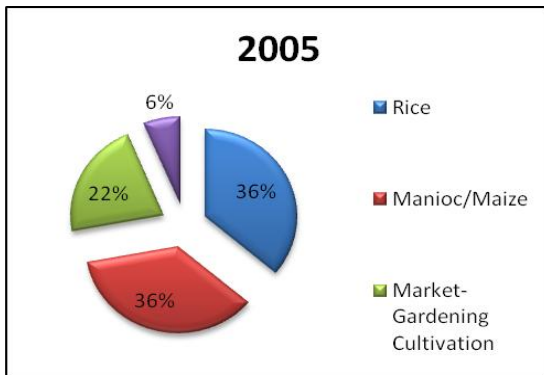
	2005	2006
<u>Main activity</u>		
Agriculture	98	97
<u>Secondary activity</u>		
Pastoralism	50	55
Handcraft	19	20
Marketing	19	10
Fishery	5	3
Forest	3	2

The main activity in 2005 and 2006 remained agriculture, with stable results. Results were also stable for the secondary activity of the household, pastoralism (50% in 2005 and 55% in 2006), followed by handcrafts for 1/5 of the households. Trade was the 3rd most frequent practice in 2005, representing 19% as opposed to 10% in 2006, but income earning constituted an important activity for 17% of the households. Forest exploitation decreased from 3% of the surveyed population in 2005 to 2% in 2006. Fishing represented 5% of households' activity in 2005, as opposed to 3% in 2006.

d. Types of agricultural production

Most of the surveyed households cultivated rice and manioc. The length of the production period - 3 months - was usually based on the two products. No significant changes were observed between 2005 and 2006.

Graph VII.5: Distribution of cultivation types (2005)



Graph VII. 6: Distribution of cultivation types (2006)

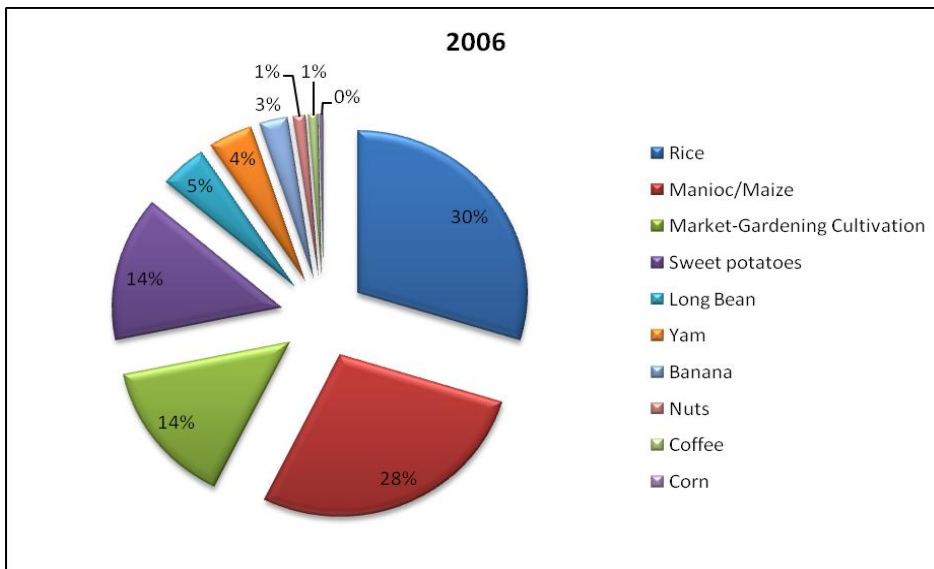


Table VII. 13: Increase/Change in production categories

	2005	2006
Rice	95	99
Manioc/Maize	94	93
Vegetable cultivation	56	53

e. Types of agricultural practices

In 2005, in most of the communes, especially in Midongy and Befotaka, the most commonly practiced technique for rice cultivation was slash-and-burn. People stated that this method was used by their grandparents and in ancient times. According to the following table, 95% of the people practiced the traditional method, and 73% practiced *tavy*. Modern technologies, such as SRI/SRA, were rare (0.5%).

Graph VII.5: Proportions of agricultural techniques practiced (2005)

In 2006, 91% of the surveyed people practiced traditional techniques, but the practice of *tavy* was reduced from 73% to 47% (less than half of the households, as opposed to 75% in 2005).

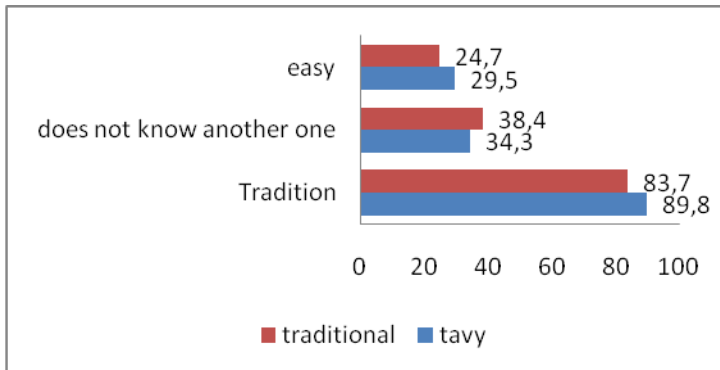
Table VII. 14: Distribution of households based on production techniques (%)

	2005	2006
Traditional technique	95	91
Tavy	73	47
Modern technique	0.5	9

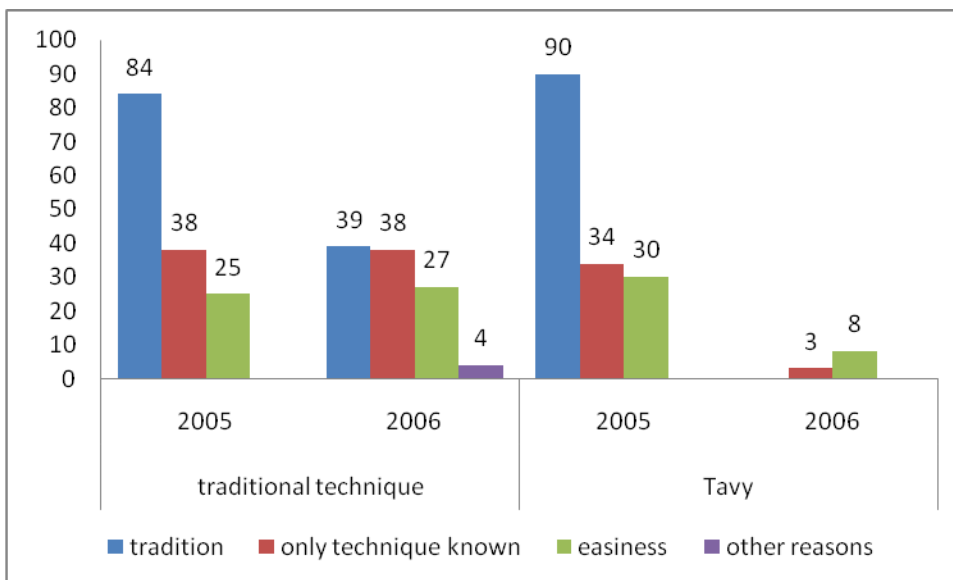
Between 2005 and 2006, an increase was also observed in the practice of modern agricultural technologies, from 0.5% to 4%. Some households used two or three techniques at the same time (4%).

Those who only used the traditional practice stated that they employed this technique mainly because of tradition, but also because they did not know other methods.

Graph VII. 6: Proportion of farmers based on technique type and choice of a particular technique (2005)



Graph VII.7: Proportion of households following agricultural techniques and the rationales for their choices (2006)



For those growing rice the traditional way, the response “because of tradition” slightly decreased between 2005 and 2006, from 84% to 80%. For “it is the only technique known,” the percent remained stable (38%); for “ease” the percent also remained stable (26% to 27%). For slash-and-burn activities or *tavy*, two important decreases were noted. Whereas “tradition” was the reason given by 80% of respondents in 2005, this dropped to 0% in 2006; for “the only technique known”, responses dropped from 34% in 2005 to 3% in 2006; and for “ease”, they decreased from 30% in 2005 to

8% in 2006. The change shows that sensitization, as well as information and training sessions, had important impacts on the population.

f. Changes in agricultural activities

When opportunities were proposed to villagers for income-generating activities, they stated that they would like to develop modern techniques of rice cultivation, such as the System of Rice Intensification (SRI), Intensive Rice Cultivation System and Improved Rice Cultivation (SRI/SRA), as well as market-gardening and seasonal cultivations.

In 2005, among the three communes, Midongy expressed more needs, and villagers were keener to adopt new techniques of production. Sixty-five% of the households said they would like to invest in improved rice cultivation, and 40.5% in market-gardening, followed by small cattle keeping (36.5%).

Table VII. 15: Distribution of households following the wish to adopt new agricultural techniques (2005)

In 2006, 89% of households were favorable toward a change of techniques, as opposed 84% in 2005. The number of uncertain individuals also decreased, from 12.1% to 7%. Still, in 2006, 4% of the households surveyed did not want to change their techniques.

In 2006, 86.9% of the households indicated an interest in training for income-generating activities; 63.1% of them for inputs and 46.0% for techniques supervision. For households who wished to develop SRI/SRA, market-gardening cultivation, cultivation in *tanety* on hills, is the most frequently demanded training.

Graph VII.8: Households interested in training sessions based on Income-generating activities (IGA) (%)

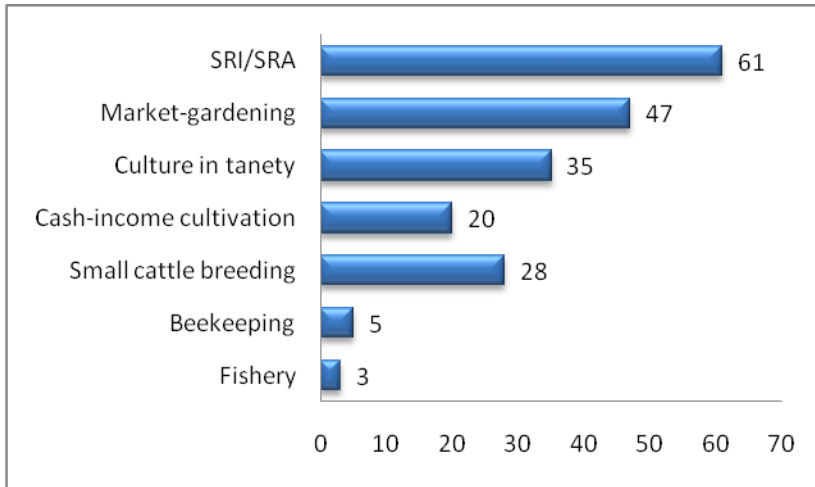


Table VII. 16: Households preferring to develop new income-generating activities (%)

	2005	2006
SRI/SRA	65	52
Market-gardening	41	48
cultivations		
Seasonal cultivation	13	48
Cattle keeping	37	24
Cash-income cultivations		17
handcrafts		14
beekeeping	7	6
fishery		3

g. Training activities for agricultural land practices

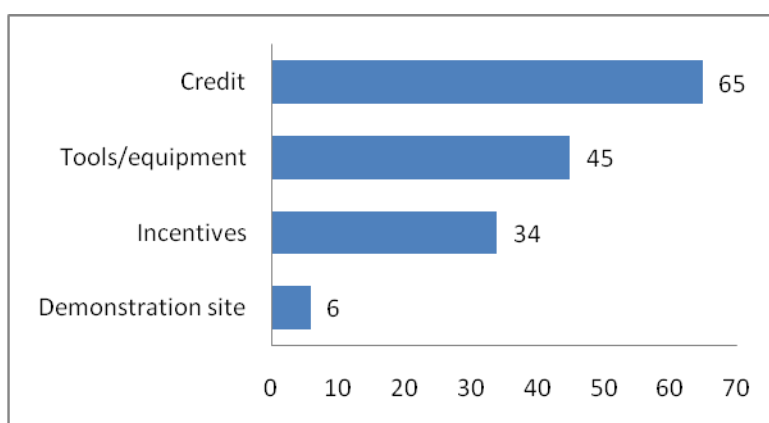
In order to develop these activities, people stated that they would also like to benefit from training and supervision sessions with specialized technicians. In 2005, 84.39% of the people surveyed expressed the will to improve their production techniques if opportunities were offered to them. 12.19% were uncertain, and 1.46% were not ready to change. People stated that they mainly needed agricultural tools (44%), then field supervision (41.5%), then inputs (25%), followed by credit (24%). The following table presents priorities and needs as defined by the population:

Table VII.17: Type of assistance needed by commune

	Ankazovelo n	Befotaka n	Midongy du sud n	All n	%
Tools/Equipment	16	29	43	88	44
Field supervision	3	28	52	83	41,5
inputs	3	17	30	50	25
credit	18	11	19	48	24

In 2006, among the households interested in accompanying measures in IGA, 65% wished to obtain credit, 45% wanted equipment, 34% wanted some inputs (seeds, etc.) and 6% wanted demonstration sites.

Graph VII.9: Type of assistance needed by commune



In 2005, 65.5% to 92% of households went to the communal market to sell their products. Their production was mainly for household consumption; a small fraction was sold.

Table VII.18 : Proportion of products sold in markets (2005)

	Ankazovelo	Befotaka	Midongy du sud
in the village	13,1%	15,5%	4,7%
local market	1,6%	19,0%	3,4%
commune market	85,3%	65,5%	91,9%
	100,0%	100,0%	100,0%

Table VII.19 : Distribution of agricultural products by destination and by commune (JSI MARP 2005)

Products destination	Midongy	Ankazovelo	Befotaka
<i>Consumption</i>			
agricultural products	rice	rice	rice
	manioc	manioc	manioc
	sweet potatoes	sweet potatoes	sweet potatoes
	maize	maize	maize
fishery products	tilapia	tilapia	tilapia
	carp	carp	carp
	crayfish	crayfish	crayfish
forest products	honey	honey	honey
	medicinal plants	medicinal plants	medicinal plants
	heating wood	heating wood	tea
			heating wood
<i>Commercialization</i>			
agricultural products	beans	beans	beans
	ground nuts	ground nuts	ground nuts
	sugar cane	sugar cane	sugar cane
fishery products	tilapia	tilapia	tilapia
	carp	carp	carp
	crayfish	crayfish	crayfish
forest products	honey	honey	honey
	precious wood	precious wood	precious wood
	construction wood	construction wood	construction wood
	charcoal	charcoal	charcoal

Note: precious wood are palissander, ebony and rose wood
Construction wood are comprennent guava, harongana, fandramanana

Between 2005 and 2006, the proportion of people using their production for sale decreased from 92% to 78%. In 2006, 80% of the production was for household

consumption, and 20% for sale. The main market where products were sold for 84% of the surveyed people was the commune market. Only 15% of people sold their products in their village, and 19% in local markets. Incomes, generated by the sale of household products, were mainly used to cover primary needs, such as clothes, food, and children's school materials.

In the study area, the cultivation period lasts throughout the year, but agricultural products are timed differently and produced throughout the year. During the heavy rainy season, people do not cultivate, and enter a period of food scarcity -- primarily subsisting on rice and secondarily on manioc. This period of famine is usually between September and March, depending on the whether the harvest period is once (May-July) or twice (September-December) per year. Among the surveyed *fokontany*, only Bekofafa (Commune of Midongy) and Ankazovelo produced pluvial rice twice a year, in valleys or on hills.

Table VII.20: Cultivation calendar by type of agricultural product and *fokontany* (JSI 2005)

Products type		J	F	M	A	M	J	J	A	S	O	N	D
<i>CR Midongy</i>													
Bekofafa	pluvial rice (vary aloha)	[Green bar from J to M]											
	sweet potatoes, beans manioc, maize, ground nuts	[Blue bar from M to A]											
	rice cultivation in valleys	[Magenta bar from M to J]											
	saonjo, beans, manioc, maize, ground nuts	[Orange bar from J to A]											
	Pluvial rice (vary aloha)	[Purple bar from J to N]											
<i>Maroangaty</i>													
Maroangaty	sweet potatoes	[Blue bar from J to M]											
	beans	[Blue bar from M to A]											
	rice cultivation in valleys	[Magenta bar from M to J]											
	manioc, ground nuts, maize, saonjo	[Orange bar from J to N]											
	sugar cane	[Grey bar from J to D]											
<i>CR Ankazovelo</i>													
Ankazovelo	sweet potatoes	[Blue bar from J to M]											
	beans	[Blue bar from M to A]											
	coffee, rice cultivation in valleys	[Green bar from M to J]											
	manioc, ground nuts, maize, saonjo, banana	[Orange bar from J to A]											
	rice cultivation in valleys	[Magenta bar from J to N]											
	sugar cane	[Grey bar from J to D]											
<i>CR Befotaka</i>													
Ambondro	sweet potatoes	[Blue bar from M to J]											
	manioc, ground nuts, maize, saonjo, banana	[Orange bar from J to N]											
	Pluvial rice (vary aloha)	[Green bar from J to N]											
<i>Ambohimahaso</i>													
Ambohimahaso	sweet potatoes	[Blue bar from J to M]											
	manioc, ground nuts, maize, saonjo	[Orange bar from J to N]											
	Pluvial rice (vary aloha)	[Green bar from J to N]											

Food scarcity period

The population acknowledged the insufficiencies of production, the fact that some potentially cultivable areas are too small to be exploited, and that cultivation techniques are not appropriate. They also noted the lack of agricultural inputs (such as seeds and other agricultural materials) and the lack of water control in the fields. People recognized that these factors considerably limited their production throughout the year. This situation was exacerbated by natural disasters such as cyclones, locusts and floods, all of which worsened the insufficiency of food. The population also acknowledged that the problem of the lack of cultivable land was due to the local topography (mountains and forests) and to social insecurity (mainly in the form of *dahalo*, or cattle thieves). Befotaka was the most vulnerable to these problems and the most severely affected, and tradition is still limiting the will to change.

In Ambodro (Befotaka), the harvest period lasts from June to July, and the period of slash-and-burn activities —the longest period -- lasts from August to December. Therefore, the period of food scarcity, from September to April, is very lengthy. In February and March 2005, a *kapoaka*, or tin of rice, cost 2.250 FMG (400 Ariary), and could be found only at the Befotaka market.

This situation suggested to the project's implementers that a local market should be developed. Villagers were grouped into associations which, after the harvest, kept 1/3 of their products for self-consumption and another 1/3 for seeds for the next season; the final third was reserved for sale in the local market. Members of these associations were also able to buy rice directly at the association, for a price below market price.

In Ambohimaso (Befotaka), the period of food scarcity lasted 5 months between harvests. Farmers realized that multiplying their slash-and-burn activities did not increase their production, and discussed the fact that this technique might not be efficient.

4. Variables related to health

One of the measures of development in any country is the health of its population. For poor people, their labor is one of very few types of capital, and when laborers are handicapped by disease, this capital is lost.

The study region is remote, and not well equipped with sanitary infrastructure; access to drinking water is scarce, and hygiene is poor. Health problems are reflected in the frequency of diseases, the lack of vaccination coverage, overall mortality statistics, etc. Health improvements are measured in terms of decreases in common diseases, the awareness and prevention of diseases, and the health status of children (e.g. vaccination prevalence, incidence of malnutrition).

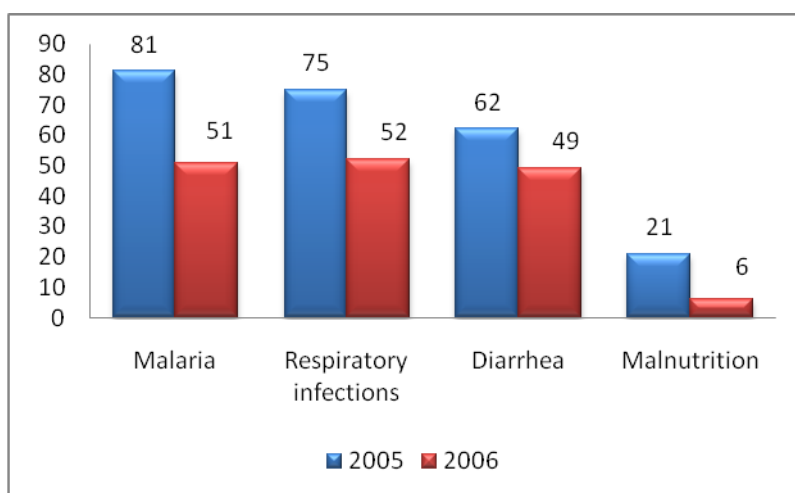
a. Diseases affecting the population

In 2005, when people were asked about diseases that affected their households and in particular their children, 81% of them mentioned malaria, 74.6% mentioned respiratory infections, 62.4% mentioned diarrhea, and 20.5% mentioned malnutrition.

Table VII. 21 – Types of diseases by *Fokontany* (MARF JSI 2005)

	Maroangaty	Bekofafa	Ankazovelo	Ambondro	Ambohimahasoa
1	malaria	malaria	IRA	malaria	malaria
2	diarrheas	diarrheas	malaria	diarrheas	diarrheas
3	gastro-enteritis	bilharziose	diarrheas	dysentery	
4	dysentery		intestin diseases	malnutrition	

Graph VII.10: Distribution of main diseases by communes (2005 and 2006)



Between 2005 and 2006, significant changes were noted in the proportions of the major diseases affecting the population. Malaria dropped from 81% to 51%, respiratory infections decreased from 75% to 52%, diarrhea from 62% to 49%, and malnutrition from 21% to 6%. Health variables bring immediate benefits to local populations. Information on prevention is thus of tremendous importance.

Table VII. 22: Major diseases (2005 and 2006)

	2005	2006
Malaria	81	51
Respiratory infections (RI)	75	52
Diarrheas	62	49
Malnutrition	21	6

The same diseases generally characterized all three communes, but some were more predominant in some places. Respiratory infections were dominant in Ankazovelo, and malaria and diarrhea in Midongy. Malnutrition remained the least common disease noted in the three communes.

b. Immunizations

In 2003-2004, the rate of total immunizations included in the general immunization programme was 53%. The highest level was reached in the province of Antananarivo, with 76% of children fully vaccinated, and in Fianarantsoa with 65%, based on international standards.

Table VII. 23: Immunization rates in 2006

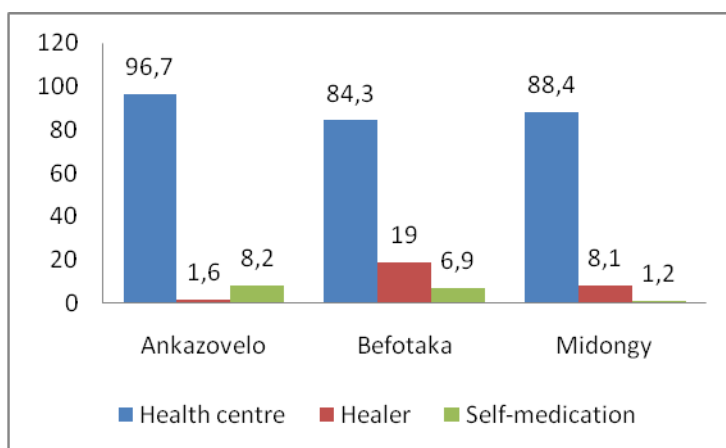
2006	All	Befotaka	Ankazovelo	Midongy
BCG	86	83	85	89
DTCHPB3	83	83	75	89
DTCHPB2	80	83	69	85
DTCHPB1	79	81	69	84
Polio 3	78	75	73	83
Measles	72	73	63	77

In 2006, immunization rates were relatively high, indicating good immunization coverage, mainly due to the vaccination campaigns coordinated with the project's activities and supporting the health centers (CSBs).

a. Health centres

In response to illness, most of the households in the study area resorted to the local health centre, particularly in Ankazovelo (84.5 to 96.7%). Secondly, people would self-medicate (8.1 to 19%). Their last resort was to go to a traditional healer (1.2 to 6.9%).

Graph VII.11: Use of Health Centres (CSBs) (2005)



In 2005, people mainly went to their local health centre for care and treatment (95.6%), for children's immunizations (48.8%), for weighing children (20.5%), for pre-natal care (12.7%), and for family planning (0.5%). This percentage reflects people surveyed who said they primarily went to a health center for these different reasons.

Attendance at health centres for minor diseases diminished between 2005 and 2006 in the three communes. This was probably due to sensitization in the health sector and the training of community volunteers.

Table VII.24: Frequency of entities visited for health concerns

	All		Befotaka		Ankazovelo		Midongy	
	2005	2006	2005	2006	2005	2006	2005	2006
Go to the CSB	90	82	85	79	97	80	88	86
Self medication		40	19	47	8	31	8	43
Healers		5	7	6	2	1	1	7

The main reasons for not going to the CSB were travel distance (36%) and cost (20%). In Befotaka, half of the households claimed that they did not go to the CSB because of its remoteness.

Table VII. 25: Reasons for not using CSB

2006	All	Befotaka	Ankazovelo	Midongy
remoteness	36	50	20	38
Costs	20	19	12	27
Staff insufficiency	1	2	0	1
Lack of medication	2	2	2	4

Table VII. 26 : Reasons for using CSB

	2005	2006
Cares and treatments	96	83
Children immunizations	49	62
childbirth	36	36
Children weighing	21	14
Post-natal consultation	13	4

Diseases are more frequent during the rainy season, due to the contamination in rivers. In Ankazovelo, people mentioned that diarrhea was frequent between September and February, particularly in May and June, for children less than 5 years old. Malaria is thought to be the cause of six deaths out of ten each year.

5. Variables related to the Environment and Conservation

Forests in Madagascar provide the necessary products for rural people's survival and livelihood, in particular in remote areas. *Fokontany* are usually rich in forested areas and rivers, and in natural resources/forestry products such as valuable wood, fish and honey. These resources are used by the population without much awareness of their vulnerability or of the fact that, if overexploited, they might disappear, causing serious threats to both the overall environment and to people's livelihoods.

a. Qualitative Results

In addition to conducting biodiversity inventories, the project posted the limits of the protected areas around the park using visible information panels in several parts of the Park -- mainly along the 36 km road between Midongy and Befotaka. Copies of legal documents concerning the protected areas were provided to local authorities. In addition, through the education component of the project, these documents were explained to the local communities in an effort to educate them on the importance of the environment and the necessity to protect the Park.

Workshops were held in Betroka and Farafangana, where stakeholders from the five protected areas were gathered together, with the participation of local authorities as well as representatives from the communities. Protocols of collaboration were signed between local stakeholders, reinforcing the partnerships that field level stakeholders (policemen, traditional chiefs, forest services agents, farmers, etc.) had entered into with MNP to manage the Park.

The construction of the protected area office was completed, and the building was inaugurated by the Minister of Environment, Water and Forests in January, 2005.

The project provided necessary equipment for the office, including a Data BLU which allows data communication via radio, a vital element to ensure communication in an isolated area such as Midongy. The Park was now linked to the protected area network as well as to the head office of MNP in Antananarivo. Training in patrol methods and in basic management tools were organized for park employees.

MNP, with the support of other partners -- such as the representative of the Ministry of Environment, Water and Forests, and the project's partners -- also established advisory and supervisory committees in support of the protected area's management. MNP established committees of elites when the project itself wanted different people to serve on these committees. The project thought these committees should initially be composed of representatives from the different areas of the Park, people from both governmental and non-governmental institutions who could represent the whole population, members of communities, and representatives of traditional authorities.

b. Project's support of MNP

Beside the official documents mentioned above, additional documents were prepared by the project, containing landscape and GIS maps, to assist the Park management authority. The project team compiled all geo-referenced data and vegetation maps as a basis to evaluate the forest cover inside and outside Midongy National Park, to map out sensitive areas, and to estimate the deforestation rate between 1980 and 2008. These maps were to be used to finalize the delimitation of the Park. It was the first time that such data had been produced for a national park. This information provided the basis for designing effective management plans, for both conservation and development.

c. Quantitative Results

i. Deforestation

The low-altitude rainforest of the Park was one of the project's main conservation targets. A conservation management plan was developed with the objective of limiting the annual deforestation rate in this area to below 0.55%.

Table VII. 27: Deforestation rates for the MBNP between 1994 and 2006-2007

Years	1994	2000	2002	2004	2006-2007
Forest (ha)	166053	156683	153403	149648	147044
GIS estimation of forest cover		191696	191696	191696	191696
Deforestation rate		0.94	1.04	1.22	0.87
%			+10,6	+11,7	-8,7

Source UNESCO, 2007

Deforestation has been difficult to evaluate, as sources of information and methods of calculation vary. However, it is important to note that although the deforestation rate increased considerably from 1994 to 2004, this increasing rate was halted and even reversed from 1.22 to 0.87, between 2004 and 2006-2007.

ii. The park's management efficiency index.

The Park's management efficiency index is based on different indicators, such as: zoning and delimitation, available management plans, material and equipment, human resources, partnerships, training, biological and threats inventories, research, rules and regulations' applications, local participation, environmental education, budget management, and economic advantages for the populations.

The following table presents the evolution of the index:

Table VII.28: Evolution of the Park's management efficiency index (IEG) between 2005 and 2007

Years	2005	2006	2007
IEG	0,41	0,45	0,52
%		+9,7	+15,5

Between 2005 and 2007, the Park's management efficiency index increased by 26.83%. This result was of great significance to the local MNP team as it was highly motivating. It was also an important indicator to test the project's approach.

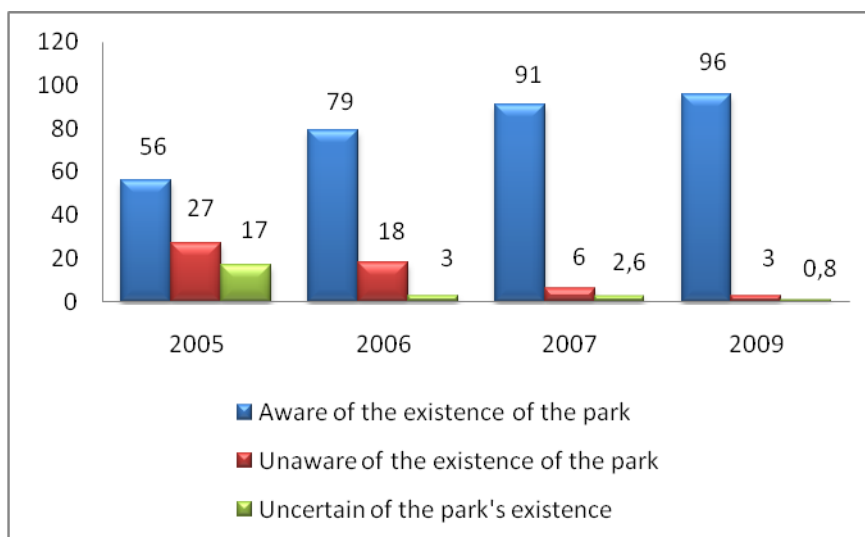
In order to assess the level of pressures on the Park, information was gathered on people's acknowledgement/awareness of the Park, on the use of forestry products, and on the potential commitment of local populations to conservation activities.

Table VII.29: Level of acknowledgement of the Park, by commune (2005)

	Ankazovelo			Befotaka			Midongy du sud		
	M	F	Both	M	F	Both	M	F	Both
aware	22	7	29	24	11	35	35	15	50
unaware	12	5	17	9	10	19	15	5	20
uncertain	11	4	15	2	2	4	10	6	16
total	45	16	61	35	23	58	60	26	86

In 2005, more than half of the households in the three communes were aware of the existence of the park (55.6%), with a slight difference between men (57.9%) and women (50.8%) and more in Befotaka (60.34%) than in Midongy du Sud (58.14%). In Ankazovelo, the fewest people were aware of the Park's existence (47.54%). 27.4% of the households in Ankazovelo were not aware of the Park, and 17.1% were uncertain about whether it existed or not.

Graph VII.12: Acknowledgement of the existence of Midongy-Befotaka National Park (2006)



The proportion of households recognizing the existence of the Park has increased considerably, from 56% in 2005 to 79% in 2006. The most important change was noted in Midongy and Befotaka, where almost 80% of the surveyed people became aware of the Park's existence.

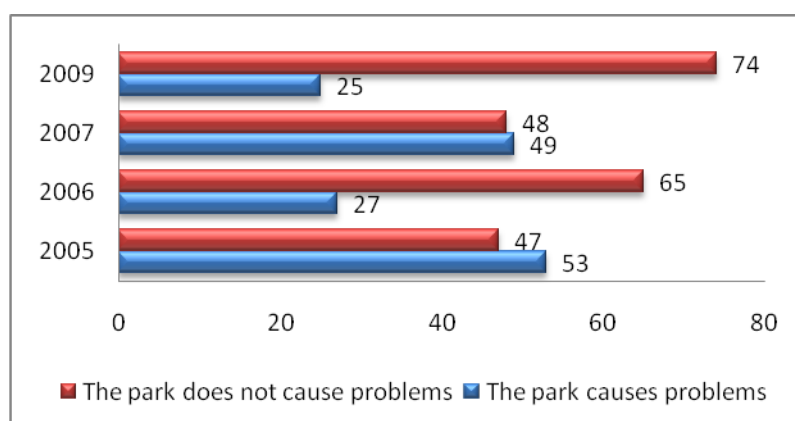
In 2005, 53.2% of the people surveyed thought that the Park did not cause problems, as opposed to 46.8% who thought it did. The main problem mentioned was the insufficiency of cultivation lands (71.9%), which could be related to traditional cultivation techniques and to the insufficient benefit from production, as well as to demographic pressures. 10.4% of survey respondents cited the insufficiency of their incomes, which implies that households were benefiting from natural resources exploitation, and feared that regulations would prevent them from doing so.

Table VII.30: Distribution of households based on type of problems encountered by the existence of the Park (2005)

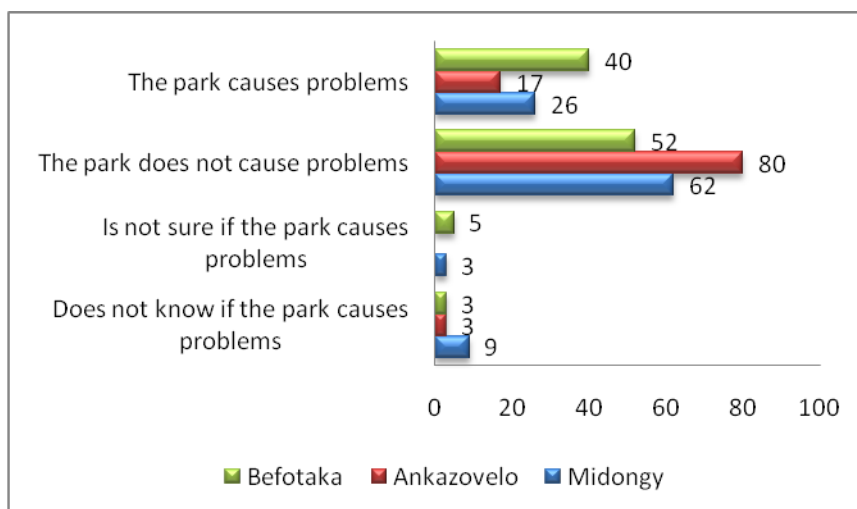
	Ankazovelo		Befotaka		Midongy	
	n	%	n	%	n	%
cultivation land insufficiency	18	78,2	22	66,7	29	72,5
illicit exploitation	3	13	2	6	2	5
incomes decrease	1	4,4	6	18,2	3	7,5
insufficiency of natural resources	1	4,4	3	9,1	6	15
	23	100	33	100	40	100

In comparison to 2005, there was a decrease in the negative perception of the Park. Survey respondents' opinion of the Park changed from 50% of the households having a negative opinion in 2005 to only 27% in 2006.

Graph VII.13: Proportion of household opinion in relation to problems caused by the Park (%)



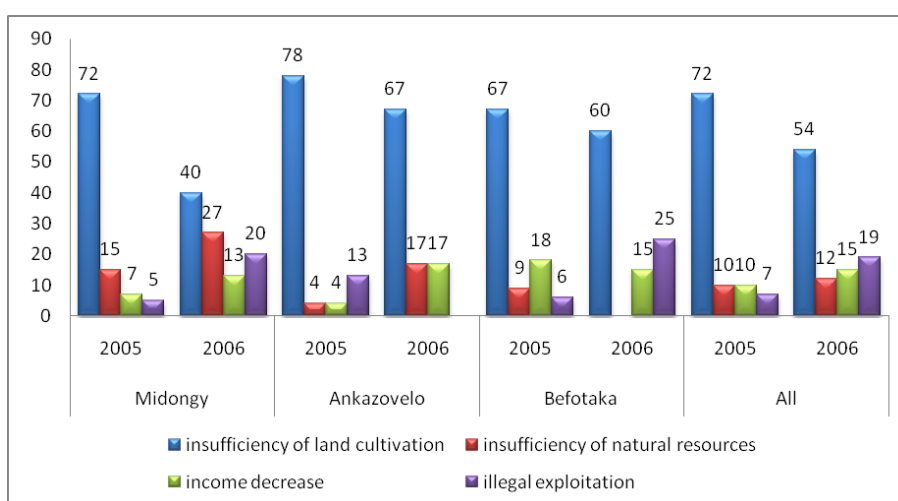
Graph VII. 14: Proportion of household opinion in relation to problems caused by the presence of the Park, by commune (%)



In Ankazovelo, people voiced the least opposition to the presence of the Park (17%) , in contrast to 26% in Midongy and 40% in Befotaka.

Graph VII.15, below, illustrates the point that the lack of cultivable land, and people’s concern that if they were denied access to the Park’s resources their incomes would fall, constituted their main problems with the Park. Note that this negative perception of the Park decreased from 74% in 2005 to 54% in 2006.

Graph VII.15: Distribution of households in relation to the types of problems encountered



iii. Motivation to protect the Park

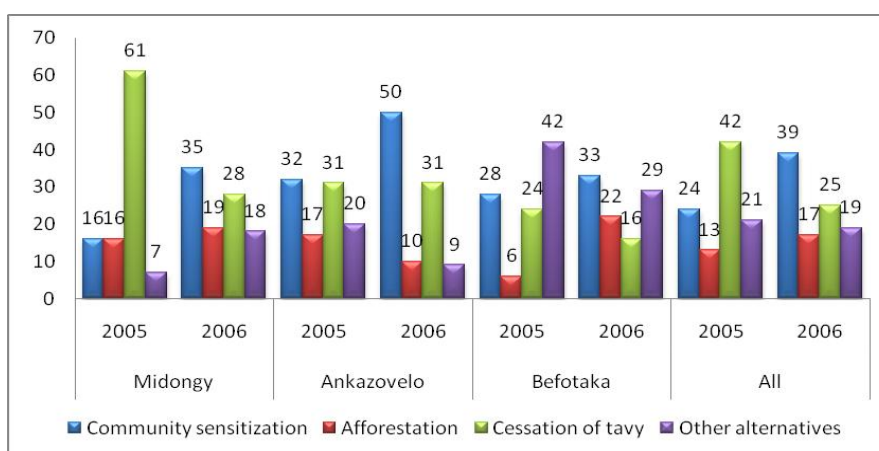
When people were asked about the kinds of activities they would like to develop that would also protect the Park, their answers included the cessation of slash-and-burn activities, the sensitization of other community members, afforestation (plantation of trees), and lastly the adoption of alternative techniques.

Table VII. 31 : Intention of households to protect the Park, on activity types and commune (2005)

	Ankazovelo		Befotaka		Midongy	
	n	%	n	%	n	%
cessation of slash-and-burn	18	30,5	13	24	51	61,4
community's sensitization	19	32,2	15	28	13	15,7
afforestation	10	17	3	5,5	13	15,7
adoption of alternative techniques	12	20,3	23	42,5	6	7,2
	59	100	54	100	83	100

In 2005, 41.8% of the households said they would be ready to stop slash-and-burn agriculture. 24% cited a need for increased public awareness in their community, 13.3% wanted to participate in afforestation, and 21% were willing to adopt alternative techniques. Moreover, 49.3% of all households were willing to go outside of the Park to seek products or potential opportunities. A year later, in 2006, only 3% of survey respondents said they would continue to exploit the Park.

Graph VIII.16: Actions in support of the Park (2006)



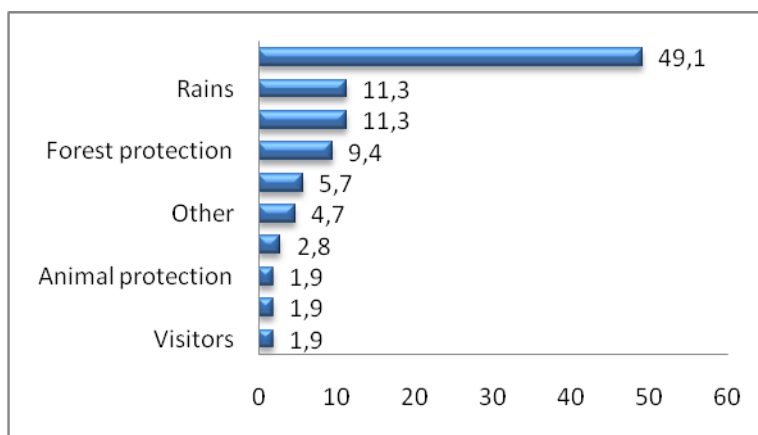
The will to be engaged in conservation activities did not change over the survey years. The proportion of people who agreed stop *tavy* decreased, from 47% to

22%. This result should be considered in parallel with the fact that the use of traditional techniques, and especially tavy, actually decreased over the study period. The proportion of people who supported sensitization increased from 24% in 2005 to 39% in 2006.

iv. Advantages of the Park

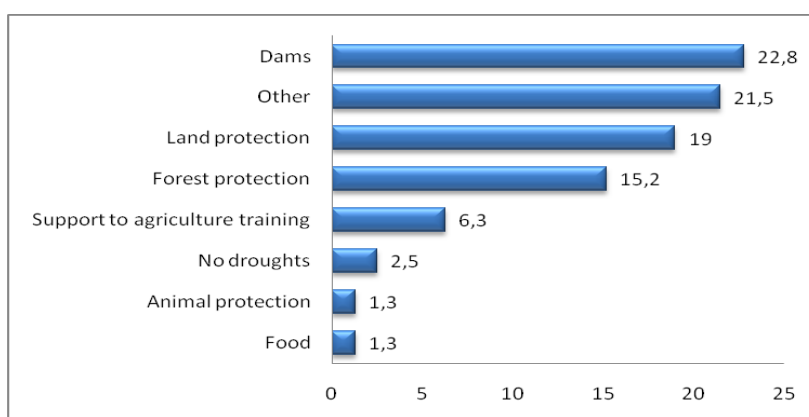
Among survey respondents who felt that protecting the park conveyed some advantages for the household, the most frequently cited reasons were: water availability (49%), rainfall (11.3%) (people think that with the protection of the park, there is more rainfall, and therefore more water available, even if these two elements are not related), land protection (11.3%), and forest protection (9.4%).

Graph VII.17: Advantages to households conveyed by Park protection (2006)



73.2% of households felt that the Park could produce advantages for the community. The main advantages cited were dams (22.8% of households), protection of the land (19.0%), protection of the forest (15.2%), and water availability (10.1%). These results show that some confusion may have existed, between advantages conveyed by the establishment of the Park and advantages resulting from the project. This can be interpreted as a positive result, since the project's work in local communities was conducted under the aegis of the Park.

Graph VII. 18: Types of advantages conveyed to the community by the Park (2006)



The use of forest products varied among communes and households, ranging from house construction to income, from food to medicinal plants.

Table VII.32: Distribution of households in forest product use by type of product (2005)

	Consumption		Commercialization		Cares and Treatment	
	n	%	n	%	n	%
construction wood	151	73,7	20	55,5	5	50
income source	24	11,6	12	33,3	2	20
collect and hunting	16	7,8	2	5,6	0	0
medicinal plants	14	6,9	2	5,6	3	30
	205	100	36	100	10	100

According to these figures, wood is the most exploited Park commodity, and is used mainly for construction and other self-consumption (73.7%), and for sale (55.5%). Additionally, people use forest products for food (7.8%), cash exchange (5.6%), and household medical care -- 6.9% for self-consumption and 5.6% for sale.

Table VII. 33: Main use of natural resources (2006)

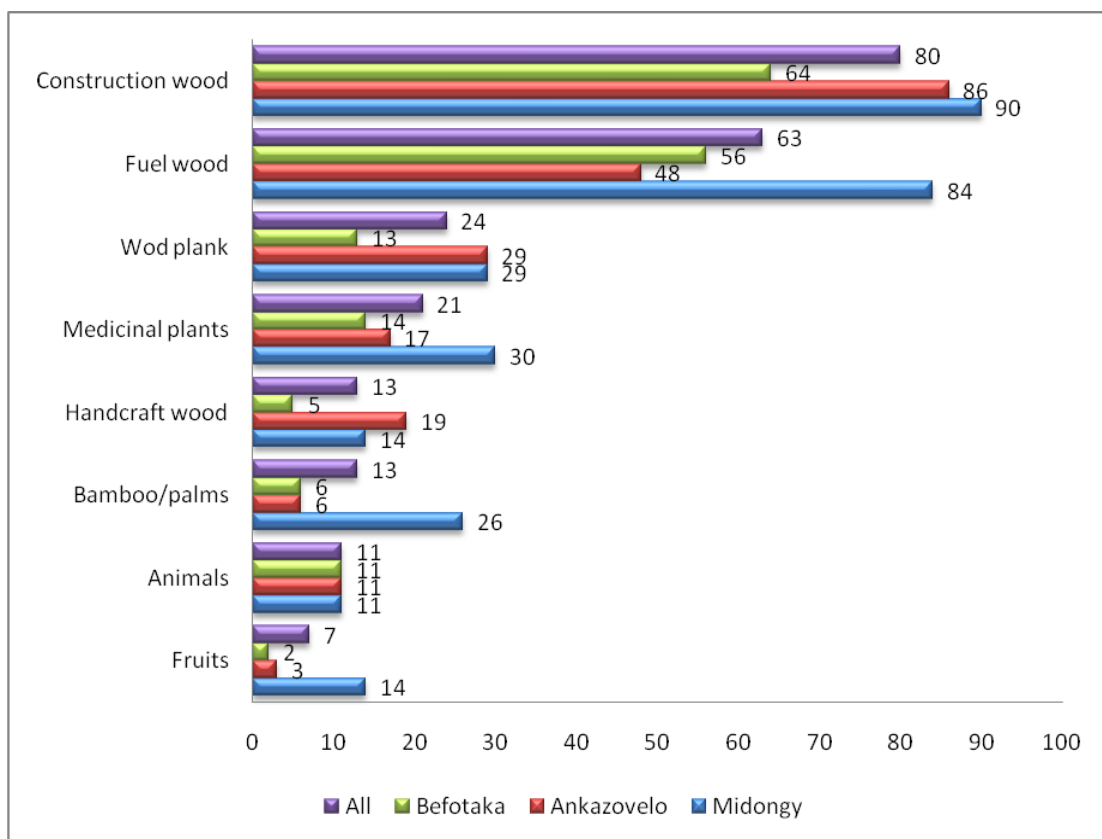
	All	Befotaka	Ankazovelo	Midongy
Construction wood	80	64	86	90
Fuel wood	63	56	48	84
Plank	24	13	29	29
Medicinal plants	21	14	17	30

Handicraft wood	13	5	19	14
Bamboo/Palms	13	6	6	26
Animals	11	11	11	11
Fruits	7	2	3	14

Households use the Park's natural resources mainly to collect construction wood (80%) and wood for fuel (63%).

The Park is most heavily exploited around Midongy, where 90% of the surveyed people said they collected construction wood and 80% collected wood for fuel from the park.

Graph VII. 19: Park Products used (2006)



Despite the increased public awareness, in 2006 the mean consumption of wood had not been reduced; the consumption frequency increased from 1% in 2005 to 3% in 2006, probably due to restrictions. Forest products are mainly used for household consumption rather than for sale (8.1% of households), or for medical

treatment and care (0.1%). When forest products were intended for sale, then construction was the most profitable source of income (10.6%), although 4% of respondents believed that fuel wood was the most profitable.

Despite the use of forestry products, people were willing to proceed with changes that would allow a more rational use of these resources while at the same time improving their living conditions. During the discussions, people noted, especially in Ambondro and Ambohimasoana, that an important part of the forest had disappeared -- almost 50% of what it used to be.

Table VII.34 : Choices for alternative forestry wood provisioning (2005)

	Ankazovelo		Befotaka		Midongy	
	n	%	n	%	n	%
provisioning elsewhere if locally	23	37,7	30	51,7	22	25,6
provisioning elsewhere	14	23	5	8,6	7	8,1
provisioning in the park	17	27,9	14	24,1	43	50

In 2006, almost half of all households (49.3%) said they would be willing to obtain forest products elsewhere if alternative locations were proposed. 74.3% of those willing to obtain forest products elsewhere would pursue this avenue only if the products were available locally; 25.7% would be willing to obtain forest products even if they were not available in or near their village. These results were similar to the 2005 results.

v. Fuel wood

In 2006, 90% of households used wood for heating. Charcoal was used only in Midongy, by 1.5% of households. All communes used petroleum (2% in Befotaka, 1.5% in Ankazovelo, and 3% in Midongy). The main types of wood used for fuel were: Haronga for 34% of households, Dinga for 32%, and Riadriaka for 18%.

Most people collect wood in the forests surrounding their residences (99%). In Midongy, 2% of the people obtain wood at the local market. The time needed to collect the wood is typically 39 minutes, except in Ankazovelo (30 minutes), because the forest is in closer proximity there. Wood collection is mainly done by men (70%)

and children (20%). The main construction woods are Haronga (53%), Rotsy (21) and Laloha (18%). Hera is the main wood use for parquet (24%).

6. Conclusion

This first section of Chapter Seven highlighted main trends observed in the 2005 and 2006 surveys. Results obtained in 2007 and 2009, initially not included in the research, will help, in the following section, in understanding the evolution of variables over a longer period of time, proving that certain results can be assessed only after a timespan of two years or more. These results will also confirm some of the trends observed between 2005 and 2006. A general table will be analysed in the next section of this chapter on the project's impacts on conservation and development.

As stated previously, the project incorporated an integrated approach, coordinating and implementing different conservation and development activities with a unique objective: the preservation of the Midongy-Befotaka National Park. Two of the most important results of the project, highlighted in the section above, were the decrease of the Park's deforestation rate and the increase in the Park's management efficiency index.

B. IMPACTS AND EFFECTS OF THE PROJECT ON CONSERVATION AND DEVELOPMENT

This section will present the generally positive impacts and effects of the Midongy case study project, which are attributable to the effective implementation of the project. It will reflect the previous section, in which statistical results were presented, and will include the results of surveys undertaken in 2007 and 2009.

One of the major problems in evaluating the success of ICDPs is their time-frame. A sufficient amount of time should be given to a project in order for it to become efficient, especially in terms of development success. A project cycle includes the preparatory phase, the selection of the project's team and its organization, the implementation of activities, the follow-up of activities, the assessment of the project's results, and the summative evaluation. Accomplishing all of these activities can take up to 3 years.

For the Midongy project, as mentioned, the first phase was begun between 2001 and 2004. The project was supposed to start in 2001; however, a political crisis

arose, and the project was finally able to start only in 2003. The project was divided among three separate entities: one international NGO in charge of the biodiversity component; one national NGO - a sister organization of the international NGO -- to implement socio-economic studies and some development components, such as health; and a governmental institution, MNP in charge of the protected areas' network, to implement conservation activities inside and development activities outside protected areas. The project's sites were identified so as to form a cluster of protected areas in the southeastern part of Madagascar, and the ultimate project goal was to prepare five sites to be inscribed on UNESCO's World Heritage List.

After one year of project implementation and due to problems that occurred in the course of implementing and conducting planned activities, conflicts arose among the three organizations, as well as among project staff. It was then decided by the donor and UNESCO to conduct an evaluation to assess the project's results so far.

The evaluation concluded that three major problems had confronted the project during its first year: there was insufficient involvement of the national authorities during the development phase of the project, and therefore a lack of commitment and involvement by the governmental partners due to the lack of initial consultation with government representatives; the project's objectives were not sufficiently in line with national conservation priorities, nor were the project's resources being allocated to activities considered national priorities; and the operational plan was very ambitious with respect to the project's two-year time period. These problems are all common in ICDPs, notwithstanding the lessons learned from the first generation of ICDPs

Following this evaluation, UNESCO decided to design a new operational plan, based on lessons learned and on the evaluation mission's conclusion and remarks. The contract with MNP was renewed, and new national NGOs were identified to implement the revised project's activities. The second project phase started in 2005. The first phase – the first one and half years of the project's implementation, from 2003 to 2005 - was of considerable help in designing the second phase, and in deciding that the operational plan and activities should be conjointly linked in order to optimize the project's intended results.

Based on the first phase, the following actions were taken: small and

achievable objectives and outputs were designed; detailed, time-defined indicators of performance were instituted; and local and national NGOs were brought into the project, based on their recognized experience in the field with local communities.

This second phase was initiated in January, 2005, with the selection and recruitment of staff as well as the identification of the project's sites. The project team started its work in February. This phase was intended to last for one year. Preliminary assessments and surveys were made between February and March, and activities began in March 2005, with community surveys. Once the surveys were completed and analysed, certain activities were redefined, and the organizational plan was elaborated to coordinate the work of all contributing institutions.

For this second phase, it was also decided that all project representatives of participating institutions should be based in the field, to be coordinated by a local project coordinator hired by UNESCO. After one year, a second set of community surveys was prepared, to evaluate the project's activities thus far. In the meantime, proposals were submitted to donors, and a third phase of the project was approved, to run from July 2007 to January 2009. For this third phase, the activities that had been deemed a success during the second phase were replicated at additional sites, and were reinforced at the original 5 sites.

As the project was expanded and lessons learned were incorporated into the overall plan, UNESCO decided to reorganize the project team. The coordination team was reinforced by the addition of another coordinator, with the result that one local coordinator was based in Midongy and one in Befotaka (Map VII.3). It was also decided to place three teams composed of two persons each - an agricultural technician and a social worker - in each of the three priority zones of the project (see Maps VII. 4, a, b, c, and d).

From the beginning there were doubts that a meaningful evaluation could be done in a two-year time period. Fortunately, in 2007 and 2009, another two community surveys were conducted, using the same questionnaire. Thus, the project eventually included a four-year time period, in which regular surveys were undertaken. This greatly contributed to the understanding of the successes and failures encountered throughout the project's several different phases. For example, comparing 2005 with 2006 helps to understand activities that brought short-term

benefits to communities or the environment, whereas a comparison between 2005 and 2007 or 2009 helps to understand the mid-term benefits conveyed by the project, both in terms of conservation and development. The 2005-to-2006 comparison was also useful in evaluating problems encountered at that time and consequently in reshaping some of the activities.

Thus, the research reflected in this dissertation was preliminarily intended to have been based on the 2005 and 2006 period, but thanks to the project's expansion, it became possible for elements of the 2007 and 2009 research to be included in this treatise, making additional analyses and observations possible.

It should be mentioned, at this point, that during the analysis, some discrepancies were noted in the 2006 survey. At that time, there was a problem with the team that was in charge of collecting data, and some results were not congruent with others. This became even more evident when comparisons were made with the 2007 and 2009 research. The situation will be made clear, below.

1. Impact on Development

The beneficial impacts realized in the development arena help in addressing the first hypothesis, that intervention by external agencies can positively impact local development by increasing the well-being of local populations.

a . Impact on Health

Health status indicators are among project results that can be measured on a short-term basis, because they reflect immediate effects.

Table VII.35.: Type of diseases

		2005	2006	2007	2009
		(%)	(%)	(%)	(%)
common diseases	malaria	81,00	51,00	46,31	69,45
	respiratory infections	74,60	52,00	31,34	13,81
	diarrheas	62,40	49,00	14,29	5,09

	malnutrition	20,50	6,00	5,00	2,00
immunizations	national mean 2003-2004	53,00			
	BCG	64,40	86,00		
	DTCHPB		80,67		
	Polio		78,00		
	Measles	60,50	72,00	63,30	47,40
frequentation of health center	go to the CSB	90,00	82,00	84,00	82,00
	self-medication		40,00	10,00	5,00
	healers		5,00	2,00	1,00
visits of health centers	cares and treatments	96,00	83,00	94,51	
	children immunizations	49,00	62,00	2,32	
	childbirth	36,00	36,00	1,90	
	children weighing	21,00	14,00	0,21	
	post-natal consultation	13,00	4,00	0,84	
	family planning	0,50	3,00		
childhood mortality					
death of children of less than one year	Male			52,38	52,58
	Female			47,62	47,41
death of children between 1 and 5 years old	M			46,00	49,39
	F			54,00	50,60
number of children alive in a household (mean)					5,25

number of children who died in a household (mean)					1,51
causes of death	malaria				37,39
	Respiratory Infections				17,39
	diarrhea				14,78
	delivering problems				11,76
	malnutrition				0,87
	other				17,39
drinking water	drinking water	59,00	1,00	4,25	

The table clearly shows that indicators related to health improved. The major diseases were reduced over the four-year period. However, a difference appeared in some results between 2005-2007 and 2007-2009. The NGOs in charge of the health component changed in 2007. The table suggests that the first NGO was more efficient than the one that worked on the project between 2007 and 2009. The same can be said about immunizations. The indicators improved quite rapidly between 2005 and 2007, but the 2007-2009 period shows a decrease in the percentage of people immunized. The reason is that whereas the first NGO was engaged in immunization campaigns, the second NGO did not conduct such campaigns.

This outcome strongly suggests that the choice of organization in charge of immunization activities should have been seriously challenged. With the same amount of funding, the same coordination unit, and the same intervention site, the results varied considerably.

The number and frequency of visits to the health center remained quite stable, while the percentage of individuals who self-medicated was considerably reduced. Training in health activities is not undertaken with the purpose of rendering communities totally independent of health intervention, and an emphasis was put on the use of public health centres. Training was undertaken in areas in which health benefits could be expected on the community level with the help of health volunteers

trained by the project. At no time, however, did the project play down the importance of public infrastructure for more important interventions.

The reasons why local people chose to frequent the health centre did not change during the project (see table). The main reasons remained care and treatment. However, some changes were observed in relation to children's use of the health center and to the frequency of births taking place there, undoubtedly a result of the training sessions that were provided by the project to educate people on child health and prenatal care. Immunization as a reason to visit the health centre decreased, as immunization campaigns in support of the CSB were provided to people at sites other than the health centre.

The death rate for children remained stable. Childhood mortality rates are among the health status indicators that require a span of a number of years to be positively or negatively assessed.

During the project, associations were established (see Map VII.7) and community volunteers were identified to be trained and to serve as intermediaries between the project and local people. Some associations took a lead role in ensuring that health activities could be sustained after the project's activities ceased.

Several anecdotes will be presented in this chapter in order to provide concrete examples of how local individuals and communities reacted to the project's activities.

The first anecdote, apropos of the creation of associations, occurred in 2005, when an association called "FIVEMA" (Fikambanana Vehivavy Maroangaty, an association of the women of Maroangaty) was created in one of the communes of Nosifeno in the *fokontany* of Maroangaty. This association benefited from selling mosquito nets to the community for a profit, which became a small fund for their association. Besides the sale of mosquito nets, the association also requested contributions from its members. Within a short period of time, the association grew to more than 20 members. The association worked so well that in 2006, it was able to contribute 390,000 Ariary (about \$US 180) to the funding of the health centre, ten times more than what it had at the beginning. This contribution paid for building the kitchen, the roof, and the latrines. In 2008, members were so numerous that they decided to divide the association into three others: the FIVEMA association (which

remains a women's association with twenty-three members), the MAROMANGA association (with twenty-five members of both sexes), and the FIMPAMA association (with forty-nine mixed-sex members).

b. Impact on Education

The education component was a key element of the case study project. As noted, the region is very remote, and there are very few teachers, including locals, who would agree to teach in the region. As already noted, education was considered to be the main pillar of the project, based on the reasonable supposition that no activities could be implemented without being supported by education.

The educational activities were oriented towards the working population in general, instead of focusing on children's education. This component of the project, therefore, targeted adults, and especially those who would participate in development activities (see Map VII.8).

Table VII.36: Literacy and education indicators

		2005	2006	2007	2009
		(%)	(%)	(%)	(%)
went to school	M	69,30			
	F	52,30			
literate	M	47,90		56,00	67,80
	F	30,80			
illiterate	M	35,00		43,58	10,00
	F	55,30			
	Midongy	52,00			
	Ankazovelo	50,00			
	Befotaka	40,00			
	All	47,00			
participation in Education activities (EPT)	Yes			62,47	66,66

AFI-D	1,82	10,75
schooling rate	0,84	0,72 0,75
national	0,98	

The method combined several themes in the lectures provided during education sessions. These themes covered several subjects useful to the communities in their daily life: health (specifically malaria, infectious diseases, AIDS, and sexually transmitted diseases), nutrition (especially that of mothers and children), and certain aspects of life in civil society (for example, how to sign one's name, how to read public announcements, how to fill in administrative papers, how to write proposals, etc.).

Positive results were obtained from the very first year. Under the project, a complete educational cycle, including instruction in how to read, write and count, took approximately five months. The same amount and kind of instruction usually takes three years in the general public education system. This aspect of the project allowed people who were excluded from or could not go to school, common in this region, to be able to get a basic level of education.

The first five-month cycle was then augmented by training in professional activities. Activities chosen within the framework of the project were all related to learning cash-income activities, in order for the communities to earn extra incomes, but also to diminish the pressures on the environment.

The original approach coupled education with other project components. During education sessions, information was provided on agricultural techniques harmless to the environment, or on the importance of preserving the forest for drinking water, or the importance of natural resources. During these sessions, representatives of other organizations were asked to contribute as speakers to deliver messages to the communities. Agricultural technicians were given theoretical lessons followed by practical sessions. The Park's team intervened on a regular basis to inform local people on the Park's regulations and to explain the meaning of the activities to be conducted during the project for conservation -- for example, the delimitation of the park. During these sessions, villagers were also encouraged to

participate by sharing their opinions on relevant subjects of their choice.

From the beginning, the Park's boundaries were a constant concern for the villagers. With the arrival of the MNP team in Midongy, one of the proposed actions was the delineation of the park's boundaries. When the project team visited villages in preliminary studies, villagers complained about the fact that MNP wanted to modify previous boundaries, and exclude some villages that were then considered to be located inside the Park. When villagers were asked about it, they mentioned limits that had been drawn up a long time ago, which were known by all elders in the villages. They could not understand why these villages were now slated for removal from the Park. Once the project team became aware of these problems, it was decided to assess the Park's activities since its creation in 1997. The team realized that in 1997, under the original decree establishing the Park, limits had already been defined in cooperation with villagers (Orgasys, 1997). Precise and detailed areas of conservation and of use or exploitation had been established.

The project therefore decided to create a GIS map based on these previous limits, and overlapped this map with the limits MNP wanted to implement (see Map VII.9). As shown on Map VII.10, some important differences were noted; all villages that MNP planned to displace were in fact located in areas that had previously been defined as areas of use or exploitation. It was impossible, at that date, to determine whether or not MNP had known about the previously-set limits, but the project's administrators decided to discuss the subject with those on both sides of the question.

Educational activities had very positive impacts on literacy levels between 2005 and 2009 (from 48% in 2005 to 68% in 2009), especially among the members of one group: women. Indeed, women were the first ones to volunteer to participate. After one year, they organized themselves into associations and were able to demonstrate their capacity in implementing activities. This success led household heads, mostly men, to also participate in education activities. After one and a half years, the project received many requests for educational activities from villages targeted by the project, and by other villages in the area as well.

An anecdote emanating from education activities involved M. Pierre Soley, a resident of the rural commune of Nosifeno in Midongy. Prior to the project, M. Soley, like most of the commune's inhabitants, was illiterate. In 2005, he attended the

literacy sessions held by the project over a six month period. As a follow-up to these literacy sessions, he also participated in some professional training in agricultural activities and woodwork, and took part in the construction of the UNESCO Office in Midongy. Today, M. Soley knows how to read and write a letter, and is proud to participate in local or district meetings. He became the president of the DINA, a DINA is a kind of regulatory body that manages the life of the community, for the protection of the environment for the Midongy District. This DINA is implemented by the Atsimo Atsinanana region, with the objective of supporting the current legislation and security in the rural area.

Not only do education activities have short-term beneficial effects; they are also sustainable. Indeed, once people have acquired the capacity to read, write, and count, they retain these skills for life. The institution chosen for education activities implemented methods that relied on simple tools. They chose to train community members and these people were then able to continue using the same method, even after the project had been completed. Books were provided, and remained the property of the community. Eventually – still within the framework of the project -- a special manual was created, geared to the Midongy context and the necessity to preserve the environment.

c. Impact on Agriculture

When discussing the project's approach, it was decided that activities should benefit community groups instead of individuals. Villagers were therefore asked to organize themselves into agricultural associations. From my own experience in Madagascar, I noticed it was preferable to engage a whole community in project activities, instead of privileging certain members. I also observed that when individuals were chosen among community members, this sometimes created tension in the community; if certain members realized more success than others when given access to project activities, the others were apt to become jealous and resentful towards this person – and the successful individual was soon excluded from the community.

In the case of Midongy, this was the first time community members had become involved in associations, and the effect was to produce motivation among association members. At this stage, it is not known how long these associations will

last. Each was provided with some basic training, as well as some financial incentives so that they could set up bank accounts and start with some basic materials and agricultural tools. In general, villagers recognized this activity as something beneficial the project had brought them.

Between 2005 and 2009, 51 associations, totaling 450-500 members, were created within the framework of the project's activities. There were thirteen in 2005, thirty-eight in 2007, and fifty-one in 2009. Women, as noted previously, were the first ones to organize themselves into associations.

The fact that there was an increasing demand to create or to participate in associations is considered a positive result of the project. Typically, villagers – especially farmers -- would become involved in activities after a period of observation of opportunities from which they felt they might gain some benefit. Even the priest in Midongy asked the project if the church could take part in the volunteer training sessions, and each Sunday, during the mass, he encouraged his parishioners to participate in project activities.

Table VII.37 : Economic activities and agricultural profile

		2005	2006	2007	2009
Main economic activity	agriculture	90,00	97,00	96,30	93,20
Secondary activity	cattle breeding	50,24	55,00	69,60	52,70
	handcrafts	19,20	20,00	7,00	5,00
	marketing	18,54	10,00	8,00	0,00
	fishery	4,88	3,00	4,00	3,00
	forest exploitation	2,93	2,00		
Destination of income	Food	72,00	91,00		
	Health	47,00	67,00		
	Education	21,00	82,00		

	Agricultural inputs	3,00			
Land tenure	less than 100 ares		14,06	40,21	
	100-500 ares		80,20	14,66	
	more than 500 ares		5,72	10,10	
	All 100-500 ares				
	Midongy	67,00			
	Ankazovelo	45,00			
	Befotaka	42,00			
	All 50-100				
	Midongy	8,00			
	Ankazovelo	11,00			
	Befotaka	5,00			
	All 500-1000				
	Midongy	2,00			
	Ankazovelo	1,00			
Befotaka	4,00				
Mean of agricultural land owned by the household (ares)		265,00	120,00	219,00	334,00
Destination of production	self-consumption	65,00	79,45	73,00	67,00
	sale/market	35,00	20,04	27,00	33,00
Nb of months covered by production	Befotaka	3,00	2,83	5,87	
	Ankazovelo	2,40	3,25	3,33	
	Midongy	5,80	3,10	4,00	

types of agricultural production	rice		95,00	99,00		
	manioc/maize		94,00	93,00		
	market-gardening cultivation		56,00	53,00		
	other		16,50			
Self-consumption/sales rates by products						
rice		consumption				61,21
		sale				14,87
manioc		consumption				67,28
		sale				60,25
sweet potatoes		consumption				62,70
		sale				28,74
beans		consumption				87,11
		sale				94,09
ground nuts		consumption				40,48
		sale				65,95
potatoes		consumption				2,50
		sale				2,40
Practiced techniques	agricultural	traditional technique	95,00	91,00		97,53
		tavy	73,00	47,00		16,95
		modern technique	0,50	9,00		30,43
Choice for particular technique						
traditional practice		tradition	83,70	80,00	45,30	68,29

	does not know	38,40	38,00	40,50	11,94
	another one				
	easy	24,70	27,00		14,18
	lack of means/tools			7	5,23
tavy	tradition	89,80	0,00		41,38
	does not know	34,30	3,00		12,07
	another one				
	easy	29,50	8,00		31,03
	lack of cultivation				15,52
	land				
	tavy's practice at the	70,60	47,50	8,50	
	level of household				
use of new agricultural	use of new	0,68	10,01	1,62	32,72
techniques	agricultural				
	techniques				
Desire to adopt new	SRI/SRA	65,00	52,00	66,10	
agricultural practices					
	Small cattle breeding	36,50	24,00	7,20	
	market-gardening	40,50	48,00		
	cultivation				
	tanety cultivation			16,10	
	cash-income	26,50	17,00		
	activities				
	seasonal cultivation	12,50	48,00		
	beekeeping	6,50	6,00		
	handcrafts		14,00		
	fishery		3,00		
Assistance needed	tools/equipment	44,00	45,00	3,29	
	field supervision	41,50		88,27	
	inputs	25,00	34,00		

credit	24,00	65,00	1,85
demonstration sites		6,00	
Proportion of products sold in in the village markets			
Midongy	4,70		
Ankazovelo	13,10		
Befotaka	15,50		
local market			
Midongy	3,40		32,58
Ankazovelo	1,60		17,98
Befotaka	19,00		6,74
commune market			
Midongy	91,90		19,03
Ankazovelo	85,30		16,42
Befotaka	65,50		21,27
starving period	5-6 Months		2-3 months

As noted previously the primary economic activity of project beneficiaries was agriculture, followed by cattle-keeping. Agricultural products were mainly cultivated for subsistence rather than for commercial purposes. The project's activities tended to increase the production of agricultural products by raising productivity. The quantity produced for self-consumption, for example, increased, which helped to mitigate the food scarcity period. Between 2005 and 2009, the number of participants in the main subsistence activities remained stable.

Rice is the main household food; 80% is retained for household consumption, the other 20% is sold. Percentages are about the same for manioc and sweet potatoes;

for beans, ground nuts and potatoes, people use about 50% of what they grow for their own consumption, and sell the other 50%. It must be noted that these last three products were not very common in Midongy, and were promoted by the project. However, these products remained novel for farmers, and they did not use as great a proportion of them for their own consumption. Cooking lessons also had to be provided, in order to explain how to use these new products.

Farmers who were members of the project's associations were encouraged to sell the products they obtained through the project's training sessions at markets. The potato was a new product in the region, but the variety that was chosen was already successful in a nearby local population. A private business, the Chinese grocery in Midongy, signed an agreement with the project to buy its beneficiaries' potatoes and sell them. The owner of the grocery complained to me, saying that all the potatoes she bought were quickly sold, and that she thought it was necessary for the project to help farmers to increase their production of this crop.

Activities aimed at increasing the production of farmers were the most successful. Between 2005 and 2009, production increased by between 1.5% and 4.5% for 74% of the population. These results are based on the use of more modern and therefore more appropriate agricultural techniques; previously, farmers had used the *tavy* method. Training had a positive impact on the shift from traditional agricultural practices to modern ones. Instruction in the use of modern techniques was solicited by farmers at the beginning of the project.

An anecdote regarding the change observed in agricultural practices under the project is provided by the example of the SOAMANDROSO association. This association was created in 2008, in the rural commune of Befotaka in the *fokontany* of Andasy, 12 km from the commune chef-lieu (the main administrative commune). It is an association of twenty neo-literate farmers and water beneficiaries.

This commune is located in the western part of the Park, in the Bara area. As explained, the zebu is so important that one sometimes sees a Bara taking off his hat in front of a zebu. Most of the time, these cattle are used in ceremonies and to increase wealth. It is forbidden to cause them to suffer (*mamilavila harena*, to not respect what you have). It is an offense, for example, to use zebus to pull plows. Before the project began, therefore, it was beyond imagination that the population

would use zebus to cultivate the land; and the project did not propose this. However, during an exchange visit between Befotaka and Midongy, the Bara saw people from Midongy using zebus for agriculture. They realized it was easier and faster to use the plow than to prepare the land by hand: with a zebu and a plow, a parcel can be plowed in one hour instead of a whole day. So The Bara began to use zebus to pull plows, and increased their production.

With the help of the mayor of Befotaka, a cart was built to transport agricultural material from the town of Befotaka, instead of employing carriers to transport goods on foot (to transport 50 kg of merchandise on foot cost 2500 Ariary). This helped farmers to save some money for their association to transport their material.

The increase in production was also supported by an expansion of lands used for cultivation. Numerous households were targeted by this expansion, which increased each household's land by a small amount. The project decided it was preferable to provide a large number of households with a small increase in land than to benefit a small number of households with larger areas of land (see Maps VII.11, 12 and 13). Prior to the project, each household had a piece of land for cultivation (for the majority the size of the parcel was between 100 and 500 acres). There were also community lands, and it was usually this land that villagers decided to use for demonstration plots at the beginning of the project. A system of task sharing was implemented among participants. Afterwards, villagers used the new techniques on their own lands. The land tenure system around Midongy has not yet been formalized. This is an activity that should be addressed in the future.

Table VII.38 : Increase in land cultivation area by commune and hectare

commune	Market gardening cultivation (ha)	Pluvial Rice (ha)	Irrigated Rice (ha)	Total (ha)
Ankazovelo	13	5,25	3,14	21,39
Antaninarenina	6,25	2,75	0,26	9,26
Befotaka	13,75	6,75	0,48	20,98
Nosifeno	30,75	21	1,4	53,15

Vatanato	46,25	28,75	6,8	81,8
Total	110	64,5	12,08	186,58

The first objective of land expansion and increased production was to optimize the number of targeted people, mainly for the purpose of augmenting their subsistence.

Another anecdote about agricultural activities involves a farmer, M. Pady, with a four-person household. Mr. Pady lived in Ankazovelo, a commune in which the project undertook numerous interventions. He participated in the project's activities, as a volunteer, beginning in 2005. Prior to his participation, M. Pady cultivated rice, manioc, and sweet potatoes, using traditional methods, which did not provide sufficient subsistence for his family. His cultivated area was 5 talaha (approximately 10 acres) of cultivated rice and pluvial rice, but his production did not exceed 1.5t/ha and 1t/ha.

Through participation in the project's activities, M. Pady shifted from traditional to modern agricultural methods, and committed himself to train other members of his community in these methods. He also elected to diversify his production by trying other products, such a ground nuts, maize, and potatoes. His production reached 2 tons/hectare, as opposed to 1 ton/hectare previously, and he complemented these yields with ground nuts (0,8 T/ha, 20 kg), maize (3,75 T/ha, 2 acres) and potatoes (7,7 T/ha, 15 kg). Recently, M. Pady was elected president of the steering committee of the centre for agricultural service of the Midongy district, one of a number of centres created by the Government to promote agriculture in each district of Madagascar.

The newly introduced agricultural techniques had some very positive impacts. What local people call "the starving period" was diminished from 4-5 months before the project to 2-3 months after the project's activities began. For the project, this was one of the most positive results.

A difference was also noted in the increase of rice production. Rice was grown in valleys rather than on forested hills, as with slash-and-burn methods (see Map

VII.11).

Table VII.39 : Increase in production by commune

Products/ Production (t/ha)	Ankazovelo	Antaninare- nina	Befotaka	Nosi- feno	Vatanat o	Mean	Mean before the project
Ground nuts	0,74	0,8	0,78	0,69	0,71	0,74	0,1
Beans	1,14	0,88	0,625	0,98		0,73	0,78
Maize	3,7	3,88	3,76	3,7	3,36	3,68	1,6
Potatoes	8,45	5,37	7,27	7,25	6,63	6,99	
Irrigated Rice	4,87	6,15	6,04	1,87	2,52	4,29	2,38
Pluvial Rice	1,91	1,8	1,93	1,86	1,69	1,84	1

This positive impact was also supported by the observed numbers of months of production, as well as the increase in both self-consumption and sale of products (see Map VII.11).

Table VII.40 : % of production sold at the local market (N= 259)

Commune	Mean (%)
Ankazovelo	18,36
Befotaka	30,13
Antaninarenina	30,59
Vatanato	25,76
Nosifeno	30,16
Total	27,79

The commune of Ankazovelo is located 8 km from the chef-lieu of the district. This commune includes 7 *fokontany* and 9025 inhabitants. Most of its population subsists through agricultural activities, especially the production of rice. However, Ankazovelo did not have a local market. Inhabitants had to travel 8 km to sell their products or buy what they needed.

The project has worked in this commune since 2005. Since then, the commune has benefited from development activities and the construction of two dams to irrigate 460 ha of land. During the project, overall production increased; mean production increased from 248 acres in 2005 to 345 acres in 2007. This increase also led to the commercial sale of agricultural products. With the help of agricultural technicians, a market has been established. Held every Saturday, it provides an opportunity to mobilize the traditional authorities and deliver messages to the population. Each *fokontany* has its own display. This market is recognized among the local communities as the market for rice and vegetables, products that did not previously exist commercially in the region.

Now that data from the project are in hand, it is possible to estimate which products have contributed most to the farmers' income, in terms of cost versus production (see Map VII.11).

Table VII.41 : Estimate of incomes obtained from sale of produce

Commune	Mean (Ar)
Ankazovelo	17856
Befotaka	18900
Antaninarenina	13330
Vatanato	14742
Nosifeno	20100
Total	16985

Another important impact of the project was the fact that the price of rice stabilized. Since 2008, the price of a cup of rice has remained between 150 and 300

Ariary during the period between harvests of food scarcity, instead of increasing to 500 Ariary as had been the case in previous years.

2. Impact on Conservation

The impact of the project on conservation addresses the second hypothesis: development activities can have a positive impact on the environment in protected areas and their peripheral zones. In particular, local people who are offered alternative economic activities and opportunities will become less dependent on the use of natural resources from a protected area.

The objective for conservation in Madagascar is to reduce the rate of deforestation below 0.55%. As noted above, the trend in the deforestation rate is very positive (see Map VII.14).

The most positive impacts were realized in terms of local people's awareness of the Park. Thanks to the educational methods used, and to environmental education messages to conserve the Park, the necessity to protect the Park was accepted by the villagers. A question remains, however: are the local people merely cognizant of the Park, or do they accept the fact that it is necessary to preserve it?

Table VII.42: Evolution of deforestation rate and Park's management efficiency index

deforestation		rate				
(objective: below 0,55)						
	1994-2000				0,94	
	2000-2002				1,04	
	2002-2004				1,22	
	2004-2006				0,87	
			2005	2006	2007	2009
park's	management	efficiency				
index			0,41	0,45	0,52	0,50

Table VII.43: Evolution of the park's perception by local people

		2005	2006	2007	2009
park's					
acknowledgement	aware	54,35	79,00	91,44	96,12
	unaware	27,40	18,00	5,88	3,10
	uncertain	17,10	3,00	2,67	0,77
park's					
acknowledgement	knows			91,44	96,12
	Midongy	58,14	84,00	88,00	98,59
	Ankazovelo	47,54	72,00	93,93	91,66
	Befotaka	60,34	79,00	100,00	100,00
problems caused by the					
park	the park causes problems	53,00	27,00	49,18	25,98
	the park does not cause				
	problems	47,00	66,00	48,10	74,02
reasons for problems					
caused by the park	cultivation land				
	insufficiency	72,00	54,00	38,20	46,87
	insufficiency of natural				
	resources	10,00	12,00	25,84	25,00
	incomes decrease	10,00	15,00	15,73	12,50
	illegal exploitation	7,00	19,00	3,37	15,62
changes observed for					
the park	forest decrease			59,55	11,93
	less tall trees			10,29	1,83
	less animals			0,73	0,00
	more tree growing			18,38	79,81
	less popoka			0,73	2,00
	less rainfall/water			1,43	0,00
	less tavy			1,46	6,42

These positive impacts were supported by other indicators, such as the decrease observed in the practice of *tavy*. Another interesting result was the fact that communities became sedentary; indeed, one problem of the Midongy region is the itinerant nature of slash-and-burn activities. The fact that communities were able to settle, no longer needing to search constantly for new lands elsewhere, is also a sign of a change in behavior and thinking that can be credited to the project.

Further support comes from villagers' opinion of the Park. In 2005, the park

was causing problems for about 53% of them, according to the project survey; in 2009, it was viewed as causing problems for only 26% of the population.

Differences were also observed in the way the population perceives the changes in the Park, such as the impact that conserving the Park has had on the growth of trees and the decrease of *tavy* practices. However, local people still think that the Park causes problems in the reduction of land available for cultivation and in access to natural resources. The fact that more local people now think that illegal exploitation is a problem for the Park can be considered a positive result of environmental education.

The indicators of conservation take longer to evaluate than indicators of development. Only trends can be observed in immediate or mid-term effects/impacts. Moreover, such evaluations should be augmented with detailed biological indicators on forest evolution, in terms of forest cover, biological populations, invasive species, and composition of the forest. This is why the project implemented biological surveys accompanied by threats assessments. These surveys should be replicated on a regular basis to test these ideas. For all the results and impacts observed thus far, it will be interesting to see the results of future surveys tracking the same key indicators.

One of the most serious difficulties for conservation activities at Midongy was the work that was done with MNP. There was a tremendous gap between what was required at the organization's headquarters and the imposed operational plan at the field level, where there was little technical or financial capacity. Several contracts were made with MNP, both directly with UNESCO and with other financial partners, but none of them succeeded in helping MNP to achieve positive results. Most of the funds were retained at the level of the HQ or the regional office, and money transfer was never done in time for operations to be adequately funded in the field. There were also problems with regards to other partners' initiatives, as MNP's delays in implementing activities were constant. This sometimes proved demotivating for the other institutions involved.

Another problem was that MNP dealt with local communities in what was interpreted by local communities as a repressive manner. Even when the project tried to compensate for MNP's weaknesses, MNP's attitude remained the same towards the population. If farmers were seen using the *tavy* method, they were sent to jail for two

months, far away from their families. They of course returned from incarceration with even more frustration than before, worsened by the fact that their families had remained alone without any way of cultivating the fields without them.

The delimitation of the Park was important, since most of the conflicts between villagers and MNP arose from misunderstandings over this issue. Considering the little amount of money allotted for establishing the boundary of the Park, the project decided to focus on priority zones, not only to delineate new limits but also to engage the park in re-addressing current limits and trying to modify the decree in conjunction with what was known by the villagers and what would be acceptable to the protected area's management team. This approach was very important as people - whether they were villagers, project team members, or representatives of MNP - were collectively and openly able to discuss the delimitation of the Park, instead of imposing limits that would never have been respected because they would not have been recognized by the villagers.

However, despite these discussions among the project's partners, MNP decided to establish the Park's boundary by itself, without any discussions with the villagers. Instead of updating the Park's limits using the GIS method, they used the old boundaries, for which spatial data were incorrect. As a result, in one case the limits of the Park fell in the middle of a football field. In another, a church was placed inside the Park's limits.

On the other hand, the project had a very good relationship with the Water and Forests employees who, when they caught people using the *tavy* method, asked them to plant some trees as a "punishment." In comparison, MNP's administration of the project seemed less than even-handed.

One day, when the project's staff was celebrating the success of certain activities, representatives of MNP asked us to accompany them, together with the police, to arrest some village people who were practicing *tavy*. This of course would have been contrary to everything the Midongy project was trying to accomplish.

Another problem that was encountered with MNP was the agreement it had with the populations. As mentioned above, the geographical location where MNP was supposed to build a dam was not well-studied, which meant that 6 km of canals would

have to be built by the local people. However, as few people were to benefit from this dam, the population decided not to participate; in addition, such a canal was too long for the communities to build. In response, MNP sent the local police to force the local people to build the canals. Finally, local communities expelled MNP from this specific area with machetes, while - at the same time and later on – the project's staff was still able to work actively there.

There are, however, some exceptions to this kind of scenario. In some places, some MNP staff were very committed to improving things with the communities, and to moving towards a more cooperative way of managing protected areas. Most of the time, unfortunately, they were prohibited from doing things that had not been officially approved by MNP, and risked getting reprimanded if their actions were seen as too accommodating towards the local people. These MNP staff members often complained about the way various constraints were imposed on them, and the lack of means this gave them.

It is hoped that in the future, these lessons will help in defining an approach that includes more community participation in conservation efforts in Midongy National Park. The project hopes to share management of the Park more evenly. The ideal would be for the communities, as planned, to establish the new limits of the Park with the different partners, and to be able to defend the creation of a new decree for the Park's boundary. This decree could be defended by local people themselves before the Malagasy Congress.

Following from the information on ICDPs presented in Chapter Four, this chapter has highlighted the following lessons learned:

a. At the project level

The research established some simple, clear goals and objectives, and explicit targets, in the project design. Very often, projects devise operational plans that go well beyond what is possible to implement in the field during a (usually short) period of time. It is also common for the capacity of national institutions to implement these activities and the capacity of local populations to absorb changes introduced by these activities, to be over-evaluated. . The Midongy-Befotaka ICDP therefore tried to

reduce the scope of activities to efforts that would bring immediate and tangible benefits to the local communities.

Socio-economic surveys were designed to link activities to the local people's social, economic, and cultural characteristics, and were adapted to rural development planning. Specific indicators were set up to be measured against a set of ecological and economic measures. These surveys, beside the use of household questionnaires, also included stakeholders involved in public or private partnerships. The research was quite innovative in using these surveys on a regular basis -- once a year. It allowed activities indicators and reactions from the populations to be monitored and assessed and for management to therefore adapt and adjust activities on an as-needed basis. Very often, for ICDPs, there is only one evaluation, typically undertaken at the end of the project, when it is already too late to react.

Interventions were made at different levels (local, policy level, etc.) and a minimum of assistance was provided by outsiders, as most of the project's partners and staff were representatives of local government and NGOs. A day-to-day adaptative management style was followed, based on local conditions, and evaluations were done on a regular basis throughout the project. The research incorporated several fields of study, in order to take an integrated and global approach to conservation via development. Traditional and public authorities were involved, in order to hear the voices of the whole community. The project also insisted that activities had to be conducted by people familiar with the field -- if possible, from the same region. The staff was attentive to the needs of the population, and shared in the daily life of local communities. Very often, in ICDPs, project staff live in a city, far away from the field, and make only occasional visits to the site.

b. At the community level

A specific focus was put on the local participation of communities at all stages of the project (design, implementation, and evaluation). Both the contemporary literature on ICDPs and development experiences explain the frequent failure of projects by a lack of community participation. This research, using PRA methods, employed a bottom-up approach: local communities were invited to discuss the objectives to be attained and the problems they envisioned even before activities were finalized and implemented. Too often, development projects are imposed on people,

and do not include the community dimension. They are the result of institutional agendas, and funds are likely to be invested in infrastructure and staff (often expatriates), but they do not take into account communities' problems; neither do they take the time to really assess communities' needs.

In Midongy, for example, there was a false assumption that dams were needed all around the Park, and as a result, communities demanded dams. After a brief study made by the project's staff, it was noticed that, to the contrary, problems arose not because of a lack of water to irrigate cultivatable lands, but by an excess of water that submerged lands during the rainy season. Communities were therefore taught how to optimize their cultivable land with appropriately-placed canals. Once communities realized, after a cultivation cycle, that these measures were adequate, there were no more requests for dams.

There are other examples similar to this one. In every case, the project's technicians introduced technologies that were available and appropriate. Tools and seeds were provided at the beginning of the project, but in exchange, farmers kept a part of their agricultural production for their associations. It often happens, with ICDPs, that modern technologies are introduced, but when a project's team leaves, farmers have no means to replicate these new methods. In addition, there was a particular focus in the Midongy-Befotaka ICDP on community capacity-building; small groups of farmers were trained in different techniques, which they were later able to teach to other farmers.

Issues of fairness and the equitable sharing of benefits were also taken into account at the community level. Other projects often focus on the elite groups in a community, because these groups are more accessible, more educated, and can more easily come into contact with project staff. They are also more able to advocate for themselves.

At the beginning of my research, I came close to perpetuating this stereotype. In a discussion with a community about the location and construction of a micro-dam, I asked, during a meeting with the whole community, who would benefit from the proposed dam. I expected that at least half of the people present would raise their hands, but out of 70 persons present, only 3 did: the mayor, the school teacher, and a local small businessman.

Before this project began, a location was identified, but it was decided upon by the Governmental Programme on Poverty Reduction, which did not have the time to consult with the entire community. Before starting this activity, I had decided to make a preliminary study (15 days) that determined the best location to build the dam to benefit the majority of the community. Ultimately, the number of beneficiaries was finally multiplied by 12, and not only the elites, and the surface of land to be irrigated by 13.

Not only did the project improve the local agricultural production; it also encouraged the integration of communities into wider markets, and the involvement of small private enterprises. In the near future, it will no longer be possible for communities to sell their products locally. The project therefore entered into an agreement with a private partner in Midongy (the aforementioned Chinese grocery store) in order to explore the possibility of exporting certain local products. This is an example of how the research took into consideration all stakeholders' interests.

c. At the national level

The literature is full of examples of how these projects have been undertaken without consideration of either a particular context or national policies. In the case of the present project, the operational plan and indicators were based on the National Environmental Plan's (EP3) operational plan. Out of 25 NGOs surveyed by the World Bank, UNESCO and 3 other NGOs were the only ones to be in conformity with this National Plan. Locally, activities were based on communal plans that defined local development priorities. Feedback from the field also informed national policies, as the project participated in government/donor committee meetings where all major events concerning the environment and national policies were discussed. Field experiences also influenced the way MNP oriented their activities locally to complement the project's activities, and made use of the dynamic created around the project and the motivation of local communities to participate.

3. Impacts on Millennium Development Goals (MDGs)

The project contributed to the improvement of Millennium Development Goals (MDGs). In addition, certain indicators were also shown to be an improvement over national-level indicators. The experience of this project, therefore, can clearly be

used for other projects in Madagascar, to help the country move more positively towards achieving the MDGs. The project demonstrates the necessity of having quantifiable results available to highlight changes in trends. The project resulted in positive impacts on almost all MDGs, demonstrating the necessity of adopting an integrated approach for such UN projects.

Table VII.44: MDGs and national indicators

Objectives and targets	MDG indicators	National Indicators
Target 1: reduce by half between 1990 and 2015, the proportion of population whose revenue is below 1\$ per day (extreme poverty).	<p>Proportion of population whose revenue is below 1\$ per day</p> <p>Poverty index of deviation (incidence of poverty x degree of poverty)</p> <p>1/5 of the poorest according to national consumption</p>	<p>Poverty ratio: 70/73,6% (93/03)</p>
Target 2: reduce by half between 1990 and 2015 the proportion of population who suffer from hunger (food shortage).	<p>Percentage of children under 5 years old with insufficient weight.</p> <p>Proportion of population that do not reach minimal caloric input</p>	<p>Rate of weight insufficient of children under 5 years old: 39,1/22% (92/00)</p> <p>Incidence of food shortage: 59/75,2% (93/02)</p>
Target 3: up to 2015 ensure that boys and girls all over the world have means to achieve a complete first cycle.	<p>Rate of school frequentation in the first cycle.</p> <p>Proportion of pupils beginning the first year and reach the class of 5th year.</p>	<p>Rate of school frequentation: 48,3%/82% (93/03)</p> <p>Rate of achievement:</p>

	Alphabetization rate of 15 to 24 years old people	39% (02/03)
Target 4: up to 2015, eliminate gender discrepancies in schooling at first and second cycles if possible and at all levels at the latest in 2015	<p>Girls/boys ratio Rapport at first cycle of education, second cycle and at universities</p> <p>Alphabetization rate of women between 15 and 24 years of age compared to men's rate.</p> <p>Percentage of working women in other sectors but agricultural.</p> <p>Proportion of women at the national parliamentary.</p>	<p>Girls/boys ratio in first cycle of education 0,98/0,98 (99/02), second cycle: 0,79/0,83 (99/02), university: 0,60/0,89 (99/02), altogether]</p>
Target 5: reduce 2/3 between 1990 and 2015, the mortality rate of children under 5 years old.	<p>Mortality rate of children under 5 years of age.</p> <p>Rate of infant mortality</p> <p>Proportion of vaccinated children of 1 year of age against measles</p>	<p>Infant mortality rate: 93%₀/79%₀ (92/03)</p> <p>Proportion of vaccinated children of 1 year of age against measles: 55,9/82,2% (98/03)</p>
Target 6: reduce 3/4 between 1990 and 2015 the maternal mortality rate	<p>Rate of maternal mortality</p> <p>Proportion of assisted baby delivery by</p>	<p>Proportion of assisted baby</p>

	qualified health staff	delivery by qualified health staff: 23,0/24% (98/03)
Target 7: by 2015, having stopped HIV/AIDS propagation and start to inverse the current trends	Rate of HIV incidence amongst pregnant women of 15 to 24 years of age. Rate of use of contraception Number of orphan children because of AIDS	Rate of incidence if HIV amongst pregnant women: 0,05/1,1% (90/03)
Target 8: by 2015, having controlled malaria and other big diseases, and start to inverse the current trends.	Rate of incidence of malaria and mortality caused by malaria Proportion of population living in risky zones but using protection and efficient treatment against malaria Rate of incidence of tuberculosis and mortality caused by this disease Proportion of depicted tuberculosis cases and treated in short period of time under direct supervision.	Rate of incidence of malaria: 19,5% (2002)
Target 9: include principles of sustainable development in national policies and inverse the nowadays trends of depredation of environmental resources.	Proportion of forested area Surface of protected areas for biodiversity conservation Growth income per consumed energy units (energy yield) Carbon Dioxide emission (per habitant)	Percentage of forested areas: 22% (90/04)

Target 10: by 2015 reduce by half percentage of population that does not have access in a sustainable manner to drinkable water.	Proportion of population having access to better water source.	Proportion of population having access to water source in urban and rural context: 8,55%-11,8% (99/01)
Target 11: by 2020 succeed in improving the living standards of at least of 100 million people living in slums.	Proportion of population having access better water draining Proportion of population having access to security of housing occupation	
Target 12: look after specific needs of less advanced countries.		Ratio of service in exportation debt

Source: National report on MDGs Madagascar 2007, UNESCO 2008

In relation to MDGs, the project also saw important improvements in terms of the self-reliance of local communities.

After their involvement in the project's activities, some participants were able to integrate with the local public authorities by becoming, for example, *chef de fokontany* (deputy mayor). For the first time, a woman became part of the administration of the *fokontany* by being placed in charge of the secretariat. Other community members who had participated in the project became part of the traditional system. These people could never have had access to such status if they had not been provided with literacy training sessions.

These success stories are particularly important in terms of local governance, as these people were project participants, gained benefits from its activities, and took their awareness of the necessity of preserving the environment into key positions in the community as leaders of the public and traditional authorities. It seems clear that after five years, a relationship of trust was established between the project and the communities.

When villagers were asked what their reaction would be if the project were to come to a close, they answered that they would be « malahelo, » meaning sad. There was unmistakable recognition of the positive impacts of the project. This can be considered a success for the project, as in some regions, such as Ranomafana National Park, where I did some socio-economic surveys several years ago, local people refused to participate in development activities. Indeed, for many projects in Madagascar, communities have often complained that surveys were made and people were asked which activities they wanted to participate in, but promises were never kept. The result of this is that communication between a project and its intended beneficiaries breaks down; and disillusioned villagers henceforth do not want to listen to what project implementers have to say.

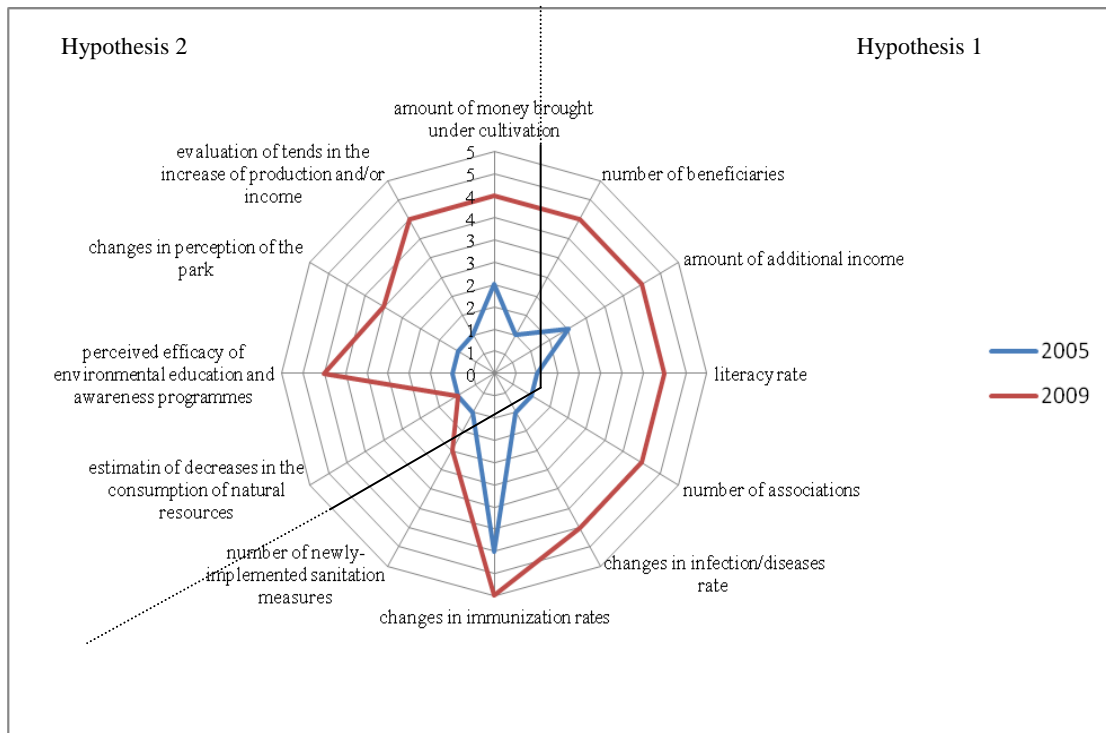
The project's staff also claims that today, any logging proposals would be rejected, because the local people now understand that logging would result in polluted drinking water and the runoff of soil into their rice fields.

Interestingly, while villagers have definitively developed a more positive opinion of the Park, survey respondents still say they dislike MNP. This suggests that they are able to distinguish between the Park as a forest that is beneficial to them in terms of ecological services, and the sometimes repressive agency in charge of its management.

4. Discussion of Hypotheses

In order to discuss the hypotheses, quantitative variables (indicators), following the results obtained in sections A and B of this chapter, have been placed on a graphical that allows one to follow the trends observed between 2005 and 2009. On the right side of the diagram are placed variables related to hypothesis 1. Variables related to hypothesis 2 are placed on the left side of the diagram.

GraphVII.20 : Evolution of Variables between 2005 and 2009



For hypothesis 1, it can be observed that all variables – including the amount of land brought under cultivation, the number of beneficiaries, the amount of additional income earned, the literacy rate, the number of associations, changes in infection and disease rates, and the newly-implemented sanitation results -- increased positively. These variables are quite homogeneous, in that they increased at nearly the same rate, except for immunization rates, which were already high in 2005.

In relation to hypothesis 2, the figure shows that the variables did not increase proportionally. Certain variables increased, such as the perceived efficacy of environmental education and awareness programmes, changes in environmentally-related behaviors, and the evolution of trends in the increase of production and/or income. But other variables, such as the decrease in the consumption of natural resources, did not show improvement.

Quantitative variables pertaining to hypothesis 1, such as historical and ecological factors, factors unique to particular groups (ethnic, social and political), external factors such as geographical location, relationship with authorities, and the way activities were implemented, show that the two different groups considered for the present research, the Bara and the Antaisaka, both responded positively to

development activities. Moreover, both groups expressed the wish to expand activities to more households and villages. The difference is mainly due to the fact that Antaisaka people are more dependent on the forest than are the Bara. At the beginning, some Bara people were reluctant to participate in project activities. Part of that reluctance may have been that project activities did not specifically target cattle breeding. As positive results were obtained with some of their neighbors or relatives, however, the Bara asked the project if they could also benefit from these activities.

This confirms Hypothesis 1, that the intervention of an external agency is dependent on geographic and ecological factors; however, no relationships were established, and no difference was observed, from a cultural or ethnic point of view, between the two groups in the results achieved. Cultural considerations did not affect the positive results obtained for one group or the other. As pointed out earlier, Bara people even accepted the use of cattle for cultivation after they had visited villagers who had learned this technique from the project.

Quantitative variables pertaining to hypothesis 2, such as the awareness of the Park's regulations and ecological services, the realization of short-term benefits, and assistance in managing resources more wisely, confirm the hypothesis that positive results introduced by development activities can have a constructive impact on the conservation of the environment.

The first set of variables related to hypothesis 1 confirms that interventions by external agencies can positively impact local development by increasing the well-being of local populations. These results, as explained in earlier sections of this chapter came about because of the way the project, and the different activities promoting development, were designed, implemented, regularly evaluated, and adapted to the local context. It also confirms the information available in the literature on development and ICDPs, that by using a bottom-up approach and by insisting, from the beginning, on the participation of local communities which define their own needs and objectives, positive results can be achieved for the indicators related to development. It also confirms that activities should be designed based on initial surveys that foster a good knowledge of the populations targeted by activities.

The second set of variables related to hypothesis 2 confirms a general trend toward conservation of the environment. These variables show that, under the project,

local communities were sensitized to the protection of the environment. People recognized the existence of the Park, and felt more positive about what the Park brought them. As already mentioned, there is a correlation between the improvement suggested by development indicators and the improvement in environmental awareness indicators. Another indication that might confirm this hypothesis is the fact that cultivable lands were expanded outside the Park, thus relieving the pressure on the Park's forest borders. However, as the diagram also confirms, it is still necessary to consider more precise indicators of the environmental situation, such as the number of *tavy* plots cultivated per year, or changes in the species located inside the Park, or the amount of wood used for building houses or for charcoal, and where this has been collected.

The approach adopted for purposes of the Midongy-Befotaka ICDP was based on close collaboration with local communities. There was a tacit agreement, between the project and local communities, that if development measures were brought to local people, then local communities would not only become more aware of the necessity of preserving the Park, but would also shift their economic focus from exploiting the Park's natural resources to new economic opportunities.

5. Conclusion

The results presented here show that positive outcomes were obtained in regards to the two research hypotheses: external development assistance can bring benefits to local communities, and in return, positive changes towards the conservation of the environment by local communities can be observed.

ICDPs that implement a system whereby each indicator can be followed on a regular basis are rare, whether these indicators are socioeconomic or biological. However, tracking indicators closely is the only way to assess the impacts of activities adequately for each component, development and conservation, and also to be able to compare these indicators against one another to assess the integration of development and conservation.

The Midongy indicators were tracked for four years. However, in order to ensure that an ICDP is truly sustainable -- that it leaves behind tools and methods from which a community can continue to benefit after funding has been withdrawn --

a period of at least seven years is necessary. Unfortunately, this did not happen in Midongy – not because the funding for a fourth phase was not found (indeed, \$US one million was raised to continue project activities), but because the political crisis that occurred in Madagascar in 2009 caused all donors to suspend their funds.

It is important to ask what the evolution of all these variables will be in the coming years, without the support of the project. Most of the variables involved improved from a reflection of extreme poverty to a less dire situation. It is hoped that the positive trends observed will serve as a basis for further improvement.

If one has never implemented an ICDP; it might be difficult to envision the complexity, the multitude of details, and the need for integration of the parameters involved that lead to success or failure. Positive results come from a lengthy process of preparation of the design and subsequent implementation of activities, and the Midongy-Befotaka project experienced its share of mistakes and various obstacles before obtaining its success.

The main conclusion of this research is certainly that, for the specific case of the Midongy-Befotaka National Park, positive impacts in the area of environmental conservation could not have been achieved without successful development interventions.

PART THREE . CONCLUSIONS

CHAPTER VIII. SUMMARY AND CONCLUSIONS

CHAPTER IX. PERSONAL CONCLUSION

CHAPTER VIII

SUMMARY AND CONCLUSIONS

A. INTRODUCTION

B. THE PROJECT'S STRUCTURE

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E. APPLYING THE PROJECT IN A NATIONAL AND GLOBAL CONTEXT

A. INTRODUCTION

The implementation of a second-generation ICDP in Midongy National Park has resulted in beneficial social and economic change for its intended beneficiaries, and for the environment. At the same time has been fraught with obstacles, due mainly to the difficulties that still surround ICDPs and their implementation in Madagascar. It must be noted that every ICDP is subjected to many national and local parameters. Each, then, is very specific, and each produces a variety of impacts, effects, and quantifiable results.

The success of ICDPs is not just a matter of time, funds, qualified staff, or motivation. They also rely heavily on the goodwill of people and the transparency expected of all participants during implementation. In addition, their success is tied to the candor of self-evaluation and the amount of flexibility that implementers are able to bring to the project. In general, the main lessons learned through the implementation of ICDPs are factual and rather obvious; these include the absolute necessity of having a well-prepared operational plan, the identification of objectives that are achievable within the allotted timeframe, and a thoroughgoing analysis of the local context, applied within a national and global context -- economic, political, and sociocultural. It is unfortunate that -- although these factors were widely acknowledged as crucial to the success of ICDPs a decade ago -- today they are still sometimes either ignored or drowned in theories and discourses focused on promoting conservation.

The Midongy-Befotaka ICDP was well-designed, with attention to the factors itemized above, yet it encountered many difficulties and obstacles in the attempt to achieve the results for which it was implemented. Project plans on paper always need adjustment as they are operationalized, and the Midongy-Befotaka ICDP was no exception. The project had to readapt itself constantly during its five years, but it did achieve a gratifying degree of success.

The lessons learned and the recommendations that emerged from the project fall into four main categories:

- issues relating to the overall project structure (operational plan, project team, partners, structural organization);
- the targeted local communities, including the choice of intervention sites;
- the project's approach, meaning the choice of methods and activities in relation to the local context;
- the alignment of the project vis-à-vis national and international policies and frameworks, such as the MDGs.

B. THE PROJECT'S STRUCTURE

The preparation of the operational plan was one of the key elements of success for the Midongy-Befotaka ICDP. The plan was composed of achievable objectives within the structure of a specific budget, and consisted of a detailed framework. Today it is widely accepted, in the NGO world, that presenting potential donors with an important project, incorporating many objectives and activities and requiring major funding, is more likely to be considered seriously by donors than a project with limited goals or a small requested budget. Management costs can also present a problem; donors prefer to invest in big projects to avoid heavy overhead costs.

There is in fact a limited amount of funding that can be absorbed, in a limited amount of time, by both a project's implementers and by its intended beneficiaries; an excess of funds can actually jeopardize the achievement of specific outcomes. Having a limited budget obliges the implementer of a project to focus on detailed and achievable activities, and to refrain from dispersing funds for accessory activities that are not necessary to the project. ICDPs in Madagascar have typically been funded for \$US 5 million. The result has been that funds have seemed unlimited, and have been allocated to activities that are not always necessary to the project. Most of this budget is for the salaries of foreign technicians, who may be involved for a few years or even for just a few months or weeks, and do not always have a solid knowledge of the national and local

contexts. In the case of Midongy-Befotaka, the first phase of the project, begun in 2003, relied on an ambiguous operational plan which was eventually proven to be unachievable. Most of the funding had been spent, however, so – in contemplating a second phase -- it was necessary to focus intently on costs and efficiency. In the second phase, therefore, the project completely reoriented its approach, moving in the direction of a limited number of intervention sites and achievable and measurable activities. Where the phase 1 operational plan was individualized for each partner, a single operational plan was designed for phase 2 that included all partners, and designated objectives that were common to all institutions. Certain interrelated indicators (e.g., indicators related to education and to local people's awareness of the Park) were put in place. Project partners were chosen based on their qualifications and experience in the field. A system of indicators that could be assessed on a regular basis was devised, in order for the project to evaluate its results continuously. Each partner was required to provide technical and financial reports every two months, and weekly coordination meetings were held in the field.

The project's overall structure was also decentralized to the field. The close proximity of a permanent team to local communities – rather than being situated miles away – helped considerably in the establishment of good relationships with local people. The project did maintain a three-person office in the capital, Antananarivo, mainly for administrative follow-up. In the field, both agricultural technicians and social workers worked in specific areas. In order to promote national and local capacities as forcefully as possible, it was also decided to incorporate national and local partners/NGOs into the project's second phase. This was a departure from the first phase, in which each implementing agency worked under its own agenda and at its own pace, with more or less experienced staff, thus creating differences and gaps in the way the various operational plans were implemented.

In the second phase, UNESCO played the overall coordinating role, and participating agencies were identified as working under a single project. The operational plan, instead of being imposed on institutions that were contracted by UNESCO, was drawn up with the support of the partners, and specific and measurable common

indicators were established.

But even though the participating agencies agreed to this arrangement from the beginning, problems soon arose because some institutions, such as MNP, did not have sufficient human resources or sufficient flexibility to support their roles. MNP was also firmly centralized in Antananarivo, so whereas the partner NGOs were quite independent in the field, the MNP team in Midongy had to receive their orders from Antananarivo and a regional office in Fianarantsoa. Funds took a long time to reach the field, and MNP began to encounter delays in the execution of its activities, while other institutions were able to stay on schedule.

The project management decided that coordination meetings should be held on a weekly basis in the field. In these meetings, if partner institutions started to question the efficiency of MNP, they were reminded that the goal of the project was to preserve the Park, and that therefore everything possible should be done by the partner institutions to support MNP and help them to implement their own activities. At this time, the director of the Park was very collaborative, and the young team that had been assembled began to see positive results.

Having all the participating organizations working together under the single umbrella of the project – and toward a single goal, the conservation of the Park -- constituted a major improvement over earlier efforts. Not only was the project seen as a single, coordinated effort by the local people; the participating agencies also benefited. For example, the Midongy-Befotaka project was among the first in Madagascar to contract a very small national association of biologists, VAHATRA. Members of this association were previously attached to the international NGO WWF, but decided to create a separate association in order to gain a certain degree of independence. The results VAHATRA achieved with the project's biological and threats surveys were certainly one of the most valuable reports the project had ever commissioned (Vahatra 2008). Their approach encompassed many disciplines, and their useful results could not have been achieved if researchers had been working individually in their limited fields of study. This report was used by MNP to update the conservation plan.

There are other examples as well. The project also worked with a newly-created health NGO, PENSER, a JSI spin-off. JSI staff decided to create their own national NGOs, composed of national doctors with experience in the field. PENSER's contribution to the project represented the best of both worlds: its activities were real applications in the field of general international programmes, but their work was adapted to the local context.

Yet another project partner was the community-based Tany Meva Foundation. Its role was mainly to fund activities, but it also worked with small local NGOs to implement activities. Such local institutions are of course less well-known, and have fewer means, than international NGOs, but they are more aware of the problems local communities face. The project also worked with the very successful government-UN programme "Education for All." This in five months can achieve results that usually take three years in a regular public educational programme. Unfortunately, the Malagasy Ministry of Education perceived this programme as a competitor, instead of benefiting from its successes.

The discourse on local capacities has always been an argument used in proposals to get funding from donors, but still there is constant reluctance from both international NGOs and donors to really trust these national and local institutions. Most of them are quite recent, and do not have the usual high profile that would allow them to apply for funds. For the Midongy-Befotaka ICDP, it was far better to rely on these organizations in the first place, rather than to enroll international NGOs that had not succeeded in the field. Recruiting these small NGOs and helping them to become established presented a challenge that was ultimately rewarded. Madagascar has become something of a breeding ground for competent national and local NGOs that have started to gain valuable experience in the field. These organizations also have light infrastructures and are not afraid to work in the field and especially in remote places. They can engage in development work using the methods that their local experience has shown to be the best to use with local communities.

Major development and conservation projects often prefer to engage senior people at high salaries, who remain based in the capital most of the time. These senior staff members are sometimes very reluctant to make regular field visits, and some of them are wedded to various obsolete methods that have not succeeded in the past. In recent years, local NGOs in Madagascar began to train young, local people to work directly with the communities. This was the case with Malagasy Mahomby, from which many of the research project's staff were drawn. Because these NGOs had only very limited funds with which to implement activities, they were forced to focus on simple approaches adequate to the local context.

The Midongy project decided to take a chance on the young people of Malagasy Mahomby -- to give them the opportunity to prove their capacities in the field. The organization's small staff was trustworthy and quite independent. Eventually, all project staff who worked in Midongy came from the region instead of from the capital. Most of them had already worked in the field, and knew what was appropriate. The backup they needed was purely administrative, not technical. They were the ones who knew which techniques to implement, and they left enough space to implement activities the way they wanted them to be. This appropriation of activities by young local people, and the fact that they felt responsible for results obtained, was one of the key success factors for the project. They established close and trusting relationships with the local communities, and local communities did not see them as foreigners coming to impose inadequate methods on them. Their main mandate was to evaluate the different parameters and the local context, and to identify local problems and how to resolve them with simple, effective techniques.

When foreign NGOs come into the field and try to impose modern techniques with modern tools, local communities often cannot absorb these new techniques. And when a project leaves, communities are left with approaches that they cannot replicate themselves. Very often they abandon these methods soon after the NGOs leave. In the case of Midongy, as mentioned previously, communities had long demanded more dams and modern agricultural techniques, despite the fact that there was abandoned land, especially in the valleys, that was potentially cultivable. Midongy was also seriously

affected by the fact that water was not controlled. The project succeeded in teaching farmers how to control water and to cultivate the abandoned fields. This method, if presented at the beginning, might have been too simplistic for a project proposal, but as it turned out, it greatly improved local production and contributed in an improvement in local peoples' way of living.

C. THE PROJECT'S INTERVENTION SITES

The choice of the project's sites was also one of the main factors contributing to its success. There is a tendency for NGOs in Madagascar to work along the road, where sites are easy to access, where the distance to cities is not too great, and for which fewer vehicles and less maintenance are necessary. However, these are not the sites that are the most in need of interventions.

In the case of Midongy-Befotaka, the sites chosen were viewed as undesirable professional assignments. Midongy itself lies six travel days away from the capital, and during the rainy season it can take three days to travel 40 km. Only two agencies had been working in Midongy: UNESCO, in association with the National Park, and WWF, whose work revolved around the forest corridors.

The task of working in this area seemed extremely daunting at first, and many institutions warned us about the difficulty of implementing a project there. However, it was a Park that had begun to be exploited in a non-sustainable manner, and it was clear that something had to be done.

It was pointed out in Chapter Five that the Midongy National Park was created in 1997, but no development or conservation efforts had been undertaken there until the UNESCO project arrived in 2005. As also mentioned, it was a formidable task, but an excellent opportunity to implement an integrated approach combining conservation and development. It was decided that the overall goal of the project would be to protect the Park and its environment, while provided much-needed assistance to the surrounding communities.

Since funds were scarce, there was no way the project could disperse its funds to many localities at once. It was therefore decided to focus the project's activities on the most environmentally-threatened areas - those directly linked to the Park's borders. A map was created to help evaluate, together with the report from VAHATRA, which communities to target for project's activities.

Frequently in Madagascar, certain factors influence the choice of targeted communities. Political factors are an example. In too many projects, in order to please the local elite, interventions are undertaken in villages where politically influential people live. This might have happened in Midongy if a tight follow-up of activities implementation had not been in place.

The first example of potential political interference, cited earlier, came from the construction of a dam that was intended to be part of Madagascar National Park's activities. The location for the new dam had previously been identified by the "Programme de Soutien au Développement Rural" (PSDR, Programme of Support to Rural Development). When the project team met with the villagers in this area, the question of who would be the actual beneficiaries of this activity was brought up, and only three persons answered – all members of the local elite. This episode is worth citing twice because it demonstrates a pervasive problem. A lesson was learned, and the project decided to construct two more dams that would target more beneficiaries and larger areas of cultivation (see Maps 12 and 13). The dam building effort was adopted and carried out in full view of the communities, an important factor in helping them to realize that they would not be left behind, and that the project was willing to include as many beneficiaries as possible.

D. THE PROJECT'S ACTIVITIES

To review: all the project's activities were designed in order to have a positive impact on both conservation and development. Considering its relatively short time-frame, particular attention was paid to activities that had the potential to be of immediate benefit. The local people were pragmatic, with a stronger sense of costs and benefits than project technicians usually have. They knew what would work for them, and they knew

when to abandon unprofitable activities. This helps to account for the success of the activities that were pursued. These activities were designed around three main components: education, development and conservation activities.

Education was used as a basis from which to implement development activities and as a tool for environmental education. It was also used to develop a sense of pride among the minority groups in the community. Development activities were first designed to bring immediate attention to daily problems encountered by the population, such as poor health, and to implement activities that would immediately allow the population to get better nutrition, to reduce suffering during the food scarcity period, and to be able to change their sources of subsistence from home-grown to purchased, as well as to implement activities that would increase their incomes. Finally, these activities would also allow local people to find alternative and sustainable ways of cultivating and of exploiting natural resources.

Significant attention was paid to the design of activities. Since intervention zones had been prioritized to focus on environmental concerns, the project implemented preliminary socio-economic activities. An important lesson was learned from an evaluation made by the European Commission for Bemaraha (European Commission 1998), which identified two reasons for the failure of this particular project: first, the status of the Bemaraha Park was unclear, and, second, no preliminary socio-economic studies had been made at the beginning of the project.

For the Midongy project, a general socio-economic questionnaire was formulated in partnership with all project partners. The goal was to have a clear idea of the socio-economic and environmental context in which the project's activities were to be implemented. The results of these surveys were used not only to establish priorities for activities, but also to establish new priorities through discussions with the communities. The project presented the results to local people, highlighted the problems encountered, and discussed with them the solutions that could be implemented collectively. The objectives designed were simple, such as vaccination, the use of boiled water, increasing agricultural lands, and the use of modern technologies for agriculture. All objectives were

subsumed within conservation activities and undertaken with the approval and joint participation of the project and the communities. Community members were the only ones to decide if they wanted to participate in a given activity or not.

During educational activities -- ultimately the basis of all the project's activities -- women initially sat to the side in early meetings, but a year later, during a celebration to distribute diplomas to those who had learned to read, the front rows were occupied by women, with men sitting behind them. This gender-related development occurred without any specific project intervention to promote women; they simply took the lead in literacy, and were the first to establish and organize associations. Local communities were still mostly run by men, but women now took a decisive role in the way their communities functioned, since they were the only ones able to read communal announcements and to sign administrative papers, both for themselves and for their husbands.

The creation of associations was a key factor in the success of the project. Typically, as has been observed previously, projects tend to favor the elite. In Madagascar, civil society is linked by the idea of *fihavanana*, meaning kinship and friendship. The organization of society is thus extremely important in aid projects. Activities should serve the whole community by respecting the traditional hierarchy. It is up to the *raiamendreny*, the elders, to decide what is good for their communities. The Midongy project was thus very concerned that no favoritism was shown to the elites.

The project succeeded in implementing 51 associations. Some of them were created in 2005, and others with the project's expansion in 2007. At the present time, it appears safe to say that associations that were created in 2005 became independent five years later. They have found their way of functioning, and have progressively incorporated new members. For the associations created in 2007, two more years will probably be necessary, along with training and capacity building, before these groups become independent.

Another activity that proved very successful involved the delivery of seeds for the associations. The "Direction Régionale de Développement Rural" (DRDR, Regional

Direction for Rural Development) agreed with the project to provide seeds for the target communities. The agreement was that communities had to return some of the seed from their crops to the DRDR. This kind of agreement was a first for Midongy. After two years, not only were the farmers able to keep a part of their produce for subsistence; they were also able to sell a portion in local markets, and to give back the initial stock of seeds that were given to them. For the DRDR, it was a very successful experience. The agreement has just been renewed.

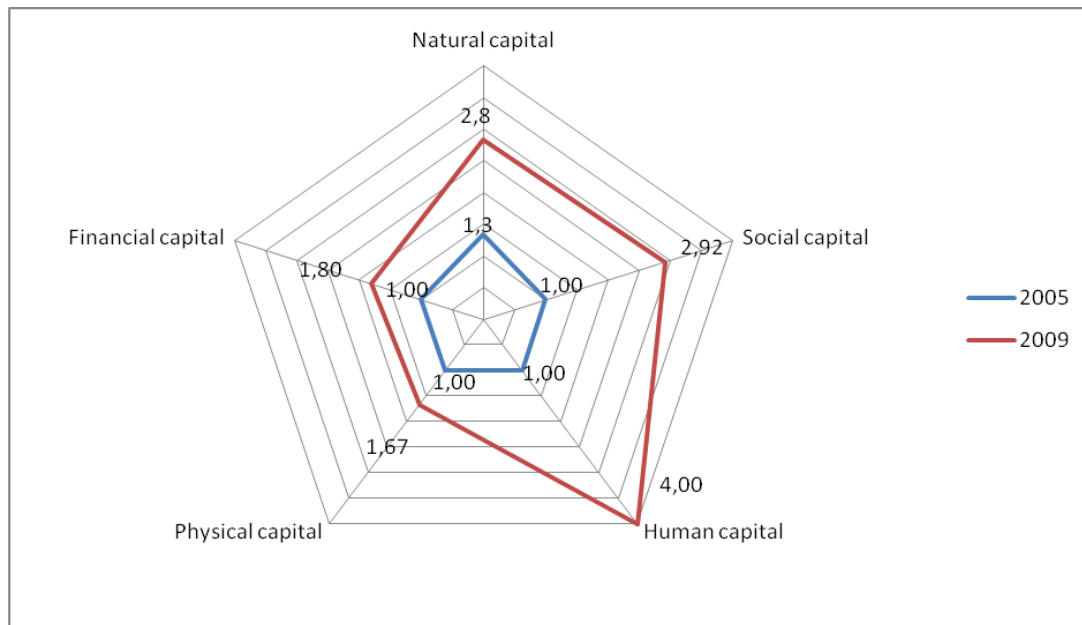
The current project plan is to organize all project associations into larger federations, in order for them to be able to access external funding and manage activities and funds on a regional basis. These federations will also carry some weight in the society, and will support the local civil society.

The project undertook other activities as well, all of which have been mentioned previously. A key factor in the success of these many activities was the surveys that were undertaken on a regular basis. They were used to follow up on specific indicators, both to gauge the success of conservation and development activities and to assess the reasonableness of the implementation of these activities. Every year, the results of these surveys would allow us to re-orient activities that were not successful and to find ways of doing things differently for better results. This strategy goes a long way toward explaining the overall success of the project.

1. The five types of capital

To synthesize results and impacts of the project in the frame of the two hypotheses, it is interesting to revisit the diagram presented in Chapter Two. This diagram reflects the main trends followed by the Midongy-Befotaka project in terms of natural, social, human, physical and financial capitals (adapted for the present research from Sayer and Campbell 2004:216):

Figure VIII.1 MB ICDP five types of capital



In the figure above, the project's main indicators have been categorized according to the five categories of capital, for the years 2005 and 2009 -- 2005 representing the first project survey, and 2009 the last project survey. In summary, natural capital has been increased by 2.13, social capital by 2.92, human capital by 4.0, physical capital by 1.67, and financial capital by 1.80.

All categories of capital increased under the project, but some increased more than others. Human capital was considerably improved, especially through education and health activities. These two components are the basis that supports strong development. Social capital was also significantly improved. It includes all the necessary conditions to construct a community with strong institutions, such as associations and equal opportunities for all members of the community, especially minority groups. It also provides adequate tools to better organize economic development, such as markets, and basic governmental services, such as health centres. Natural capital increased as well, to a level close to social capital. The form of capital allows for the implementation of the necessary protection and conservation of a healthy ecosystem, one that includes

ecological services, such as drinking water, and also ensures the viability of increased cultivation lands, and protection against natural hazards.

Physical and financial capital showed less improvement than the others. Both are related to larger-scale economic development. Physical capital includes the creation of large infrastructure projects, such as roads and energy sources. Financial capital implies a larger transformation of living conditions in local communities – for example, piped-in water and modern cooking fuel. The figure shows that financial capital improved in regards to the increase of household incomes.

The diagram is quite informative about the progress made during the project. Project activities sought to bring about improvements mainly in three of the kinds of capital: natural capital for conservation, and human and social capital for development. The project succeeded in improving these capitals. However, long-term and sustainable development also requires that financial and physical capitals be improved as well.

2. The problem of scale

Thus the project demonstrated that large-scale, sustainable development must be initially supported by the improvement of natural, social and human capitals, in order to implement the basis of future long-term development activities. It also showed that ICDPs, whose role is usually limited to the natural, social and human capitals, needs to seek out larger partnerships in order to achieve improvements in all five kinds of capitals – and for all five kinds to reach equilibrium.

The present research has in fact explored implementing activities at a larger, perhaps regional, scale, in order to become a seed project for a better approach to conservation. For example, the project engaged in discussions with the World Bank about the possibility of organizing a reforestation campaign, 100 kilometers from Midongy, to protect the watershed and avoid the annual floods that cause much destruction in and around the Midongy-Befotaka National Park.

F. APPLYING THE PROJECT IN A NATIONAL AND GLOBAL CONTEXT

The project was subsumed within a larger context. First, it was presented to numerous stakeholders involved in conservation, both national and international. Its operational plan overlapped with the environmental plan, phase III, especially in terms of conservation activities. Activities that were to be complemented by the work of Madagascar National Parks were designed, and served as a backbone for the project.

Additionally, the project participated in the “Environmental Committee” that included both the Government and donors. This committee was in charge of integrating new policies based on information provided by the project.

It was also necessary to forge synergy within the UN system in Madagascar. As all agencies were asked to work in synergy with the UN, the project complied by inviting certain specific agencies to intervene operationally in specific areas. The World Food Programme, for example, participated in the implementation of dams by providing rice to farmers who participated in the dam construction. UNICEF was also invited to participate in nutrition sessions in the Park, specifically targeting the health of mothers and children. The project was quite innovative in encouraging farmers to produce new products, such as vegetables, and to achieve a better nutritional balance in the foods produced. UNICEF provided cooking sessions to teach local people how they could prepare and consume the new products. This intense collaboration led the UN system in Madagascar to ask UNESCO to take the lead for UN coordinated actions in the region.

That said, however, there are still gaps between international Conventions and Programmes, field activities, and impacts/effects. The Midongy project was an attempt to reconcile these gaps by operating under the tenets of the UNESCO World Heritage Convention, the idea being that both the Convention and the project would reap mutual benefits. Problems, mentioned earlier, were encountered with MNP. In the end, however, the project’s efforts to build consensus and create a conciliatory approach satisfactory both to MNP and to the local communities were rewarded. Positive results were realized in the conservation arena as a result of the support and success of development activities. Overall, the project’s results seemed to indicate that with improvements in development,

improvements in conservation naturally follow. This conclusion suggests that applied anthropology, which was the approach used to reconcile conservation and development, is an important asset to ICDPs.

The research also answered important questions about ICDPs in general (see introduction). First, conservation in Madagascar cannot be accomplished without integrating the development dimension to sustain local people who live at the edge of poverty while recreational parks are being created. It is important for Malagasy people to see they are a part of protected areas and therefore involved in their protection. Second, foreign assistance should be limited to a period that does not exceed 7 or 8 years.

National and local structures are in place, and they should be entrusted to receive and manage funding to implement activities. This began to be tested in Midongy in September, 2010, with the Small Grants Programme, which has provided funding (\$US 50,000) to the two unions that were created.

Third, activities should target all members of a community and support local initiatives. Communities should be entrusted to manage their own environment and be accountable for it. Environmental paternalism in Madagascar lasted for many years; it is time for it to end. Communities should be not only entrusted with responsibilities on paper – they should be given real responsibilities.

Fourth, communities should not always bear the burden of environmental destruction. Many examples in recent years show that massive destruction (from timbering, mining, and agroforestry) has caused more harm to the environment than local people's practices.

Fifth, National authorities should find ways of becoming less dependent on external funding, and assume greater responsibilities towards the preservation of their country's natural heritage. In Madagascar, national authorities have been dependent on external funding for many years. However, it is also true that funding was not always allocated to governmental priorities and therefore, national authorities did not feel responsible for their environment.

ICDPs still remain a kind of interference in the way Madagascar manages its environment. But if well designed and implemented, ICDPs can produce positive, sustainable results, and later can – and presumably will -- give way to independent and autonomous institutions, governmental and – still later -- local.

CHAPTER IX

PERSONAL CONCLUSION

A. INTRODUCTION

B. THE INTERNATIONAL CONSERVATION WORLD AND LOCAL DEVELOPMENT

C. A PREDICTABLE ENVIRONMENTAL CRISIS

D. DEVELOPMENT AS A NECESSARY REMEDY

E. THE INTERNATIONAL AGENDA AND LOCAL REALITIES

F. CONCLUSION

A. INTRODUCTION

Before I started to work on an ICDP, I believed that conservation was an arena in which everything could be resolved in a satisfactory way for the sake of preserving the biological diversity of the planet. I also thought that development played a relatively minor role – that it was mainly intended to “open doors” for conservation efforts. Seven years later, I am convinced not only that conservation efforts often fail to attain their goals, but also that they can sometimes do more harm than simply allowing the status quo to persist.

B. THE INTERNATIONAL CONSERVATION WORLD AND LOCAL DEVELOPMENT

In my view, one serious problem with conservation and development is that -- instead of remaining focused on its original attempt to save threatened environments – the conservation community began to introduce additional activities for which it lacked competence. Conservationists should have concentrated on undertaking biological surveys and designing effective management tools in the field in order to preserve the environment. Instead, they constructed an imaginary bubble where perfect harmony could be found between communities and nature, and all protected areas could remain pristine. It is time for the conservation community to acknowledge the fact that its efforts alone will never save the world.

While its objectives were admirable, the conservation community never accepted responsibility for the results achieved. Instead of recognizing its mistakes and failures, and trying to resolve its problems on a daily basis, it devolved into a small world into which few people were admitted and for which funds became scarce. The first generation of ICDPs, as mentioned in the previous chapters, enjoyed copious staff and funds, but as the anticipated results failed to appear, donors – newly saddled with the recent world financial crisis -- started to back off from their commitment to conservation.

In Madagascar, as explained, the situation was particularly grim, since its natural resources and biodiversity are among the country’s primary national and world legacies.

Before the financial crisis, as the flow of funds for conservation increased the poverty of the country worsened, especially around protected areas where the influx of money was being spent.

Madagascar was a country with great potential, even before conservation efforts began there, but this potential was not realized, and the benefits that resulted from the use of its resources went primarily to outsiders. The world of conservation in Madagascar was invaded by external agencies that took it upon themselves to explain to the Malagasy people how to use their own resources. At one point, it became clear that international NGOs and institutions were seen as using the richness of the country for their own benefit, without trying to improve the country's situation.

This was the point at which the conservation agencies shifted from a pure conservation approach towards an integrated conservation and development approach. All proposals for conservation work in Madagascar started with the sentence: "Madagascar, despite its outstanding and universal biodiversity, is among the poorest countries in the world." The result was that conservationists began to add development to their agendas, and additional funds were donated in the name of both conservation and poverty reduction.

Madagascar has always been defined as a model country in terms of the management of its environment, and in particular its protected areas. The national environmental plan shifted from pure conservation efforts towards a sustainable use of natural resources. But the results, after fifteen years of national planning and ten years of funding, are quite disappointing.

The predominant international footprint on Malagasy internal environmental concerns caused the failure of the National Environmental Plan. This plan was supposed to start by acknowledging the dominance of international NGOs over the country's protected areas, and to move towards the eventual appropriation of conservation efforts, if not funding, by the Malagasy people. The idea was for international NGOs to increase the capacities of local and national institutions so that the Malagasy people could eventually take over the protection of their natural heritage. Strong national institutions

with complementary agendas, such as SAGE, ANAE, ANGAP, and ONE, would be created. However, ten years later, none of these institutions has achieved its mission, not because funds were lacking for them to function and implement their activities but because of the continuing structural dependency of these national institutions on international NGOs.

During the past fifteen years, conservation has been profitable for many international organizations. Funds were used not so much to improve local capacity as to sustain the existence of the international organizations themselves. If Madagascar were to have taken over the role of international NGOs, this would have undoubtedly have meant the disappearance of these NGOs. Therefore, there was always a “sword of Damocles” above the Malagasy people. The country felt it must succeed, for if it failed, then international NGOs would be still be there to take on the job.

At the beginning of the 1990s, the overall plan was to put international NGOs in charge of protected areas, which constituted the typical scheme of ICDPs. Later, these NGOs were obliged to pass on their role of managing protected areas to national institutions like MNP. I was a student at the time, and it is my impression that this transfer of responsibilities was negatively perceived by the NGOs. Not only did it mean an end to a part of their activities; it also meant an end to most of their funding.

The transition period was difficult for Malagasy institutions. In some cases, they lost the support of the NGOs they had once depended on, and were left to fend for themselves. In others, they were compelled to defer to international NGOs still in place, preventing the transfer of responsibilities from going smoothly. Salaries were higher in NGOs, so at one point many of the national institutions’ staff members abandoned their jobs for positions with international NGOs. Even local beneficiary communities were offered better opportunities and better compensation with international NGOs. This inevitably created a gap between the national institutions in charge of the management of conservation efforts and the NGOs that were working in the area. National institutions tried to resist this trend and to insert themselves into the world of conservation, but the imbalance proved too significant to overcome.

Moreover, if the presence of NGOs was burdensome, funds were still coming from these NGOs. The Government was at first unable to provide sufficient funds for national salaries, but even when the Government took charge of salaries, conservation and development activities continued to be funded by international NGOs. This enabled the international NGOs to play “carrot and stick,” and national institutions were never able to escape this old scheme of being influenced to some degree in their missions and policies by international NGOs.

This model prevailed for quite a long time, yet finally collapsed around 2008. Each NGO that wanted to invest in activities in protected areas in Madagascar was asked to commit itself to a specific site and an extended period of time. The commitment had to be both technical and financial. Therefore, after 15 years of trying to make a national environmental plan (NEAP) viable, the original idea of resorting to international NGOs was reinstated. Essentially, fifteen years of conservation efforts had to begin all over again. Today the national institutions created by the NEAP are weakened, and NGOs are asked, just as in the 1990s during the USAID ICDP period, to take on the technical and financial responsibilities of protected areas.

C. A PREDICTABLE ENVIRONMENTAL CRISIS

An environmental crisis that arose in Madagascar in 2009 provides a strong warning for all conservation efforts that have been made over the past 10 years in the country. Two national parks in Madagascar, Masoala and Marojejy, both recognized as model parks, both cited for good management, both World Heritage sites, and both previously targeted by ICDPs, were hit by severe trafficking of illegal wood, especially rosewood and ebony. In less than six months, some 1,500 containers (about 45,000 tons) of precious wood were exported out of Madagascar (Global Witness and EIA 2009). Environmental stakeholders were powerless to do anything about it. To this day, neither the international community nor governmental technicians have been able to react to this crisis. Thus the tremendous efforts, both technical and financial, that have been made over the past 15 years in Masoala and Marojejy parks have been for naught.

One might have thought that protected areas would be secure enough to be able to withstand such a crisis. However, MNP simply had to abandon the threatened sites, as it was unable to stop the invasion of external loggers. Today, there are more than 100 loggers inside Masoala National Park (Lisa Gaylord, personal communication, August 2010).

At the beginning, local communities near the two parks sought help. They had been asked for many years to become involved in the parks' protection, and local activities had been set up with the goal of sustainably maintaining the conservation of the protected areas. Suddenly, however, the local people saw outsiders coming into the parks without any intervention or actions on the part of those who had been involved in conservation for many years. The natural resources they had learned to protect and manage were taken from them in less than a year.

If past ICDPs' activities helped the average rural person to earn 2,000 Ariary per day (\$US1), wood trafficking allows them to make more than four times more, 10,000 Ariary per day (\$US 4.6). To earn this amount, a community member has to cut and transport one tree valuable for its wood. For many poor, rural Malagasy people, there really is no choice. Local communities have been bombarded with explanations regarding the fragility of the ecosystem and the fact that maintaining it would benefit them (through the availability of natural resources, protection of water sources, preservation from soil erosion and run-offs into rice fields), but it appears that nothing can be done in the face of this new source of increased income.

The most striking defeat is that once again the people of Madagascar are not benefiting from the exploitation of a valuable resource that exists nowhere else in the world. A recent report (Global Witness 2009) has undertaken an economic analysis of the illegal trafficking. Since the beginning of the crisis, illegal wood that was sold for an amount of \$US 15 million has been estimated to have actually been worth \$US 175 million, which amounts to a loss of \$US 160 million for the Government and people of Madagascar.

Several articles and other publications have been written about this investigative report made by GW and EIA (2009), such as the *Univers Maoré*, Numéro 13 in June 2009, entitled “la fièvre de l’or rouge saigne la forêt malgache” (the fever for red gold bleeds the Malagasy forest), “Precious Trees Pay Off – But Who Pays? An Update”, a poster presented by Lucienne Wilmé *et al.* in December 9, 2009, or the New York Times’ article, published on May 24, 2010, entitled “Shaky Rule in Madagascar Threatens Trees.”

Since its takeover in March, 2009, the new and current Government, the Government of High Transition (HAT), has not been recognized by the African Union, the UN, or the international community. In order to push the Government to organize elections and respect an eventual detente with the previous presidencies, donors have withheld most of their regular funds to Madagascar, with the exception of funds for emergency and humanitarian causes. This has created a difficult situation, as Madagascar is still very dependent on outside financing (which represents about 75% of its internal budget). The Government, having being placed in a difficult funding position, has had to identify new sources of funding to be able to continue running the country. This new source of funding was found in the trafficking of illegal wood, which serves to maintain governmental salaries and to run the country. There is no clear right answer for a government that has no choice but to make use of funds realized from wood trafficking to maintain hospitals and schools.

And there are other problems as well. Once most of the valuable wood is sold, other natural resources that have been preserved until now, such as minerals, will also be exploited in order to get some easy cash. Donors must now face a situation in which the government is losing control even as solutions are being proposed for lifting the country out of its current crisis. Without national political will, nothing can be done.

As soon as UNESCO was alerted to what was happening at the two World Heritage sites, the World Heritage Committee issued a recommendation asking the Government to take immediate actions to resolve the situation. One of the most important points of the recommendation was to ask the States Parties to the World Heritage

Convention not to participate in the trafficking of illegal wood coming from Madagascar. However, the role of UNESCO remains limited, as no communication is allowed above the level of directors at the ministries. The UN is not allowed to contact a member of the current Government, rendering the situation quite untenable. If reports are requested, they are prepared by technicians who, even if they are deeply concerned and despairing of finding appropriate solutions and actions, are subjected to the decisions of their superiors, who themselves are under great pressure from the Prime Minister and the President.

The environmental community is trying to mobilize. But donors are now understandably reluctant to fund conservation activities. Justifiably, they feel that – considering the amount of funding that they have already invested in conservation in Madagascar -- this unacceptable situation should have never happened.

However, it seems that even under these circumstances, the conservation community is ready to make the same mistakes all over again. Deeply affected by their usual donors' suspension of funds, conservationists are seeking new sources of funding. However, even if fresh funds are found the solutions now being proposed are the same as the ones that were implemented in past years. Conservationists apparently want to encourage an already repressive system with sanctions and the implementation of pure conservation activities, such as controls and reinforcement of patrols.

And once again, development has been set aside without any consideration. A governance committee composed of ambassadors, chiefs of mission, and technicians who belong to international conservation NGOs has been put in place to evaluate what can and should be done. Members of this committee all agree that some important measures will have to be implemented to sustain the communities that will be left by themselves once the trafficking is stopped.

This deep crisis in conservation supports the argument of this thesis, as well as the diverse criticisms that were made regarding measures that were taken by the conservation world in Madagascar during the past 10 years. When people who have been working in this field are consulted, only now do they recognize the failures of the past. Problems

were never discussed or even acknowledged the way they are now; they were hidden. Now, however, conservationists have an obligation to recognize past mistakes.

D. Development as a necessary remedy

Conservation cannot stand by itself, but development can. Indeed, not only can conservation not stand alone; it needs development to succeed, as the Midongy project illustrated.

The previous chapters have shown that – for the Midongy-Befotaka ICDP -- certain conservation activities did not succeed, but some positive results were obtained nevertheless. And with some of the conservation activities implemented, no direct impact could be tested, but -- as noted in general - conservation indicators mirrored the positive progression of socioeconomic indicators. I am convinced that conservation measures can succeed under two particular circumstances: when development activities are already well-implemented and have yielded tangible results, and when conservation messages are delivered through development activities such as education.

E. The international agenda and local realities

This thesis highlights the enormous gap that exists between what is decided at the level of international conventions and programmes, and realities in the field. International conventions are often not flexible enough to adapt themselves when conditions are changing in the field. They also embody certain conditions and commitments from the government, but no mechanism for adjusting these in case of a major crisis.

It is obvious that these commitments are made at certain periods of time. Countries of the southern hemisphere, if they fulfill their obligations towards these conventions, obtain certain recognition and funding. Therefore, as in the case of Madagascar, the Government commits itself, usually based on pressures coming from international NGOs, to environmental treaties that, in the end, it is not able to fulfill. An example of this is the declaration that was made by President Ravalomanana of Madagascar during the World Parks Congress in 2003. Ravalomanana pledged to multiply by a factor of six the amount of protected areas in Madagascar, in order to fulfill

the requirements of the Convention on Biological Diversity, which stipulated that protected areas in each country should cover 10% of the total area of the country.

For the World Heritage Convention, the preparation of Madagascar's nomination dossier was strongly supported by international NGOs. It was an opportunity for Madagascar to become inscribed on the World Heritage List, which would mean that its parks would become famous and attract visitors. However, it then developed that the sites of Masoala and Marojejy did indeed meet the criteria for outstanding universal value, but they lacked the proper criteria for integrity and management. Now that the international community is paralyzed by the current Government, international NGOs that committed themselves to help Madagascar in protecting these sites are now powerless, and Madagascar has to deal with the current threats alone.

The question remains whether lessons will be learned from the current environmental crisis in Madagascar, and whether environmental stakeholders will agree to modify their way of proceeding with conservation measures in the future. Will governmental institutions be modified such that they are sufficiently independent of political decisions and will? Will the Malagasy environmental community recognize that things went in the wrong direction, and that lessons must be learned after 15 years of a national environmental plan? How will international organizations deal with their obligation to concede that mistakes were made, and how will they inform donors of what went wrong? Will transparency be improved in order to break the "conservationists club" that was progressively established, with the result that only a few institutions were able to access conservation funds? Will national institutions finally accept responsibility?

One purpose of this research was to demonstrate that it is necessary for an ICDP to be operational for a seven-year period in order to be effective. However, it seems to me, based on the research, that five years is a sufficient amount of time for the beneficiary communities to be able to take care of their own development. It was shown that most of the activities implemented under the case study ICDP relied on local associations. These associations, created four years ago, became quite independent over

the course of the project. For the associations that were created in 2007, it is still too early to evaluate their level of self-reliance.

The Midongy project was at one point approved for funding for a third phase, which would have expanded its timeframe to seven years. However, due to the political situation, donors decided to suspend all funding. These decisions, even if one can understand how they can be justified from a political point of view, nevertheless had some very negative consequences for the ICDP. When promised funding fails to materialize, the dynamism of a project is interrupted, and communities are left to fend for themselves. Fortunately, in the case of Midongy, an agreement was established with the Tany Meva Foundation and the GEF Small Grants Programme to pursue a set of agricultural activities during the transition period. Local associations will be in charge of the implementation of activities and the management of their own funds, which should lead to greater self-reliance and self-governance.

The UN system and some of the Midongy-Befotaka ICDP's donors continue to be active in humanitarian activities, but now decline to pursue environmental activities, even when these activities are directly related to the well-being of local populations – for example, their sanitary or economic conditions. When this happens, stopping environment-related activities can obviously have negative consequences for local communities.

Another lesson that the project brought home to me is that focusing on easily accessible sites leads to a negative situation where a site is overloaded with interventions that are often not coordinated with each other, and efforts are wasted.

Where multiple Institutions are involved, they use different methods, and this, too, has negative impacts on the results of activities. Local communities have no single point of reference, and problems cannot be attributed to specific institutions or methods. Additionally, there is apt to be no follow-up of activities; staff stays for a while in the field and leaves without assessing whether the community is ready to take over the activities that have been implemented.

On the other hand -- and this is currently the case for the Midongy project -- working in a remote area can produce some very interesting tangible results. It seems clear, however, that more than one agency should be present locally, or everything relies on a single agency.

Another lesson learned is the use of simple and adaptable methods and accounting tools with the local community. In Madagascar, too many complicated methods were used, without taking into consideration the local context and capacities. For example, NGOs, mainly international ones, implemented complicated agricultural methods with materials that, if and when they malfunctioned, could not be repaired or replaced by local communities after the departure of the NGOs. Similarly, instead of promoting responsibility in the communities, gifts and free materials were distributed, which also left the communities without a sense of responsibility for what had been donated.

Apparently, lessons are yet to be learned from the current environmental crisis in Madagascar. Sadly, the same old mechanisms are being readied in order to resolve the current crisis. International and national conservation NGOs have formed a committee in April 2009, called “Cercle de Concertation des Partenaires Techniques et Financiers du Secteur Environnement” (CCPTF) to address issues following the illegal logging crisis. But unfortunately they have prepared an action plan that includes only conservation measures; when problems relating to the communities were discussed, no development activities were planned. Moreover, this committee is composed only of conservation stakeholders. After numerous consultations, it was agreed at the initiative of UNESCO in March 2010, that development partners should be included in the overall action plan, and should start to mobilize a development platform in support of conservation.

The flow of money that arrived during this crisis has sustained the economic life of the region, but when the trafficking is stopped, communities will be left in an even worse position. It will be of utmost importance for the development world to be mobilized and to support local communities for the socioeconomic future of the region.

Masoala and Marojejy National Parks, are a part of a site that was inscribed on the World Heritage List in 2007. Under these circumstances, the State Party of Madagascar

has the obligation to respond immediately to threats affecting the sites. UNESCO is in permanent contact with the technicians who prepared reports on the state of conservation; they also have to present action reports. Following the recommendation in 2009 to act upon these threats, a national report was received from the Government in November 2009 (Ministry of Water and Forest 2009). This report was well prepared in terms of the problems encountered and actions to be remediated; however it was soon contradicted by the numerous unofficial reports that were sent to UNESCO by NGOs and members of the civil society.

Under these circumstances, how should the World Heritage Convention respond? UNESCO should serve as a mediator between NGOs, the civil society, and the Government. One of the tools of the Convention is the ability to put a site on the endangered list when the values of that site are directly threatened, which is the case here. There are two possibilities for accomplishing this: either the State Party can ask to inscribe the site on the endangered list itself, or, if the State Party does not ask to inscribe the site on the endangered list, the World Heritage Committee can decide whether the site should be inscribed or not. If the State Party cannot address the threats, it can appeal to the World community for support in mitigating the threats.

This is a complicated situation, as putting a site on the endangered list is always negatively perceived -- by the government because it must acknowledge some management problems at the site, and by NGOs because of the implicit waste of all the investments that were made to protect the site. UNESCO has therefore engaged in a process of consultation with all stakeholders involved in these two sites, in order to consider all points of view before deciding on the most appropriate recommendation.

At last, as the preparation of this dissertation approached its end, the World Heritage site “Rainforests of Atsinanana” was inscribed on the UNESCO WH Endangered List by the WH Committee in August 2010.

F. CONCLUSION

In conclusion, Madagascar, despite its environmental plan, has long been subjected to external paternalist conservation actions. A core problem is that the national environmental plan was devised in order for the country to gain a certain degree of independence from interventions by external agencies, but the funding of conservation remains the province of international NGOs. Madagascar's dependency, in terms of both technical and financial interventions, thus remains, and the country must adjust both its policies and interventions in the field following an international agenda.

When the serious environmental crisis described above occurred, there were no adequate responses from the national institutions' technicians, nor were there adequate political responses. This clearly shows that no appropriation was made at these two levels. Possibly, technicians might be feeling, at this point, that they need not assume responsibility for the current situation since they have never been in charge of it.

It is impossible to predict what will happen in the near future, but it is to be hoped that the international conservation community working in Madagascar will acknowledge some responsibility for the crisis, will review its funding decisions, and will allow the country itself to take greater responsibility for moving towards more independence in managing its environment and natural resources.

Nothing is irretrievably lost yet. The Midongy ICDP has shown that conservation can succeed, if appropriate measures, and especially development measures, are taken. Development is not just an entryway to conservation; it really improves specific indicators related to conservation, such as people's behaviours and motivation to participate to the management of a protected area. It also ensures a certain sustainability once the project is over.

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APPENDICES

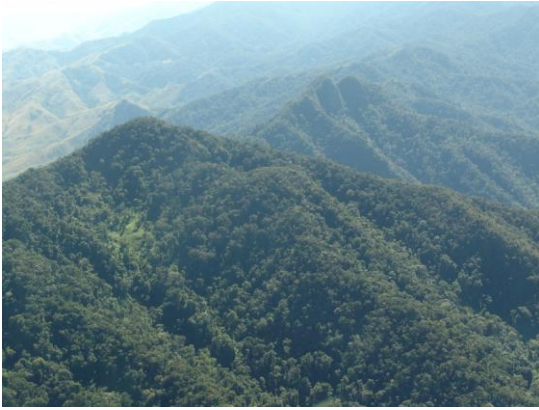
APPENDIX 1: ILLUSTRATIONS

APPENDIX 2 . MAPS

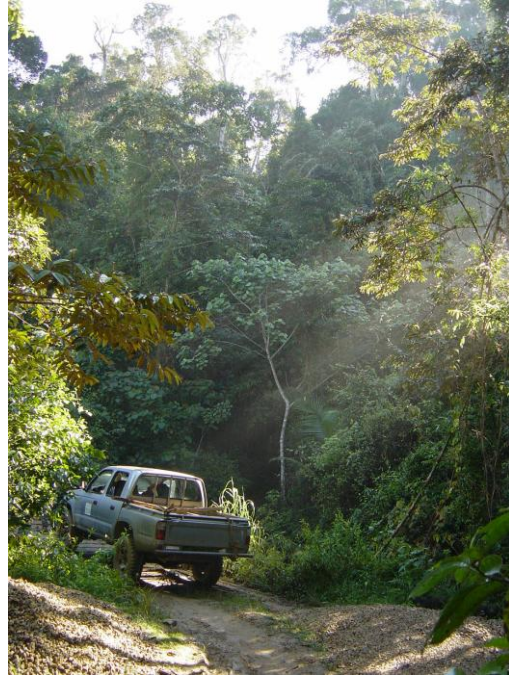
APPENDIX 3 : HOUSEHOLD QUESTIONNAIRE

APPENDIX 1: ILLUSTRATIONS

1.a: THE MIDONGY-BEFOTAKA NATIONAL PARK



1.a: THE MIDONGY-BEFOTAKA NATIONAL PARK



1.b: THE PEOPLE OF MIDONGY-BEFOTAKA



1.b: THE PEOPLE OF MIDONGY-BEFOTAKA



1.c: PROJECT'S ACTIVITIES, AGRICULTURE



1.c: PROJECT'S ACTIVITIES, AGRICULTURE



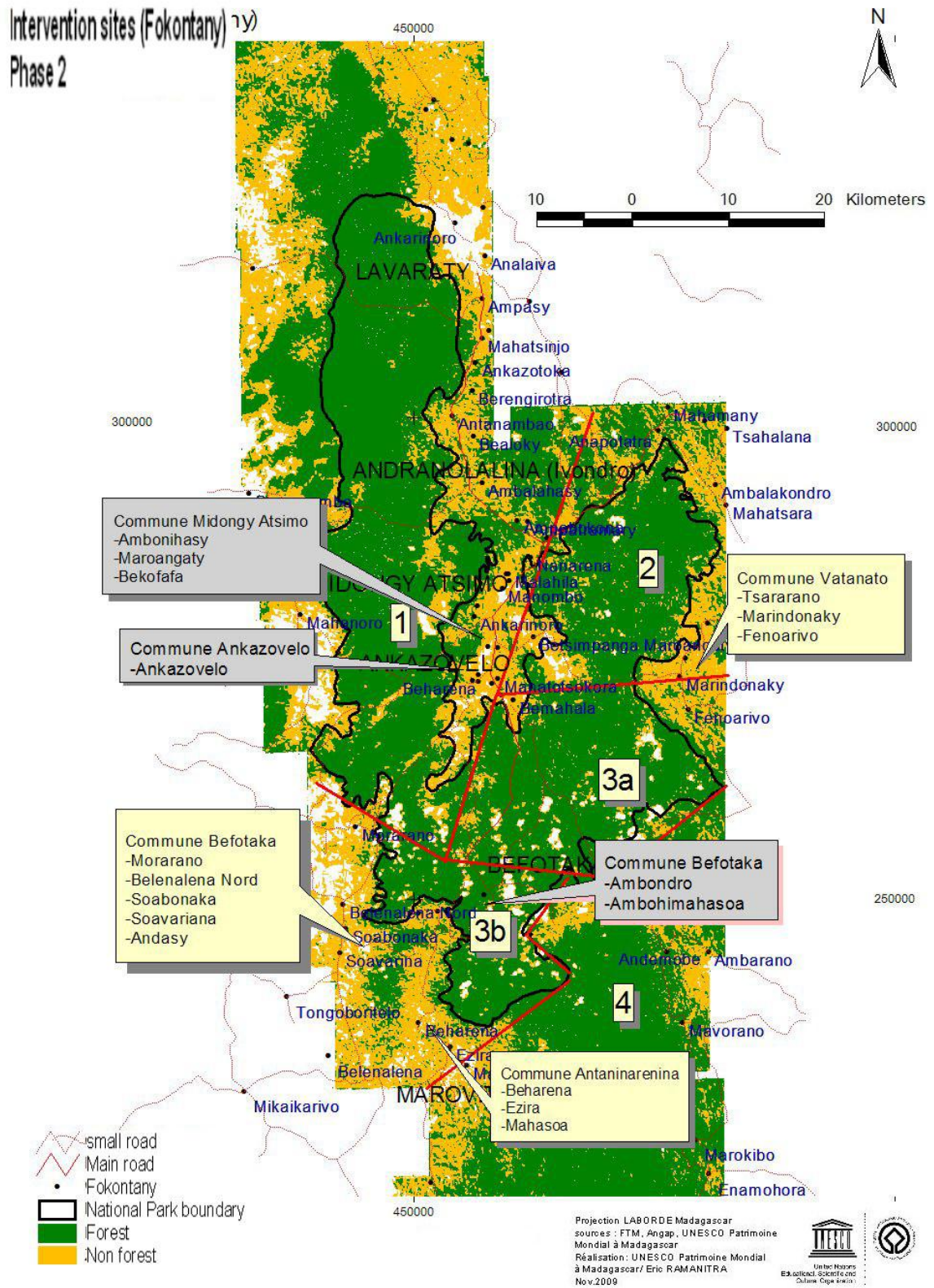
1.c: PROJECT'S ACTIVITIES, AGRICULTURE



1.d: PROJECT'S ACTIVITIES, CONSERVATION

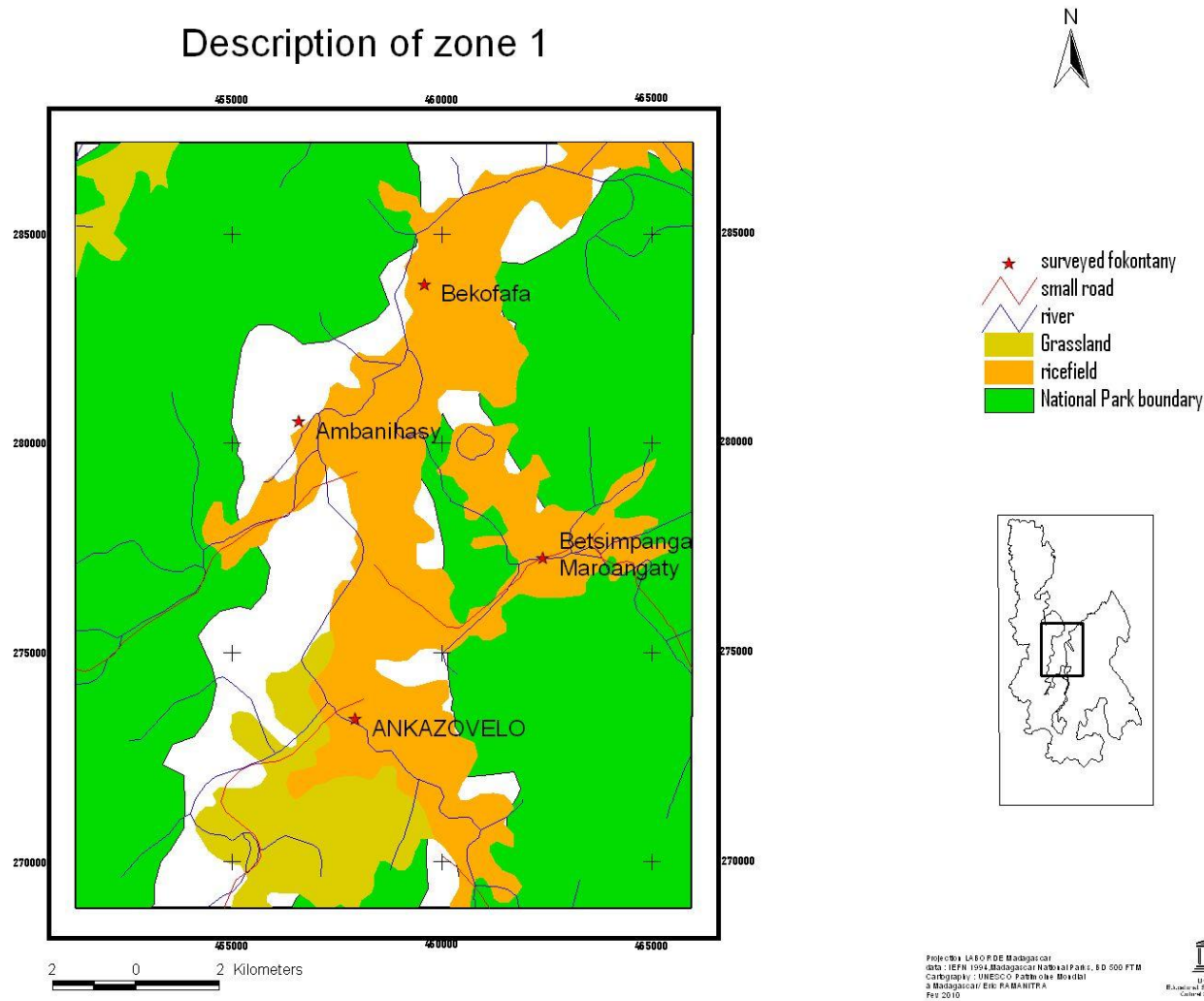


Map VII.4 : Research's Intervention Sites



Map VII.4. a: Description of project's intervention Area n° 1 (central part of the

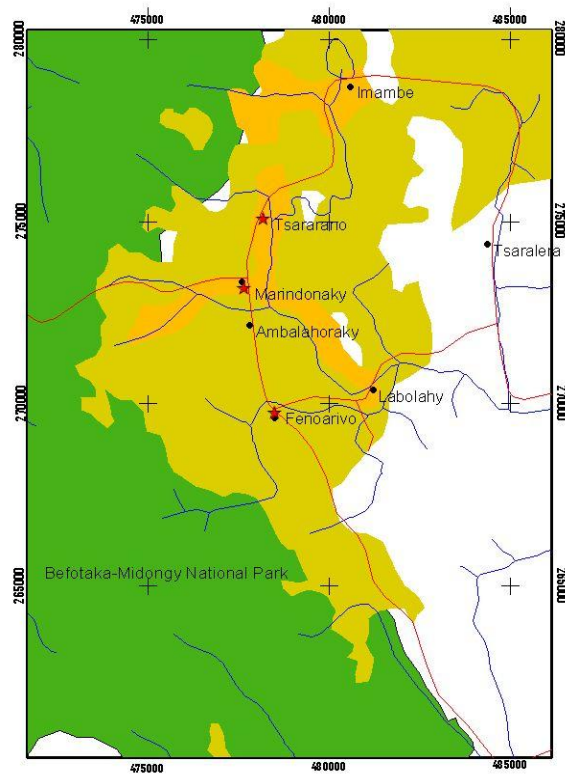
National Park)



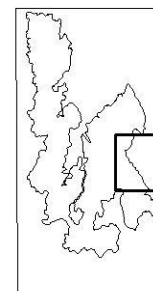
Map VII.4.b : Description of project's intervention Area n° 2 (eastern part of the

National Park)

Description of zone 2 (Commune Vatanato)



- ★ surveyed fokontany
- Villages
- small road
- river
- Mosaic of culture
- rice field
- National park boundary

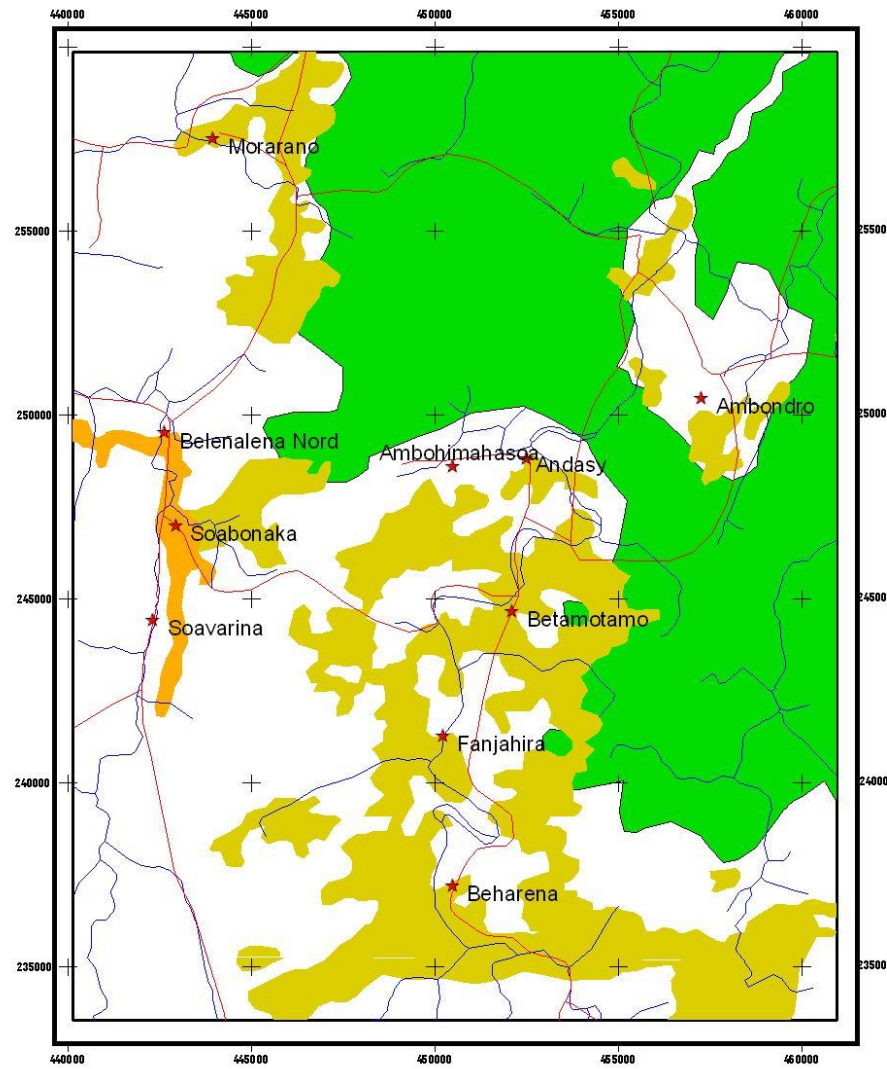


Projet de LA S O P D E Madagascar
 site : IEPH 1004 Madagascar National Park, RD 500 PTM
 Cartography : UNESCO Patrimoine Mondial
 Madagascar/ Ent. FANANITRA
 Feb. 2010



Map VII.4.c :Description of project's intervention Area n° 3a (southwestern part of

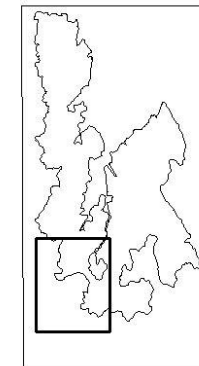
the National Park)



Description of zone 3

- surveyed fokontany
- small road
- river
- Mosaic of culture
- ricefield
- National Park boundary

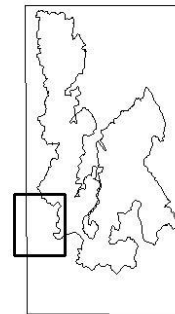
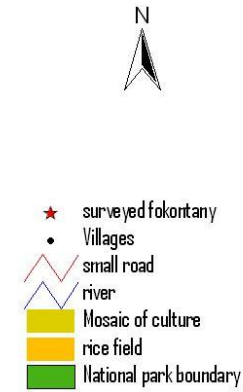
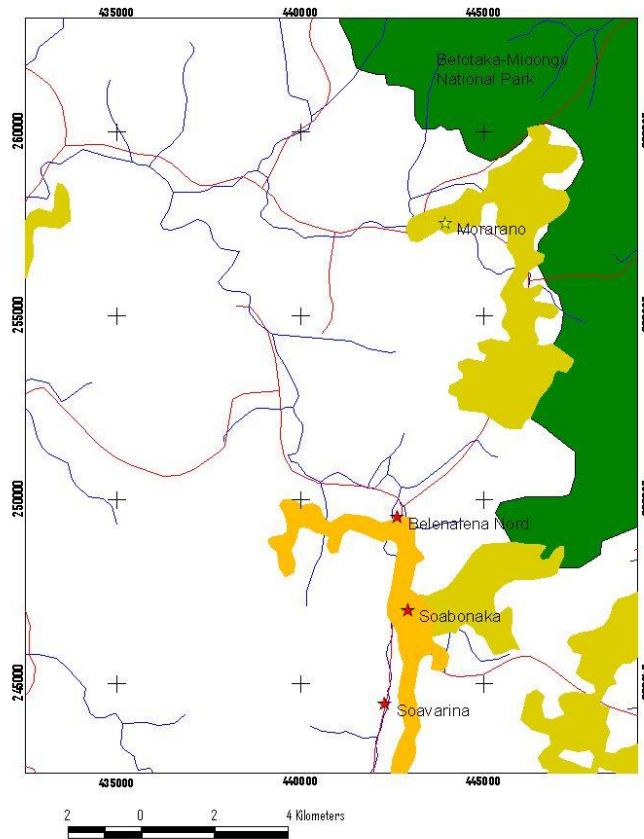
3 0 3 Kilometers



Projet OUV LABO PDE Madagascar
 data : IEPN 1994 Madagascar National Park, SD 500 FTM
 Cartographie : UNESCO, Patrimoine Mondial
 a Madagascar/ EIC RAMANTRA
 Feb 2010



Description of zone 3B (Commune Befotaka)

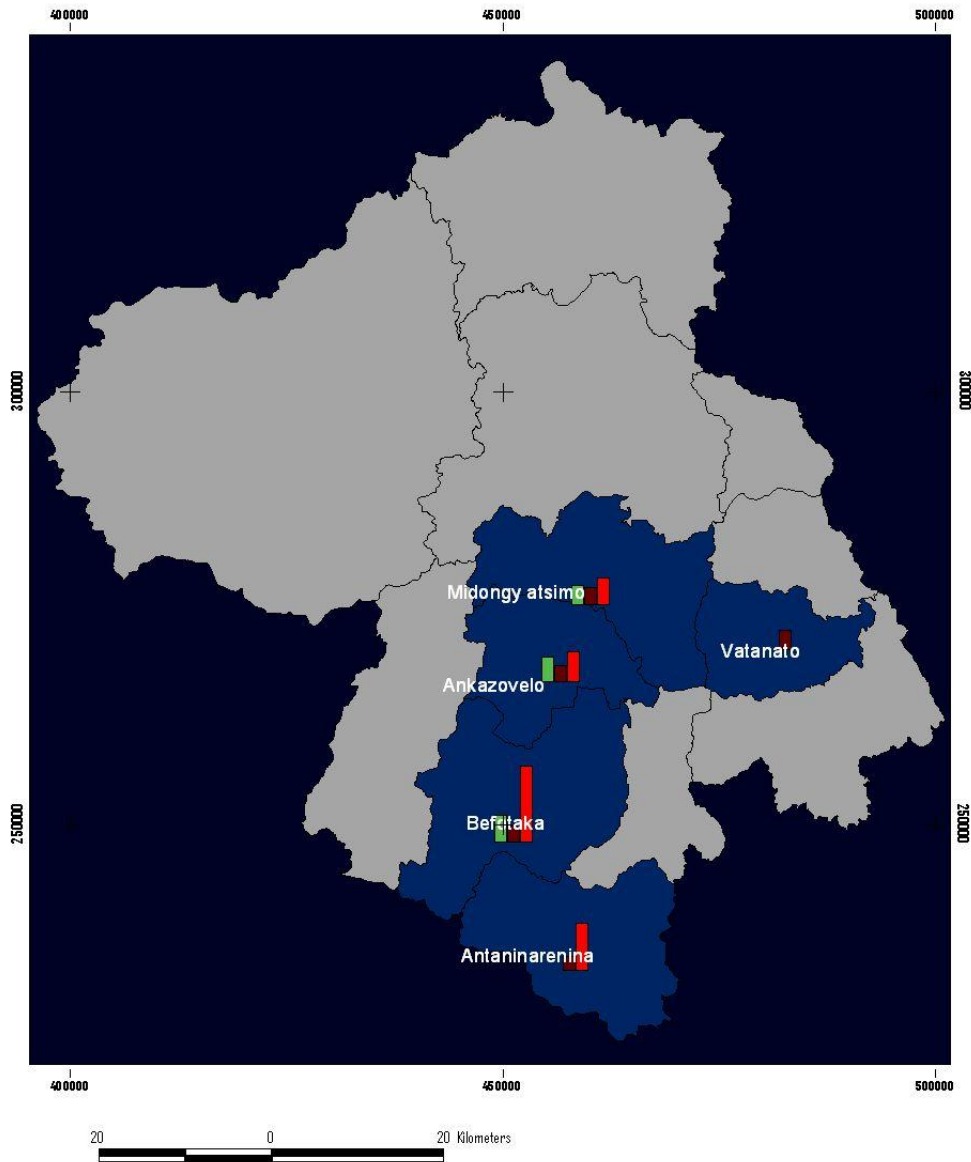


Projet de LAEOP DE Madagascar
 data : IEPN 1994 Madagascar National Parks, 8 D 500 FTM
 Cartographie : UNESCO Patrimoine Mondial
 © Madagascar/ERIC RAMANTIA
 Feb 2010

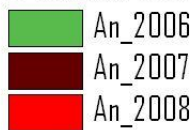


Map VII.5. : Evolution of Vitamin A Coverage between 2006 and 2008

Evolution of Vitamin A coverage



% vitamin A coverage



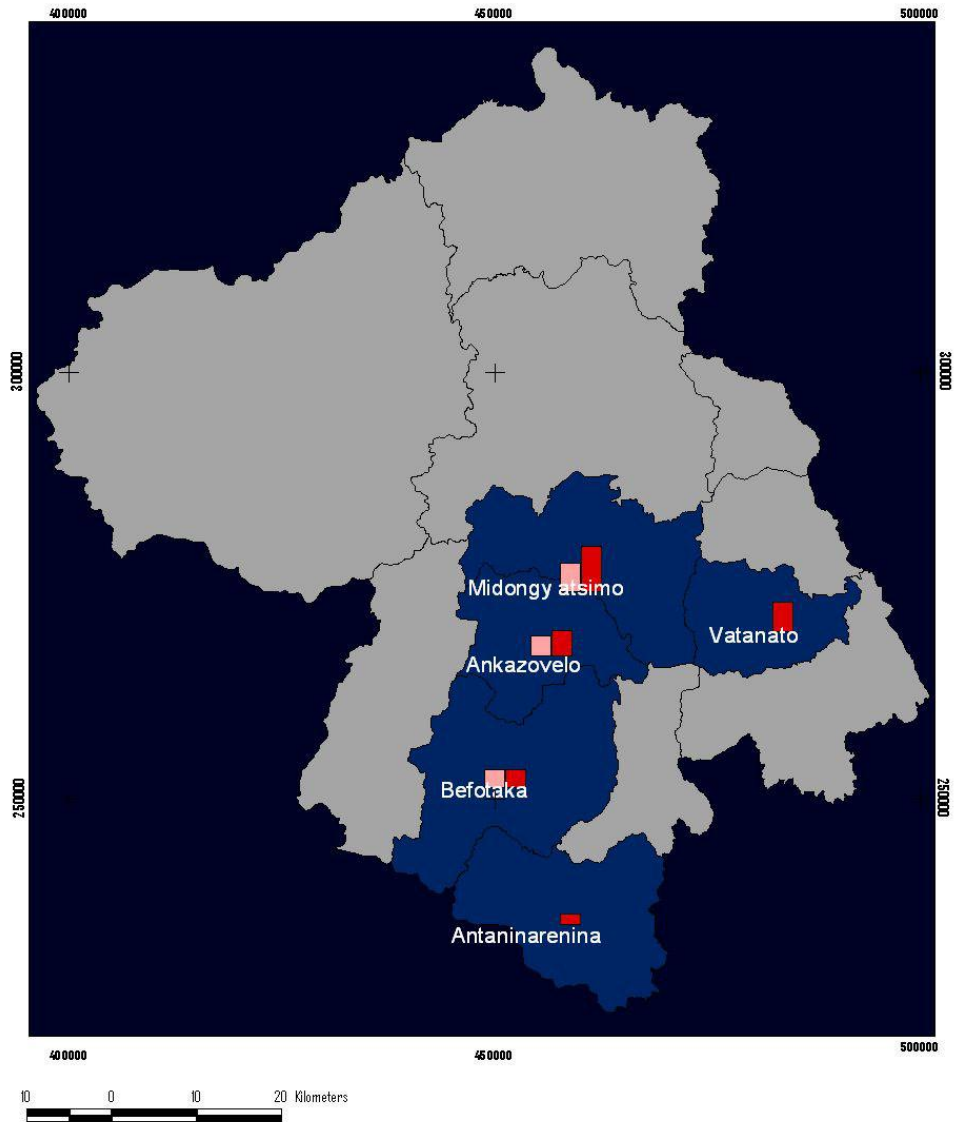
Projection: LABORDE Madagascar
 data: FTM, Angsp, UNESCO Patrimoine
 Mondial à Madagascar
 Cartography: UNESCO Patrimoine Mondial
 à Madagascar/ Eric RAMANITRA
 Nov.2009



Map VII.6.: Immunizations Coverage between 2005 and 2007



Immunizations coverage (children under 11 months)

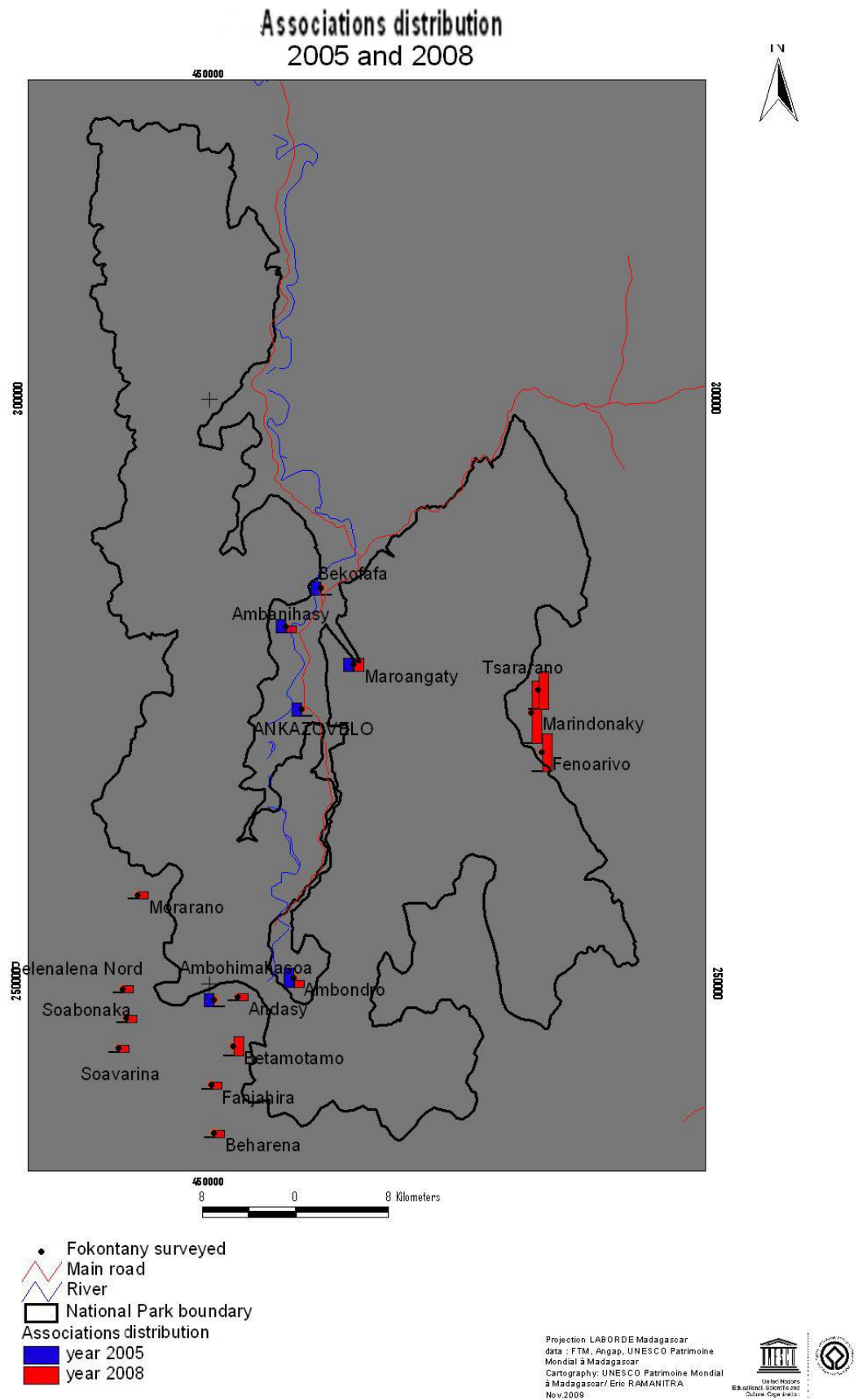


% immunized
 Year 2005
 Year 2007

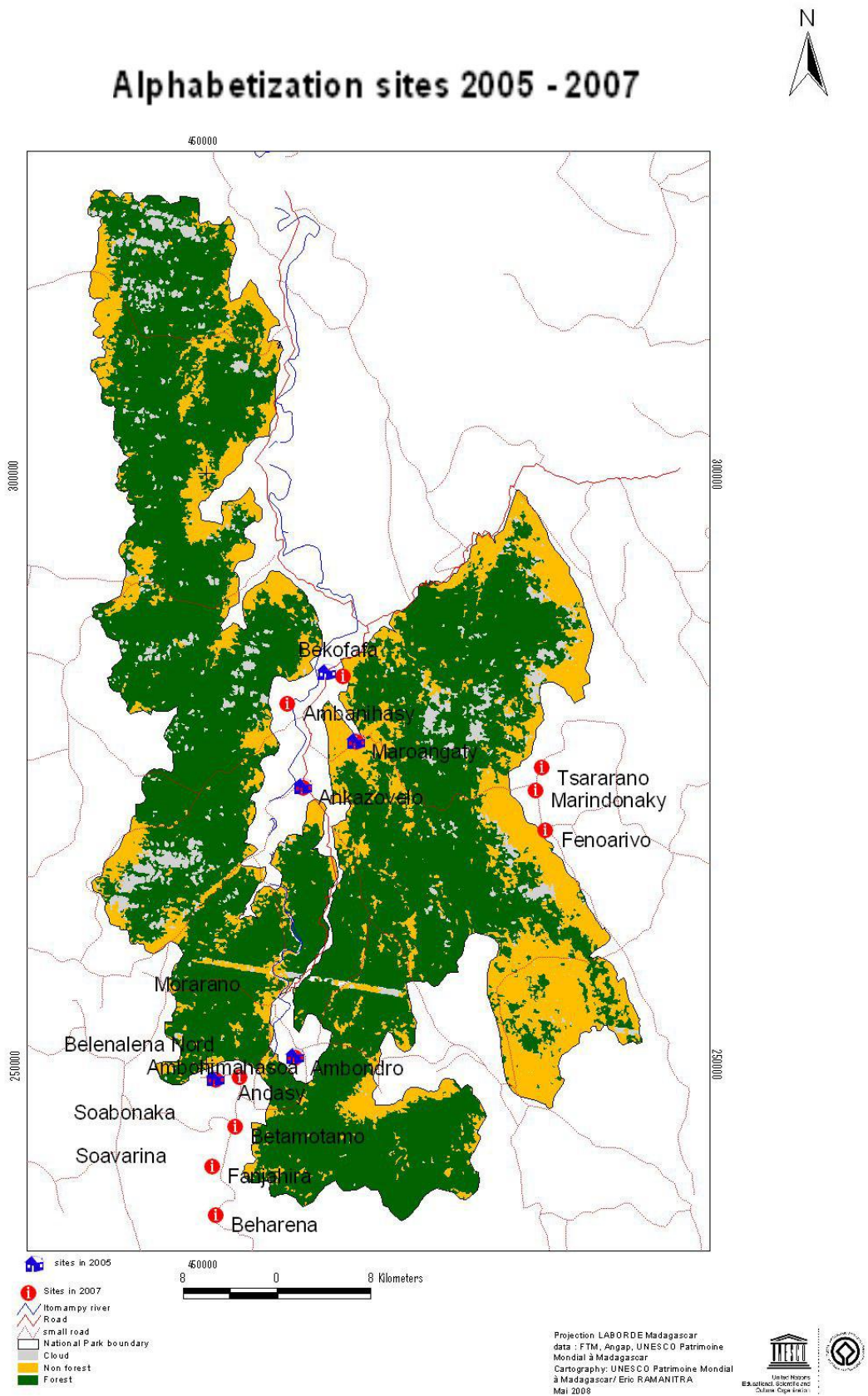
Projection: LABORDE Madagascar
 data: FTM, Angap, UNESCO Patrimoine
 Mondial à Madagascar
 Cartography: UNESCO Patrimoine Mondial
 à Madagascar/ Eric RAMANITRA
 Nov.2009



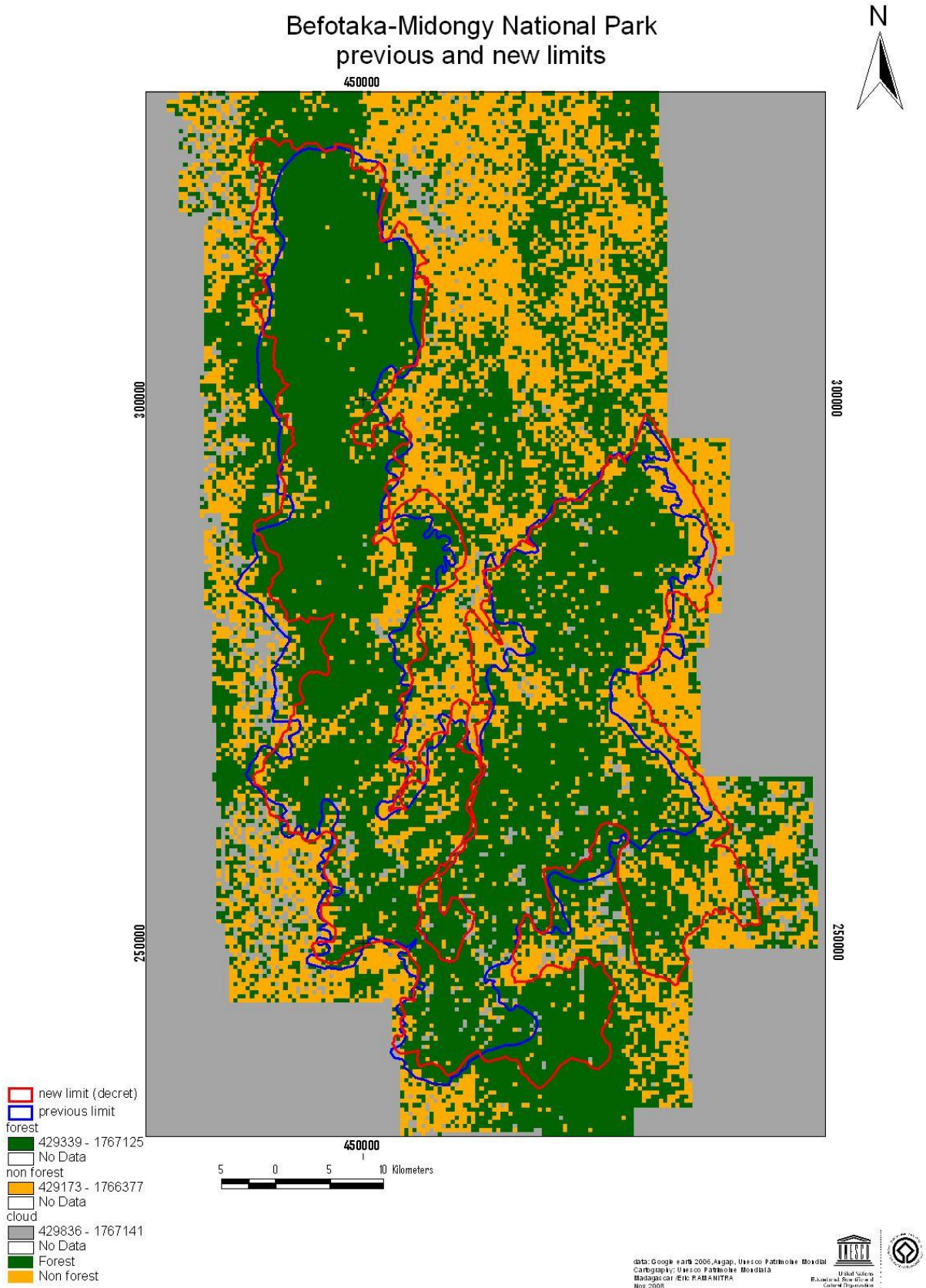
Map VII.7. : Association Geographical Distribution between 2005 and 2008



Map VII.8 : Literacy Sites between 2005 and 2007

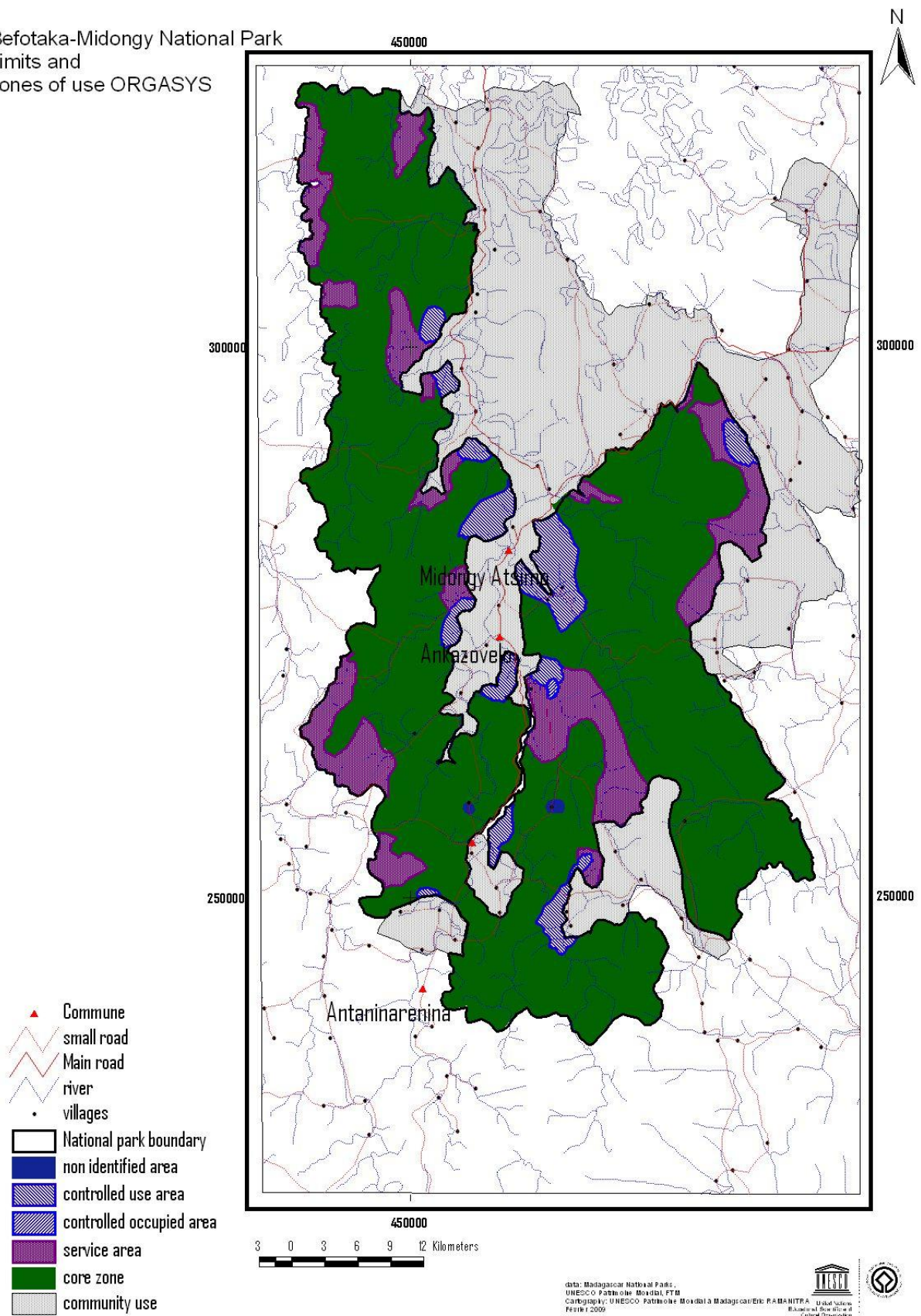


Map VII.9. : Midongy National Park's Previous and New limits

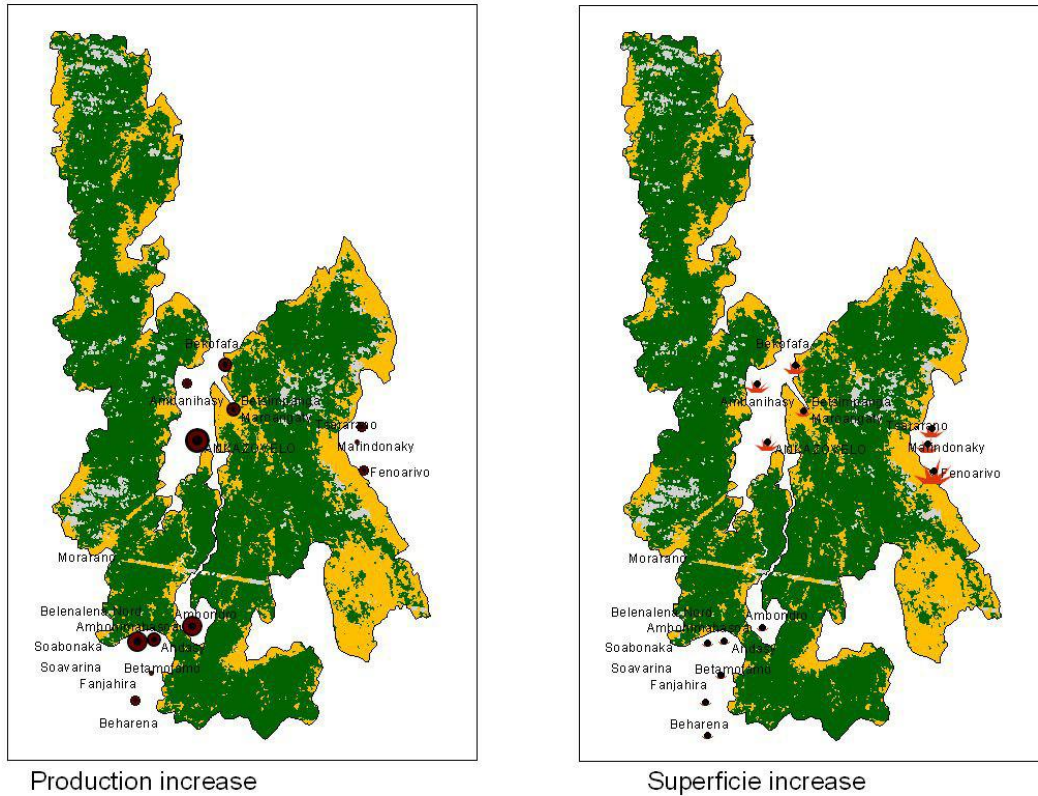


Map VII.10. : Zone of use (Orgasys 1997)

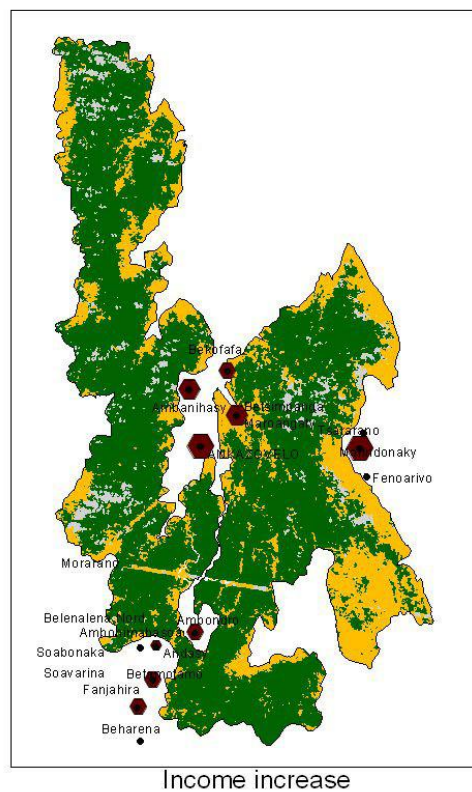
Befotaka-Midongy National Park
limits and
zones of use ORGASYS



Map VII.11 : Comparison of Production Incomes and Superficies between 2007 and 2008



Comparisons of production, incomes and superficie 2007-2008

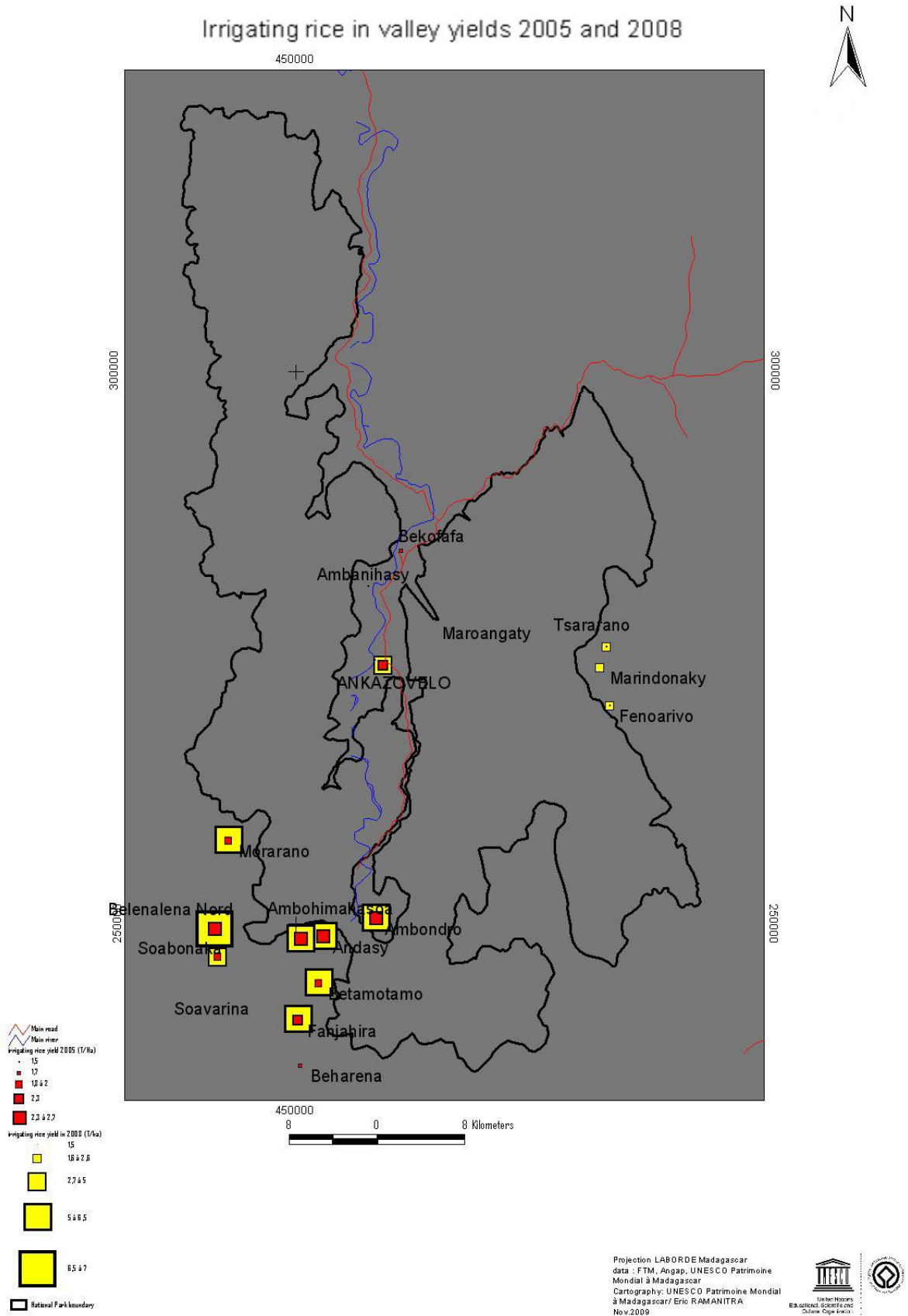


7 0 7 14 Kilometers

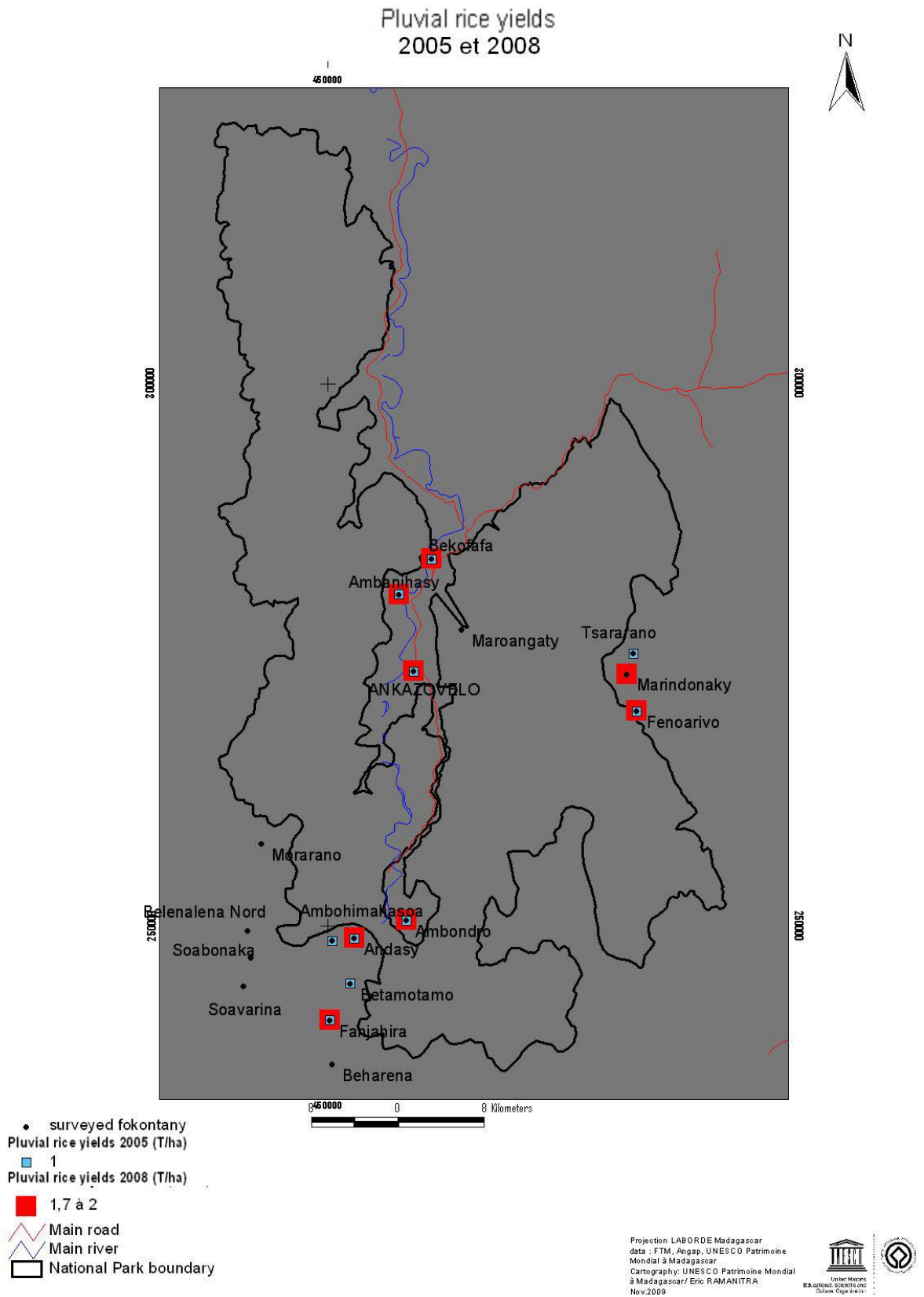
Projection LABORDE Madagascar
 data : FTM, Angap, UNESCO Patrimoine
 Mondial à Madagascar
 Cartography: UNESCO Patrimoine Mondial
 à Madagascar/ Eric RAMANITRA
 Nov.2009



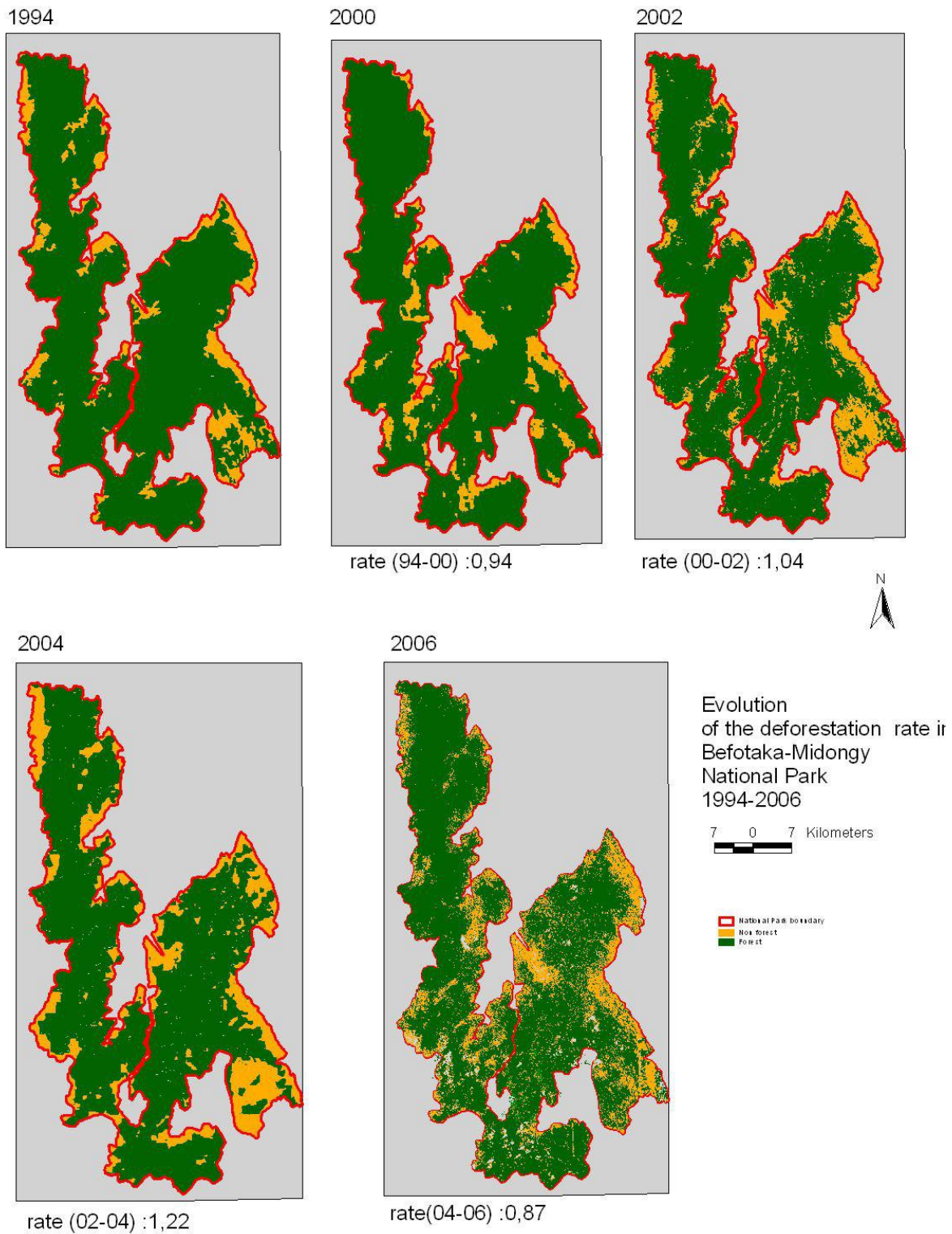
Map VII.12 : Irrigating Rice Yield Expansion between 2005 and 2008



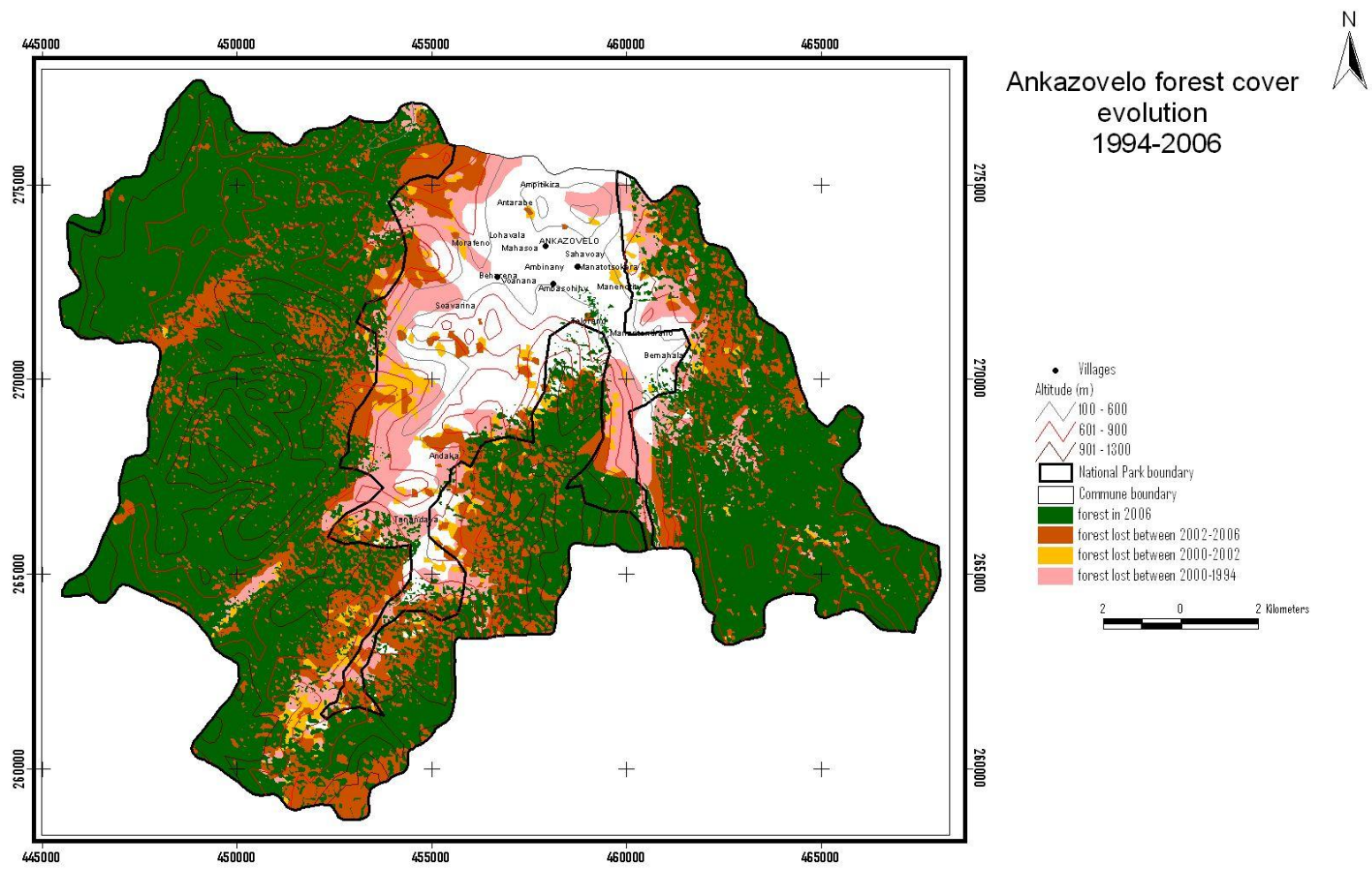
Map VII.13 : Pluvial Rice Yield Expansion between 2005 and 2008



Map VII.14 : Deforestation Rate between 1994 and 2006



Map VII.15 : Ankazovelo Forest Cover evolution between 1994 and 2006

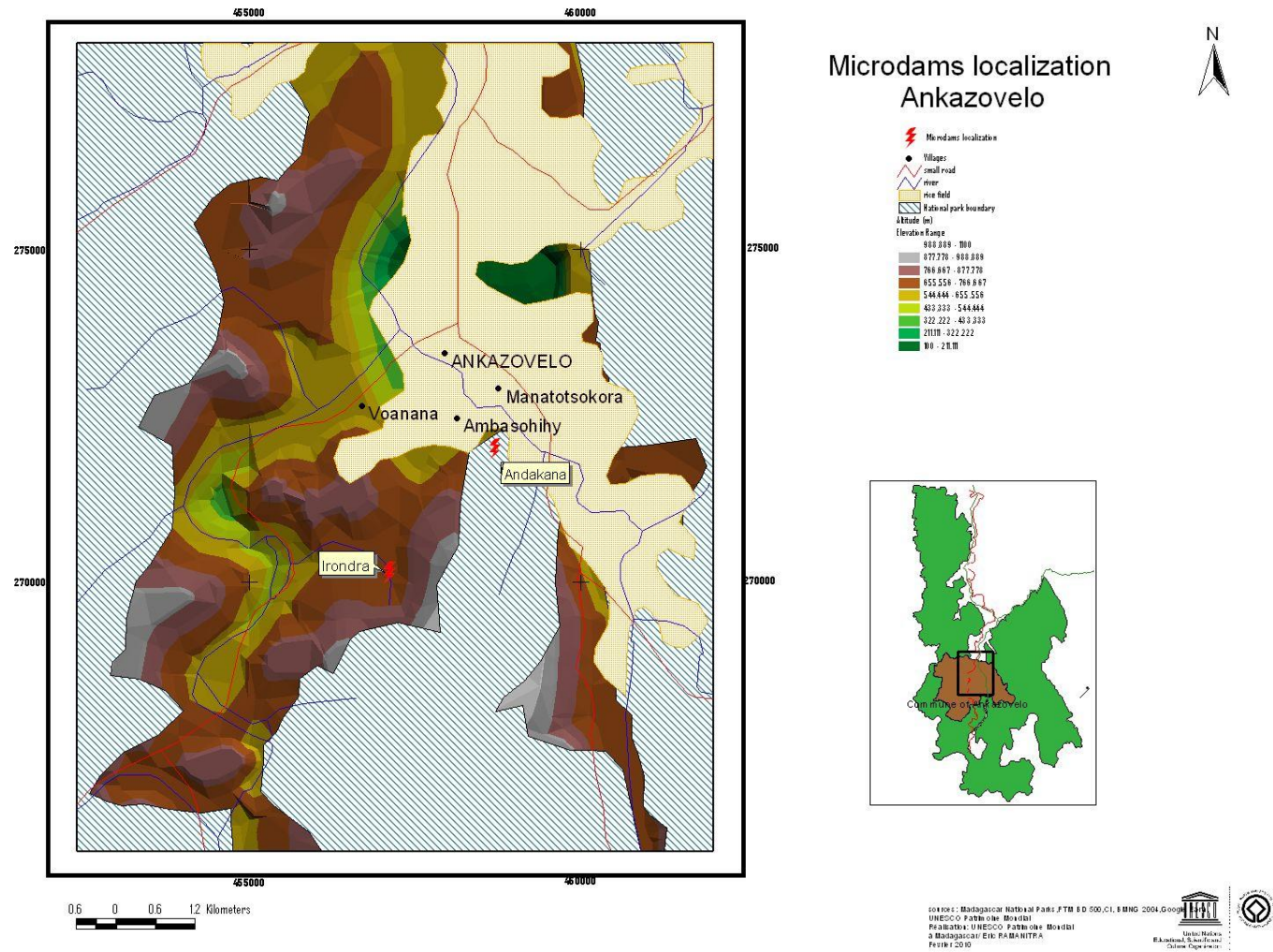


data: A: gpp, FTM 80 500, C: L: haw Gaster, Google Earth, UNESCO Path: ome: Moadisi
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 Mars 2008

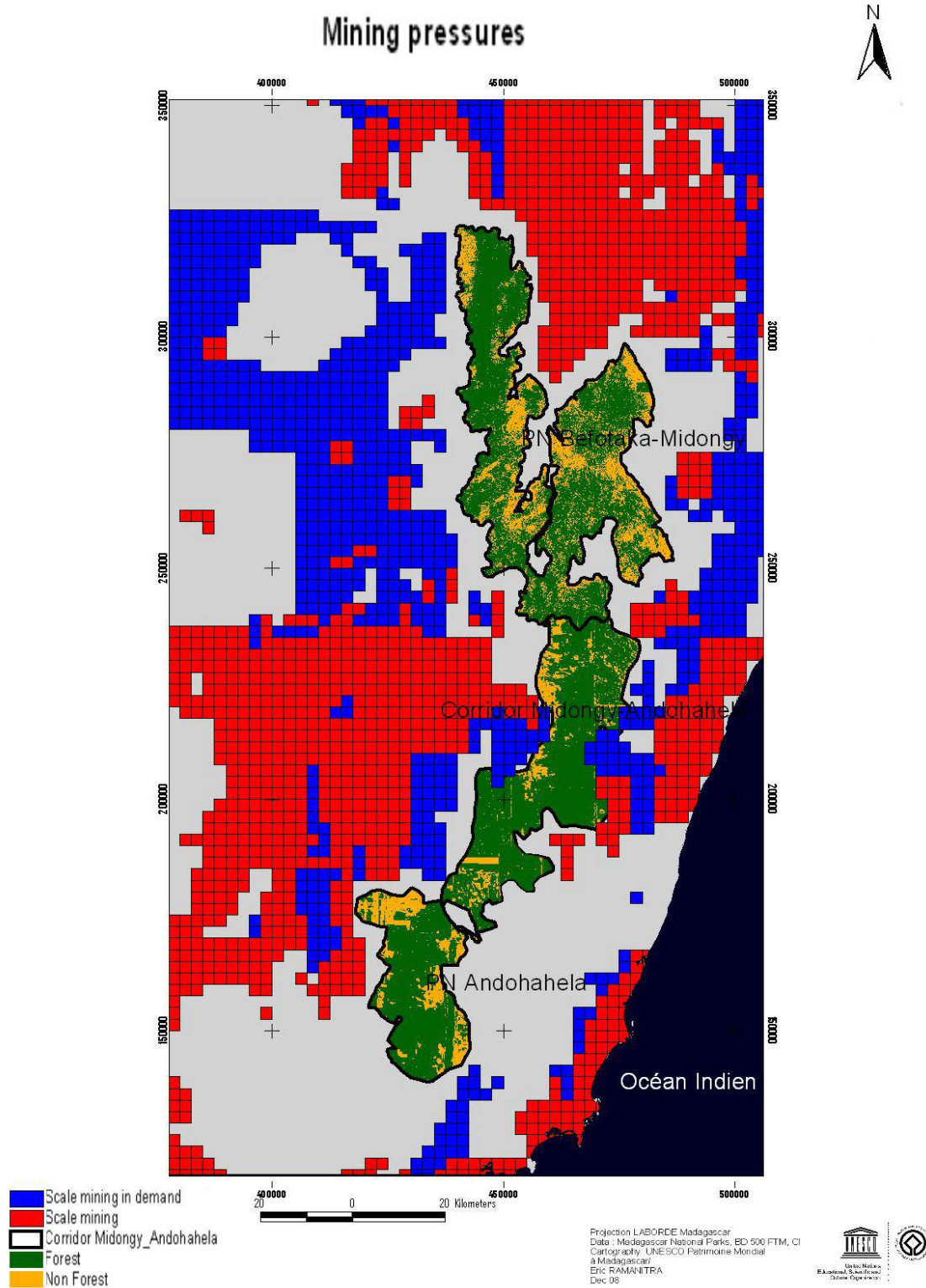


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 Centre d'Ecologie Evolutive et Fonctionnelle

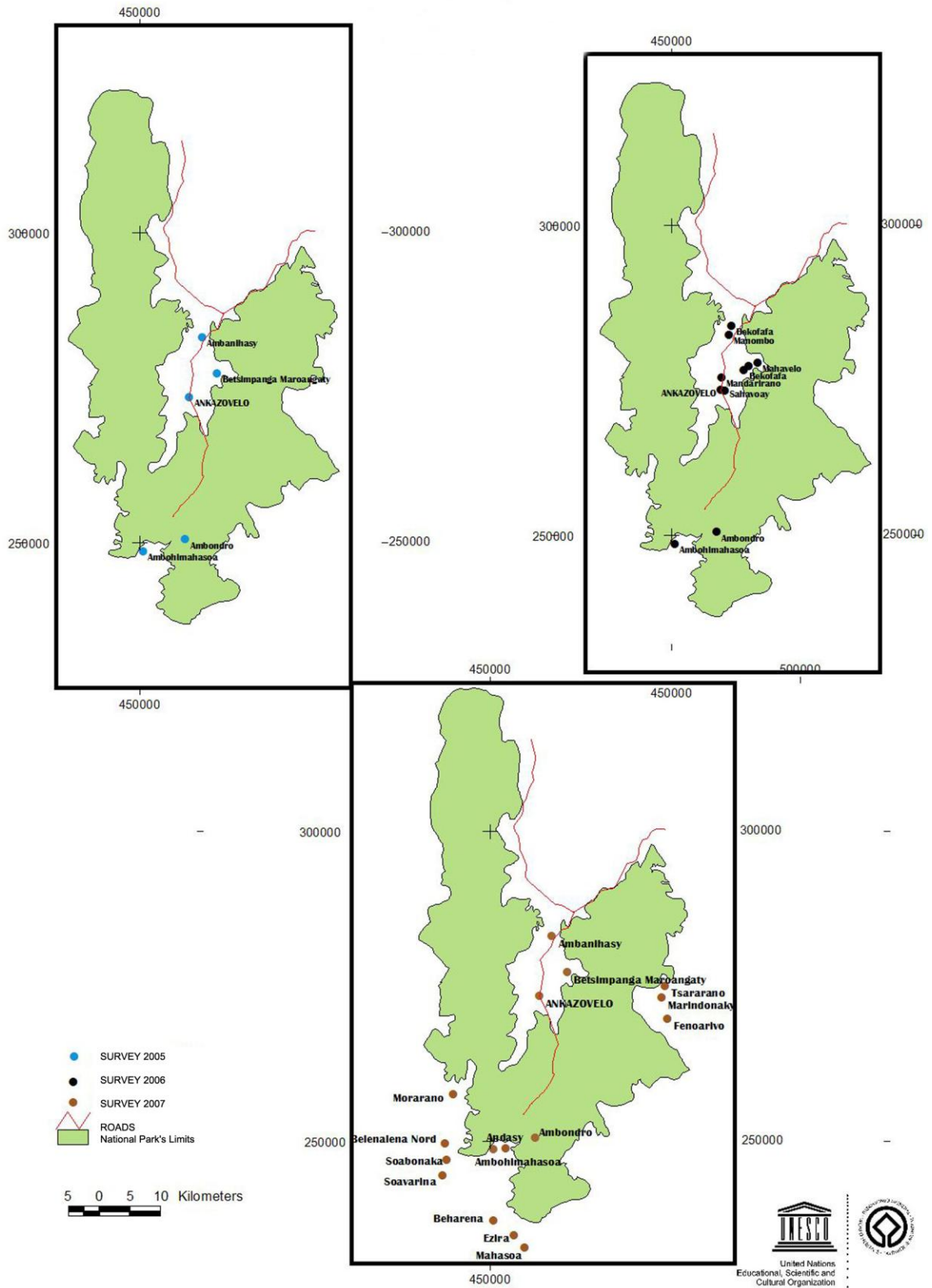
Map VII.16 : Microdams Location



Map VII.17 : Mining pressures



APPENDIX 2.a: SURVEYED VILLAGES



APPENDIX 2.b: LIST OF TARGETED FOKONTANY AND ASSOCIATED VILLAGES

(2005 and 2006, 2007 and 2009)

Districts and Communes	Fokontany	Villages
District of Befotaka (7 communes)		
Commune of Antaninarenina (5 Fokontany)	Beharena	Beharena
		Benoniky
		Manombo(Beharena)
	Betamotamo	Ambalahoraky(Betamotamo)
		Betamotamo
	Fanjahira	Fanjahira
Commune of Befotaka (8 Fokontany)		
	Ambohimahasoa	Ambohimahasoa
	Ambondro	Ambondro
		Manasoa
		Morarano(Ambondro)
		Vohimasy
	Andasy	Andasy
		Beraketa(Andasy)
		Mahasoa(Andasy)
	Belenalena nord	Antanifotsy
		Bekoaky
		Belenalena
	Morarano	Asoma
		Ketsihetsy
		Mahazoarivo
		Morarano(Morarano)
	Soabonaka	Anivontany
		Antanambao
		Beraketa(Soabonaky)
		Soabonaky
	Soavariana	Antondrobondro
Soavariana		
District of Midongy-du-Sud (6 communes)		
Commune of Ankazovelo (8 Fokontany)	Ankazovelo	Andranolava
		Ankazovelo
		Behajiny

		Mahasoa (Ankazovelo)
		Mandrirano
		Manombo(Ankazovelo)
		Masoandonaky
		Sahavoay
Commune of Nosifeno (11 Fokontany)	Ambonihasy	Ambanihasy
		Beseva
		Mahasoa(Ambonihasy)
		Vohimary
		Vohimasy
	Bekofafa	Bekofafa
		Menatraka
		Tsitove
	Maroangaty	Analapary
		Betsipanga
		Mahavelona
District of Vangaindrano (5 communes)		
Commune of Vatanato (5 Fokontany)	Fenoarivo	Fenoarivo
	Marindonaky	Ambalahoraka(Vatanato)
		Ambalatraka
		Ambodivato
		Andrezatritreoky
		Ibara
		Mahafasy
		Manadretaky
		Vohitrevo
	Tsararano	Morahariva
		Tanandava
		Tsararano
		Vohitromby

APPENDIX 3 : HOUSEHOLD QUESTIONNAIRE

General Information :

Locality Name:	
Fokontany :	<input type="checkbox"/> <input type="checkbox"/>
Commune :	<input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Fivondronana :	<input type="checkbox"/>
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Faritany :	
Household N°:	
Total Population in the commune	
Number of Fokontany in the commune	
Fokontany Population	
Total Village Population	
Name of Respondent:	
Sex : 1 = M	<input type="checkbox"/>
2 = F	
Name of Surveyor:	
Date of Survey:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
dd / mm / yy	

QUESTIONNAIRE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF LOCAL POPULATIONS

We would like to ask you some questions about you and family (household head, woman or man of 15 years or more)

1. Which month and year were you born?	Month.....	<input type="checkbox"/> <input type="checkbox"/>
	No mention of month..... 98	<input type="checkbox"/> <input type="checkbox"/>
	Year..... 19	

	No mention of year..... 9998	
2. Are you : married, in free union, single, widow (er) or divorced ?	Married.....1 Single.....2 Divorced.....3 Widow(er).....4	<input type="checkbox"/>
3. How long have you lived continuously in (name of the current place of residence)?	Years..... Always..... 95 Visitor.....96	<input type="checkbox"/> <input type="checkbox"/>
4. Did you attend the school?	Yes.....1 No.....2	<input type="checkbox"/>
5. Which highest level of studies did you reach: primary education, secondary or superior?	Primary.....1 Secondary 1 st cycle.....2 Secondary 2 nd cycle.....3 Superior.....4	<input type="checkbox"/>
6. Which was the most recent class you completed at this level?	Classroom.....	<input type="checkbox"/> <input type="checkbox"/>
7. Can you read and understand a letter or a newspaper easily, with difficulty or not at all?	Easily.....1 With difficulty.....2 Not at all.....3	<input type="checkbox"/>
8. Are you accustomed to listening to the radio once per day?	Yes.....1 No.....2	<input type="checkbox"/>
9. Which radio do you listen to?	RNM.....1 FM of proximity.....2 RFI.....3	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10. What is your religion?	Catholic.....1 Protestant.....2 Islamic.....3	<input type="checkbox"/>

	Traditional.....4 No religion.....5 Other_____6 (to specify)	
11. To which ethnic group do you belong?	Bara.....1 Antesaka.....2 Antefasy.....3 Antemoro.....4 Other_____5 (to specify)	<input type="checkbox"/>

Now, I would like to ask you few questions about the house you are living in.

12. From where does the drinking water for your household come from?	Tap water Inside the house.....11 Outdoor tap12 Public fountain/tap.....13 Private water well Arranged well.....21 Simple well.....22 Public well water Arranged well23 Simple well24 Surface water Spring.....31 River/brook.....32 Pond/lake/dam.....33 Other_____41	<input type="checkbox"/>
--	--	--------------------------

	(to specify)	
13. How long does it take you to fetch the water and return?	Minutes..... Close to your house.....996	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
14. Do you use a treatment before consuming the water?	Yes.....1 No.....2	<input type="checkbox"/>
15. If yes, which one?	Boil water.....1 “Sur’eau” water purification tablets2 Other.....3 (to specify)	<input type="checkbox"/>
16. Which kind of toilets do you have?	Flush system.....11 Latrines.....21 Tin barrel.....22 No toilets/outside.....31 Other.....96 (to specify)	<input type="checkbox"/> <input type="checkbox"/>
17. Are the toilets only used by the members of your household or are they shared with other households?	Exclusive use.....1 Shared.....2	<input type="checkbox"/>
18. In your household, do you have :	1 yes 2 no	
Electricity?	Electricity.....1 1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
A radio ?	Radio.....2 2	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
A TV ?	Television.....3 3	<input type="checkbox"/> <input type="checkbox"/>
A phone?	Phone.....4 4	<input type="checkbox"/>
A fridge?	Fridge.....5 5 None.....6 6	
19. Does one member of your	1 yes 2 no	<input type="checkbox"/>

household own a :	Cart.....1 1	
Cart?	Bicycle2 2	
Bicycle?	Motorcycle3 3	
Motorcycle?	Car.....4 4	
Car?	None.....5 5	
20. Do you use a waste management system:	1 yes 2 no	
Garbage tank?	Regular garbage pit..... 1 1	<input type="checkbox"/>
Incineration?	Incineration.....2 2	
Composting?	Composting.....3 3	
	None..... 4 4	
21. With which materials did you build your house?	Wood.....1	<input type="checkbox"/>
	Earth/sand.....2	
	Bamboo/palms/woven straw3	
	Cement.....4	
22. How many rooms do you have in your house	1.....1	<input type="checkbox"/>
	2.....2	
	3.....3	
	More than 3.....4	
23. In your house, how many rooms do you use to sleep ?	Number of rooms.....	<input type="checkbox"/>
24. Can you describe the ground of your house? <i>(if you are in the house, note the observation of the principal material used)</i>	Natural floor Earth/sand.....11 Dung.....12 Simple floor Wood floor.....21 Bamboo/ palms/woven straw.....22 Constructed floor	<input type="checkbox"/>

	Parquet or waxed floor.....31 Cement.....32 Tiled.....33 Other_____96 (to specify)	
25. Where do you cook ?	<i>Inside the house</i> Separate room.....11 Kitchenette.....12 <i>Outside</i> Separate building.....21 Hangar.....22 Outdoor.....23	<input type="checkbox"/> <input type="checkbox"/>
26. How many times a day do you cook?	Once1 Twice.....2 Three times.....3 More than three times4	<input type="checkbox"/>
27. Which fuels do you use for the kitchen?	Heating wood.....1 Charcoal.....2 Oil.....3 Gas.....4 Other_____96 (to specify)	<input type="checkbox"/>
28. Where do you usually get the fuel?	Surrounding forest.....1 Local market.....2 Other_____96 (to specify)	<input type="checkbox"/>

QUESTIONNAIRE 2 : EVOLUTION OF THE SANITARY SITUATION

Now, I would like to ask you some questions regarding births in your household and the health of the household members

28. How many people live permanently in your household?	Number of persons.....	<input type="text"/>
29. Which are the bonds of these people with the head of the household?	Spouse.....1 Children.....2 Relatives.....3 Brothers/sisters.....4 Other _____96 (to specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
30. Do you have children?	Yes.....1 No.....2	<input type="checkbox"/>
31. If so, do these children live with you in your house ?	Yes.....1 No.....2	<input type="checkbox"/>
32. How many sons live with you? How many daughters live with you?if NONE, SPECIFY "00"	Sons..... Daughters.....	<input type="text"/>
33. Do you have children who do not live with you ?	Yes.....1 No.....2	<input type="checkbox"/>
34. How many sons do not live with you? How many daughters do not live with you?if NONE, SPECIFY "00"	Sons Daughters	<input type="text"/>
35. Did you have children who died after their birth? <i>(INSIST : child who cried or gave a sign</i>	Yes.....1 No.....2	<input type="checkbox"/>

<i>of life but died few hours or days after)</i>		
36. How many of your sons died ? How many of your daughters died ?if NONE, SPECIFY "00"	Deceased sons..... Deceased daughters.....	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
37. What was the cause of their death/s?	Malaria.....1 Respiratory infections.....2 Diarrhea.....3 Complications with child birth ..4 Malnutrition.....5 Other_____96 (to specify)	<input type="checkbox"/> <input type="checkbox"/>
38. At what age did your children die ?	Less than 1 year.....1 Less than 3 years.....2 Less than 5 years.....3 More than 5 years.....4	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
39. Among your living children how many are: 5 years old ? 3 years old? 1 year old?	Less than 5 years old..... Less than 3 years old..... Less than 1 year old.....	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
40. For how long did you breastfeed your children?	6 months exclusive.....1 6 months mixed.....11 Less than 2 years.....2 2 years3	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
41. At which age did you give them some other source of food ?	Six months.....1 Other_____2	<input type="checkbox"/>

	(to specify)	
42. Are your children immunized for: BCG, DTCHepB 3, polio, measles ? <i>(see the vaccination/health notebook for children less than 3 years old)</i>	BCG.....1 DTCHepB 3.....2 DTCHepB 2.....21 DTCHepB 1.....22 Polio 3.....3 Measles.....4	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
43. Did you children receive any immunizations during the last six months? <i>(see the vaccination/health notebook for children less than 5 years old)</i>	Yes.....1 No.....2	<input type="checkbox"/>
44. Which are the principal diseases which affect usually the health of the members of the household?	Malaria.....1 Respiratory infections.....2 Diarrhea3 IST.....4 Malnutrition.....5 Other_____6 (to specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
45. What action are you accustomed to making when faced with a sick family member?	Go to the public health centre.....1 See a doctor.....2 See a healer.....3 Self-medication.....4 Other_____5 (to specify)	<input type="checkbox"/>
46. For which services do attend you the CSB?	Care/treatments.....1 Children's immunization.....2	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

	Children.....3 Family planning.....4 Post-birth.....5 To give birth.....6 Other_____7 (to specify)	
47. For which reasons don't go you to the health centre (CSB)?	Too far away.....1 High costs.....2 No qualified staff.....3 No medication.....4 Not a good reception.....5 Other_____6 (to specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Now, I would like to ask you some questions about family planning

48. Are you pregnant ? <i>(if the person is a man, as his wife)</i>	Yes.....1 No.....2 Not sure.....98	<input type="checkbox"/> <input type="checkbox"/>
49.If you are pregnant, after you will give birth, how long would you like to wait before having another child ?	Months.....1 Years.....2 Other_____96 (to specify)	<input type="checkbox"/> <input type="checkbox"/>
50. If you are not pregnant or not sure, how long would you like to wait before having a/another child ?	Months.....1 Years.....2 Soon/now.....3 After your wedding.....4	<input type="checkbox"/> <input type="checkbox"/>

	Other _____ 96 (to specify)	
51. When was the last time you were pregnant; did you want to be pregnant at that time or did you want to wait later or did you want not to be pregnant ?	At that time.....1 Later.....2 Did not want.....3	<input type="checkbox"/>
52. Have you already used a method not to be pregnant or to avoid it during your life ?	Yes.....1 No.....2	<input type="checkbox"/>
53. Do you actually use a method not to be pregnant or to delay a pregnancy?	Yes.....1 No.....2	<input type="checkbox"/>
54. Do you think you will use a method to avoid being pregnant or to delay it in the next 12 months ?	Yes.....1 No.....2 Does not know.....8	<input type="checkbox"/>
55. Do you think you will use a method to avoid being pregnant or to delay it in the future ?	Yes.....1 No.....2 Does not know.....8	<input type="checkbox"/>

<p>56. In this case, which method would you prefer to use</p>	<p>Pills.....1 Injection.....2 Implant.....3 DIU.....4 Condom.....5 Female sterilization6 Male sterilization7 Periodic abstinence8 Ablation.....9 Other_____96 (to specify) Does not know.....98</p>	<p><input type="checkbox"/></p>
<p>57. What is the principal reason for which you would not like to use a specific method ?</p>	<p>Not married.....11 Not fertile.....12 <i>Reasons linked to fertility</i> No sexual relationships.....21 Few sexual relationships22 Menopause.....23 Breast feeding.....24 Would like another child.....25 <i>Opposition to the use of a method</i> Woman opposed31 Man opposed.....32 Parents opposed.....33 Religious prohibitions.....34</p>	<p><input type="checkbox"/></p>

	<p>Reasons linked to the method</p> <p>Health problems.....41</p> <p>Afraid of secondary effects.....42</p> <p>Does not know where to find it...43</p> <p>Too expensive.....44</p> <p>Not convenient to use.....45</p> <p>other _____ 98</p> <p>(to specify)</p>													
58. Would you use a method if you were married, agreed or if you had one at your disposal ?	<table style="width: 100%; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;">1oui</th> <th style="text-align: center;">2non</th> </tr> </thead> <tbody> <tr> <td>Married.....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Available locally.....</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> <tr> <td>None.....</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> </tbody> </table>		1oui	2non	Married.....	1	1	Available locally.....	2	2	None.....	3	3	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	1oui	2non												
Married.....	1	1												
Available locally.....	2	2												
None.....	3	3												
59. (If a woman) Would your husband accept to use a method to delay or limit the number of births in the household ?	<p>Accept.....1</p> <p>Does not accept.....2</p> <p>Is not sure.....3</p> <p>Does not know.....4</p>	<input type="checkbox"/>												
60. If your husband refused the use of such a method while you would like to use it, what would you do ?	<p>Would use it anyway.....1</p> <p>Will not use it.....2</p> <p>Does not know.....3</p>	<input type="checkbox"/>												

<p>61. Have you already heard about sexually transmitted diseases ?</p>	<p>Yes.....1 No.....2</p>	<p><input type="checkbox"/></p>
<p>62. Which diseases are you aware of ?</p>	<p><i>Syphilis (angatra)</i>.....1 Gonorrhea Chlamydia2 AIDS.....3 Other_____98 (to specify)</p>	<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/></p>
<p>63. Have you had one of these diseases in the past two months ?</p>	<p>Yes.....1 No.....2 Does not know.....3</p>	<p><input type="checkbox"/></p>
<p>64. If yes, which ones ?</p>	<p><i>Syphilis (angatra)</i>.....1 Gonorrhea Chlamydia2 AIDS.....3 Other_____98 (to specify)</p>	<p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/><input type="checkbox"/></p>
<p>65. Did you inform your partner ?</p>	<p>Yes.....1 No.....2</p>	<p><input type="checkbox"/></p>
<p>66. Where did you get treatment ?</p>	<p><i>Health centre</i>.....1 Doctor.....2 Pharmacy.....3 Grocery.....4 Healer.....5</p>	<p><input type="checkbox"/></p>

	No treatment.....6	
67. Has your partner been treated ?	Yes.....1 No.....2 Do not know.....3	<input type="checkbox"/>
68. Are you aware of any means to protect you from AIDS ?	Yes.....1 No.....2 Do not know.....3	<input type="checkbox"/>
69. Which are the means that you know to protect you from AIDS?	Abstinence.....1 Fidelity.....2 Condom.....3 Other_____98 (to specify)	<input type="checkbox"/>
70. Do you think AIDS exists in Madagascar ? (if mentioned in question 62)	Yes.....1 No.....2 Does not know.....3	<input type="checkbox"/>

QUESTIONNAIRE 3 : ECONOMIC ACTIVITIES AND AGRICULTURAL PRACTICES

Now I would like to ask you some questions on the revenues earned in the region

71. What is the main economic activity of the household?	Agriculture.....1 Cattle.....2 Fishing.....3 Forestry exploitation.....4 Trade business.....5 Receive a salary.....6 Handcraft.....7	<input type="checkbox"/> <input type="checkbox"/>
--	--	---

	Other_____ 98 (to specify)	
72. Which production technique do you use for your activity ?	Traditional.....1 Tavy.....2 Modern.....3 Other_____ 98 (to specify)	<input type="checkbox"/>
73. Why did you choose this technique ?	Does not know another one.....1 Tradition.....2 Ease.....3 Other_____ 98 (to specify)	<input type="checkbox"/>
74. Is this activity sufficient as yearly household income? <i>(food, children education, health,...)</i>	Sufficient.....1 Not sufficient2 (specify the months financially covered by this activity)	<input type="checkbox"/>
75. In which domains do you spend most of your incomes ? <i>(mark the two main domains)</i>	Food.....1 Health.....2 Children's education.....3 Agricultural inputs.....4 Other_____ 98 (to specify)	<input type="checkbox"/>
76. Would you be for or against the amelioration of your production ?	For.....1 Against.....2 Is not sure.....3	<input type="checkbox"/>
77. If you had the opportunity of developing another kind of income activity, which one would it be ?	SRI/SRA.....1 Beekeeping.....2	<input type="checkbox"/> <input type="checkbox"/>

	Fishing.....3 Small cattle breeding.....4 Agriculture on <i>tanety</i>5 Fruits agriculture.....6 Off-season cultivation.....7 Handcraft..... 8 Other_____98 <i>(to specify)</i>	
78. If you had the opportunity to develop other cash-income activities, which ones would you chose?	Training Extensive/intensive rice cultivation.....11 Beekeeping.....12 Fishing.....13 Agriculture on tanety.....14 Support activities Inputs21 Credit.....22 Material/equipment.....23 Follow-up Supervision.....31 Supervised visits.....32 Other_____98 <i>(to be specify)</i>	<input type="checkbox"/>
79. Where do you think you could sell these products?	<i>Locally</i>1 Outside.....2	<input type="checkbox"/>

80. If you could have access to these activities, would you participate immediately ?	Yes.....1	<input type="checkbox"/>
	No.....2	
	Is not sure.....3	
	Does not know.....8	
81. How many benefits could you potentially gain out of these activities during the first year ?	<i>Ariary</i>	
	Kgs.....	

QUESTIONNAIRE 4 : USE OF NATURAL RESOURCES BY THE LOCAL POPULATION

Now, I would like to ask you questions on regional natural resources

82. Are you aware of the existence of the National Park ?	Yes.....1	<input type="checkbox"/>
	No.....2	
	Not sure.....3	
	Does not know.....8	
83. Has the presence of the park caused you some problems ?	Yes.....1	<input type="checkbox"/>
	No.....2	
	Not sure.....3	
	Does not know.....8	
84. What type of problems do you encounter ?	<i>Insufficiency of natural resources..1</i>	<input type="checkbox"/>
	Income reduction.....2	
	Illegal exploitation.....3	
	Insufficiency of cultivated areas...4	
	Other_____98 (to specify)	
85. For which reasons this park is useful for you?	<i>Building wood</i>1	<input type="checkbox"/>
	Income source.....2	<input type="checkbox"/>
	Hunting.....3	<input type="checkbox"/>

	Collection.....4 Medicinal plants.....5 Other_____98 (to specify)	
86. If you had the opportunity of collecting these products elsewhere, where would you go?	<i>National Park</i>1 Elsewhere if locally.....2 Elsewhere outside.....3 Both.....4 Other_____98 (to specify)	<input type="checkbox"/>
87. If you had the opportunity to participate in activities against the National Park's illegal activities, which ones would you choose ?	<i>Sensitize the communities</i>1 Afforestation2 Stop the tavy.....3 Adopt alternative activities4 Other_____98 (to specify)	<input type="checkbox"/>
88. Which advantages could the Park protection bring to the household, for the community ?	<i>Household</i>	
	<i>Community</i>	

INTERVIEW NEAR BY PUBLIC INSTITUTIONS/LOCAL AUTHORITIES

QUESTIONNAIRE 5 : INFORMATION ON BASIC INFRASTRUCTURES

<p>1. Existence of Public Institutions ?</p>	<p align="right">1 yes 2</p> <p>no</p> <p>Health centre.....1 1</p> <p>Agricultural service.....2 2</p> <p>Seeds centre.....3 3</p> <p><i>Cattle centre</i>.....4 4</p> <p>Water and forests service....5 5</p> <p>Agricultural inputs sale6 6</p> <p>Pharmacy.....7 7</p> <p>Schools.....8 8</p> <p>High school.....9 9</p> <p>Security service.....10 10</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
<p>2. Infrastructure use?</p>	<p align="right">1 yes 2</p> <p>no</p> <p>Health centre.....1 1</p> <p>Agricultural centre.....2 2</p> <p>Seeds centre.....3 3</p> <p><i>Cattle service</i>.....4 4</p> <p>Water and forests service....5 5</p> <p>Agricultural inputs sale.....6 6</p> <p>Pharmacy.....7 7</p> <p>Schools8 8</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>

	High school9 9 Security service10 10	
3. Number of infrastructures ?	Health centre Schools High school	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4. Existing personnel ?	Health centre Doctor..... Paramedics..... Sanitary assistants..... Schools Schools Teachers..... High school teachers..... Agriculture/Cattle breeding/fishing Agriculture..... Cattle breeding..... Fishing..... Water and Forests Forestry agents.....	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Remarks/Observations

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HOUSEHOLD QUESTIONNAIRE 2006 – added questions

QUESTIONNAIRE 1 : SOCIO-DEMOGRAPHIC CHARACTERISTICS OF LOCAL POPULATIONS

3. How many people live in your household ?	Number of persons.....	<input type="text"/> <input type="text"/>
4. How these persons are related to you ?	Spouse(e).....1 Children.....2 Relatives.....3 Brothers/sisters.....4 Other (to specify).....5 (specify the number)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
6. In which village were you before ?	Village..... District..... Region.....	
7. Original village of your spouse ?	Village..... District..... Region.....	
8. Original village of your parents	Father District..... Region..... Mother District..... Region.....	

24. Who is in charge of fetching the water ?	Mother.....1 Father.....2 Children.....3 Others.....4	<input type="checkbox"/>
33. What kind of wood do you use?	Wood..... Palms.....	
40. What kind of wood do you use?	Heating wood..... Charcoal..... (indicate the wood's vernacular name)	
41. Which quantity per year	Quantity..... Does not know.....96 <i>(use the local measurement)</i>	<input type="checkbox"/> <input type="checkbox"/>
43. If 1, localization of the forest	North.....1 NE.....2 E.....3 SE.....4 S.....5 SW.....6 W.....7 NW.....8 Locally.....0	<input type="checkbox"/>
44. How much time does it take to get some wood (to go and come back)	Minutes..... Locally.....0 (to specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
45. Who is mainly in charge of getting the wood?	Mother.....1	<input type="checkbox"/>

	Father.....2	
	Children.....3	
	Other (to specify).....4	

QUESTIONNAIRE 2 : EVOLUTION OF THE SANITARY SITUATION

49. How many of your sons died ? How many of your daughters died?if NONE, NOTE "00"	Deceased sons..... Deceased daughters.....	<input type="checkbox"/> <input type="checkbox"/>
50. For which reasons did they die?	Malaria.....1 Respiratory infections.....2 Diarrhea.....3 Childbirth.....4 Malnutrition.....5 Other (specify).....6	<input type="checkbox"/>
56. What do you usually do when a member of your family is sick ?	Go to the health centre.....1 Liberal doctor.....2 Go to the healer.....3 Self-medication.....4 Other (specify).....5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
59. Would like to have more children ?	No.....0 Yes.....1 Does not know.....98	<input type="checkbox"/> <input type="checkbox"/>
60. If yes, how long would like to wait before having another child	Months.....1 Years.....2 Soon/now.....3	<input type="checkbox"/>

	After the marriage.....4	
	Other (to specify).....5	

QUESTIONNAIRE 3 : ECONOMIC ACTIVITIES AND AGRICULTURAL PRACTICES

81. What is the secondary activity of the household	Agriculture.....1 Cattle breeding.....2 Fishing.....3 Forest exploitation.....4 Business.....5 Salary.....6 Handcraft.....7 Other (to be specify).....8	<input type="checkbox"/>
84. Do you use a modern technique for cultivation ?	No.....0 Yes.....1	<input type="checkbox"/>
85. Why did you choose this mode of production ?	Does not know another one.....1 Tradition.....2 Ease.....3 Other (specify).....4	<input type="checkbox"/> <input type="checkbox"/>
86. Do you practice tavy for exploitation ?	No.....0 Yes.....1	<input type="checkbox"/>
87. Why did you choose this method ?	Does not know another one.....1 By tradition.....2	<input type="checkbox"/> <input type="checkbox"/>

	W.....7 NW.....8 Locally.....0	
90. How many minutes does it take you to go to your exploitation field	Locally.....000 Minutes..... Does not know.....998	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
93. Localization of your Tanimbary (compared to the centre of the village)	North.....1 NE.....2 E.....3 SE.....4 S.....5 SW.....6 W.....7 NW.....8 Locally.....0	<input type="checkbox"/>
90. How many minutes does it take you to go to your exploitation field	Locally.....000 Minutes..... Does not know.....998	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
95. What is the land tenureship ?	Owner.....1 Share-cropping.....2 Tennant farming.....3 Usual owner.....4	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
96. Way of tenureship	Buy.....1 Inheritance.....2 Loan.....3 Other (to specify).....4	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

97. What kind of agricultural products do you cultivate each year?	Rice.....1	<input type="checkbox"/>
	Manioc.....2	<input type="checkbox"/>
	Potatoes.....3	<input type="checkbox"/>
	Bean.....4	<input type="checkbox"/>
	Ground nuts.....5	<input type="checkbox"/>
	Other (to specify).....6	<input type="checkbox"/>
98. What do you do with your harvests ? (ask for the quantity, local measurement)	Self-subsistence.....	<input type="checkbox"/>
	Marketing..... (Give a percent)	<input type="checkbox"/>
99. Where do sell your products?	Locally.....1	<input type="checkbox"/>
	Local market.....2	<input type="checkbox"/>
	Communal market.....3	<input type="checkbox"/>

QUESTIONS ON WORLD HERITAGE		
108. What is the richness of your region ?		
109. For you, what does World Heritage mean ?		
110. Have you participated in WH activities?	No.....0	<input type="checkbox"/>
	Yes.....1	<input type="checkbox"/>
	Not sure.....96	
111. If yes, which ones?	EPT.....1	<input type="checkbox"/>
	JSI.....2	
	Both.....3	

111.a. Since you have followed WH activities, what have you obtained?	<i>None</i>0 <i>Augmentation of cultivation lands</i> .1 Augmentation of agricultural production.....2 Augmentation of incomes.....3	<input type="checkbox"/>
111.b. If 1 how much?	<i>Supplementary land</i> Horaka.....1 Tanety.....2 Tanimboly.....3 <i>(use the local measure)</i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
111.c. If 2 how much?	<i>Supplementary kilo</i> <i>(use the local measurement)</i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
111.d. If 3 how many?	<i>Supplementary Ariary</i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
112. In your opinion, are WH activities beneficial for the community ?	<i>No</i>0 Yes.....1 Does not know.....98	<input type="checkbox"/> <input type="checkbox"/>
113. For which reasons ?		
114. What do you suggest for ameliorating these activities ?		
115. What does that mean to you : to protect the environment?		

QUESTIONNAIRE 4 : USE OF NATURAL RESOURCES BY THE LOCAL POPULATION

116. Are you aware of the existence of the Midongy-Befotaka Park?	Yes.....1 No.....2 Not sure.....96	<input type="checkbox"/> <input type="checkbox"/>
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117. For which reason is this Park useful for you ?	<i>None</i>0 <i>Construction wood</i>1 Incomes.....2 Hunting.....3 Collection.....4 Medicinal plants.....5 Other (to specify).....6	<input type="checkbox"/>
118. What do you do with the products collected in the Park ?	<i>Household consumption</i>1 Marketing.....2 <i>Health and treatment</i>3	<input type="checkbox"/>
119. Which products give you more money	<i>None</i>0 <i>Construction wood</i>1 Handicraft wood.....2 Plank.....3 Fuel.....4 Fruits.....5 Animals.....6 Bamboo/Palms/Reeds.....7 Medicinal plants.....8 <i>Other</i>9	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
120. In your opinion, has this forest changed since you have known it ?	No.....0 Yes.....1 Not sure.....96	<input type="checkbox"/> <input type="checkbox"/>
121.If yes, why ?	Forest degradation.....1 Less big trees.....2	<input type="checkbox"/>

	Less animals.....3	
	Others (to specify).....4	

124. For each product collected in the forest, which quantity do you take per year, how many times and during which season ?

Construction wood

Quantity (number/building)

Frequency ()

Dry season.....1

Rainy season.....2

All year.....3

Plank

Quantity (number/building)

Frequency ()

Dry season.....1

Rainy season.....2

All year.....3

Fuel

Quantity (number/building)

Frequency ()

Dry season.....1

Rainy season.....2

All year.....3

Fruits

Quantity (number/building)

Frequency ()

Dry season.....1

Rainy season.....2

	All year.....3	
	<i>Animals</i>	<input type="checkbox"/> <input type="checkbox"/>
	Quantity (number/building)	
	Frequency ()	
	Dry season.....1	<input type="checkbox"/>
	Rainy season.....2	
	All year.....3	
	<i>Bamboo</i>	<input type="checkbox"/> <input type="checkbox"/>
	Quantity (number/building)	
	Frequency ()	
	Dry season.....1	<input type="checkbox"/>
	Rainy season.....2	
	All year.....3	
	<i>Medicinal plants</i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Quantity (number/building)	
	Frequency ()	
	Dry season.....1	<input type="checkbox"/>
	Rainy season.....2	
	All year.....3	

HOUSEHOLD QUESTIONNAIRE 2007 – added questions

QUESTIONNAIRE 1 : SOCIO-DEMOGRAPHIC CHARACTERISTICS OF LOCAL POPULATIONS

10.b. And your spouse ?	No.....0 No (formal).....1 Yes (informal).....2	<input type="checkbox"/>						
11.b. And your spouse ?	None.....0 Primary.....1 Secondary 1 st cycle.....2 Secondary 2 nd cycle.....3 High school.....4	<input type="checkbox"/>						
12.b. And your spouse ?	11°..... 10°..... 9°..... 8°..... 7°.....	<input type="checkbox"/>						
13.b. And your spouse ?	No.....0 Yes.....1	<input type="checkbox"/>						
14.b. And your spouse ?	Not at all.....0 With difficulty.....1 Easily.....2	<input type="checkbox"/>						
18.If 1, where do you listen to the radio ?	At home.....11 At the neighbor's house.....12	<table border="1" style="margin: auto;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>						

	Community radio.....13	
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34. Frequency of the construction or restoration of your house ?	Year.....	<input type="checkbox"/> <input type="checkbox"/>
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QUESTIONNAIRE 3 : ECONOMIC ACTIVITIES AND AGRICULTURAL PRACTICES

83. Monthly incomes of the household	Inferior to 53 000 ar.....1 Superior to 53 000 ar.....2	<input type="checkbox"/>
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QUESTIONS ON WORLD HERITAGE		
102. What is the richness of your region ?		
103. For you, what signifies World Heritage?		
104. Have you participated in WH activities?	No.....0 Yes.....1 Not sure.....96	<input type="checkbox"/> <input type="checkbox"/>
105. If 1, which ones?	<i>EPT</i>1 <i>JSI</i>2 Both.....3	<input type="checkbox"/>
105.a. since you have participated to WH activities, what did you gain ?	<i>Nothing</i>0 <i>Augmentation of cultivable land</i> ...1 Augmentation of agricultural production.....2 Augmentation of incomes.....3	<input type="checkbox"/>
105.b. If 1, how many ?	<i>Augmentation of cultivable land</i> Horaka.....1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

	Tanety.....2 Tanimboly.....3 (use local measurement)	
105.c. If 2, how many ?	Additional Kilo (use local measurement)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
105.d. If 3, how many additional ariary	Additional Ariary	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
106. For you, are WH activities beneficial for the community?	No.....0 Yes.....1 Does not know.....98	<input type="checkbox"/> <input type="checkbox"/>
107. For what reasons ?		
108. Which idea would you propose to improve the results?		
109. For you, what signifies the environment?		