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IMPLEMENTATION COMPLETION REPORT
(IF-N0090)

ON A

CREDIT

IN THE AMOUNT OF US$ 30 MILLION

TO

MADAGASCAR

FOR

THE ENVIRONMENT PROGRAM PHASE II PROJECT

(P001537 & P040596)

December 2003

Environment & Social Development Department

Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective)

Currency Unit = Malagasy Franc (FMG)
US$ 1 = 4,200

FISCAL YEAR

ABBREVIATIONS AND ACRONYMS

AGERAS	Support to Regional Programming and Spatial Analysis
AGEX	Implementing Agency
AGIR	Regional and Local Environment Management Support Component
ANAE	National Association for Environment Management Support Component
ANGAP	National Association for the Management of Protected Areas
AP	Potected Areas
CAPE	Protected Areas and Ecotourism Component
CARE	International NGO
CAS	Country Assistance Strategy
CFSIGE	Environment Information Training Center
CI	Conservation International, an International NGO
CIRAD	French International Center for Research
CITES	
CIME	
CNE	
DCA	Development Credit Agreement
DD	Land Tilting Directorate
DGEF	Water and Forests Directorate
DO	Development Objective
EIA	Environmental Impact Assessment
EMC	
EP 1, 2 , 3	Environment Program Phase 1, 2, 3
ERR	Economic Rate of Return
ESFUM	Multiple-Use Forest Ecosystems
EU	European Union
FOFIFA	Malagasy Agricultural Research Institute
FORAGE	Regional Fund for Environment Management
FTM	National Geographic Institute
GCF	Forest Management under contract to local communities
GEF	Global Environment Facility
GELOSE	Management by local communities accompanied by granting relative land security
GOM	Government of Madagascar
ICB	International Competitive Bidding
ICR	Implementation Completion Report
IFAD	International Fund for Agricultural Development
IP	Implementation Progress
IRD	French Institute for Research and Development

MDS	Multi-Donor Secretariat
MECIE	
NCB	National Competitive Bidding
NEAP	National Environmental Action Plan
NGO	Non-Governmental Organization
NRM	Natural Resources Management
ONE	National Environment Office
OSF	Forestry Sector Observatory
PADR	Action Plan for Rural Development
PRSP	Poverty Reduction Strategy Paper
PSDR	Project to Support Rural Development
PZ	Priority Zone
QAG	Quality Assessment Group
SAGE	Service d'Appui à la Gestion de l'Environnement
SAR	Staff Appraisal Report
SIL	Single Investment Loan
TA	Technical Assistance
Tavy	Slash and burn agriculture
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VAN	Actual Net Value
WCS	World Conservation Society
WWF	World Wide Fund for Nature
IFAD	

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MADAGASCAR
ENVIRONMENT PROGRAM PHASE II PROJECT

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Project ID: P001537	*Project Name:* ENVIRON. II
Team Leader: Bienvenu Rajaonson	*TL Unit:* AFTES
ICR Type: Core ICR	*Report Date: June 10, 2004*

1. Project Data

Name: ENVIRON. II
L/C/TF Number: IF-N0090
Country/Department: MADAGASCAR
Region: Africa Regional Office

Sector/subsector: General agriculture, fishing and forestry sector (100%)
Theme: Water resource management (P); Biodiversity (P); Environmental policies and institutions (P); Land management (P); Civic engagement, participation and community driven development (P)

KEY DATES		*Original*	*Revised/Actual*
PCD:	05/18/1995	*Effective:*	02/01/1997	06/12/1997
Appraisal:	06/01/1996	*MTR:*	11/01/1999	05/29/2000
Approval:	01/09/1997	*Closing:*	06/30/2002	06/30/2003

Borrower/Implementing Agency: REPUBLIC OF MADAGASCAR/NATIONAL ENVIRONMENT OFFICE
Other Partners: Various National Agencies; Mulilateral donors: EU, GEF, IFAD, UNDP, World Bank; Bilateral donors: The Netherlands, France, Germany, Japan, Norway, Switzerland, USAID; International NGOs: WWF, IUCN,

STAFF	Current	At Appraisal
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2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome: S
Sustainability: L
Institutional Development Impact: SU
Bank Performance: S
Borrower Performance: S

	QAG (if available)	ICR
Quality at Entry:	S	U
Project at Risk at Any Time:	Yes	

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective:

The Environment Program Phase 2 Project (EP2) was the second phase of a fifteen year, three-phase, US$ 410 million program implementing the 1998 Malagasy National Environment Action Plan (NEAP). The first implementation phase (EP1) was implemented between 1991 and 1996 at the cost of US$ 110 million. It focused on biodiversity conservation in protected areas. The second phase – discussed in this ICR – was implemented between 1997 and 2003 at the cost of 150 million. It focused on integrating biodiversity conservation with development . The final third phase (EP3), is prepared for 2004 – 2008, again at the cost of US$ 150 million. It will focus on mainstreaming conservation into macroeconomic management and sectors programs and establishing sustainable conservation financing mechanisms.

All three phases of the environment program are marked by the effort of a multitude of donors to support conservation of some of the world's most remarkable biodiversity in one of the world's poorest economies.

The original development objectives of EP2 were to (i) reverse current environmental degradation trends and to promote sustainable use of natural resources, including soil, water, forest cover, and biodiversity; and (ii) to create conditions for environmental considerations to become an integral part of macroeconomic and sectoral management of the country.

The EP2 objectives were highly responsive to Madagascar circumstances of continued environmental degradation and the need to preserve economically valuable and globally unique biodiversity and other natural resources. They were supported by the 1994 Country Assistance Strategy (CAS) and its 1996 revision. They were also reflected in the 2000 Madagascar Interim Poverty Reduction Strategy Paper (IPRSP). Finally, the EP2 objectives were consistent with the priorities of a large number of donors – including multilateral donors such as EU, GEF, IFAD and UNDP; bilateral donors such as USA, France, Germany, Japan, Norway, Switzerland and the Netherlands; and international NGOs such as WWF, CI, WCS, Care International – who contributed substantial resources – US$ 65.05 million toward its implementation.

The objectives, however, as presented in the Staff Appraisal Report (SAR), were misstated, contradicting the remainder of the SAR as well as some other key project documents. First, they suggested that EP2 will reverse environmental degradation, when, in fact, EP2 aimed only to reduce it. Second, they implied that EP2 will focus on all of Madagascar, when, except the sector policies, it focused only on selected geographic target areas. The lack of clarity in formulating the PDO was also reflected in the project design and affected its implementation.

Design :

The EP2 design was conceptually strong – in fact, the Quality at Entry Assesment (QEA) considered some elements of the design as best practice – but it lacked realistic work program and practical implementation arrangements. The strong aspects of EP2 were long-term approach; donor coordination; and linking biodiversity conservation with the development agenda.

The long-term, programmatic approach which EP1 launched, and EP2 sustained, is key in addressing long-term, complex issues of environmental degradation. While the NEAP implementation programs in other countries commonly started as long-term multi-phased undertakings, they seldom lasted beyond the first (usually five-year) phase and left most of their agenda unresolved. EP2 was a rare exception of a NEAP-inspired project that continued to pursue the original long-term agenda and brought it to the final phase under the upcoming EP3. Appropriately for a long-term approach, EP2 was designed flexibly, with annual programming and budgeting reviews allowing the project to adjust its focus and operations as necessary.

The focus on systematic donor collaboration – especially through the active Multi-Donor Secretariat and joint preparation and supervision missions – helped to ensure continued and coordinated donor support during EP2. Experience from similar projects elsewhere, e.g., Zambia and Malawi, showed that poor donor coordination can quickly lead to funding disruptions, abandoning of critical components or inefficient use of financial resources by the government.

The multi-sector, comprehensive approach that EP2 adopted went beyond the narrow biodiversity conservation focus of EP1 and focused on links between biodiversity conservation and natural resource management on one side and rural development and economic development in natural resource based sectors – e.g., tourism and forestry – on the other. Such an approach is important in the effort to sustainably capture the economic potential of Madagascar's unique natural resource endowment for the country's development.

EP2 design also had a number of negative aspects, especially regarding realism of work programming and practicality of implementation. As Quality Enhancement Review (QER) in February 2001 noted, EP2 – with fourteen components and seven implementing agencies – was too complex to understand easily or implement efficiently. The strain from design complexity on implementation was made worse by a lack of an adequate monitoring and evaluation system that would have allowed to determine progress, identify problems and guide adjustments. In addition, missing links between the ambitious objectives and targets of the program and the specific outputs of annual work programs made it difficult for the implementing agencies to understand how the short-term actions relate to long-term objectives. Finally, an inadequate reporting regime under EP2 failed to provide the management information needed for steering and supervising such a complex operation.

3.2 Revised Objective:

The project development objectives (PDO) underwent a revision in March 2001, following the Mid-term Review (MTR) and QER. The revised objectives were to (i) increase the sustainable use of natural resources, including soil, forest cover and biodiversity in target areas; and (ii) establish conditions for mainstreaming sustainable environmental and natural resources management at the national level.

The revision was motivated by an effort to address the confusing presentation of the original PDO in the SAR and present the objectives so that they more clearly and realistically reflect the

outcomes that EP2 was designed to deliver. The revision consisted of two changes. The first was removing the introductory statement that EP2 will "reverse the current environmental degradation trend", which contradicted the rest of the EP2 SAR discussion of project objectives. The SAR correctly points out that EP2 "...will not be able to stop environmental degradation altogether or to reverse it." Rather, the program "has to be understood as one that will endow the country with the capacity to manage its environmental resources more effectively and reduce the rate at which its natural resources are being depleted." The reversal of environmental degradation was the goal of the entire 15 year program, not EP2. The second change was specifying that the project's effort to increase sustainable use of natural resources was limited to selected target areas.

It is important to note that the PDO revision did not affect the intended direction or scope of the project; rather it brought the formulation of the PDO in line with what the project had set out to achieve.

3.3 Original Components:

Originally, EP2 had fourteen components organized in three sets of activities: (i) field operations; (ii) strategic activities; and (iii) support activities.

Set I. Field Operations :

Field operations involved the following four components.

Sub-set 1. Specialized Sub-sector Activities (corresponding to about 80% of EP2 cost)

Component 1. Sustainable Soil and Water Management (ANAE) (US$ 43.5 million)
The focus of this component was the implementation of 4,000 community level mini-projects on soil, water and land management. The implementing agency for the component was ANAE.

Component 2. Multiple-use Forest Ecosystem Management (ESFUM) (US$ 29.9 million)
The focus of this component was improving management of gazetted forest reserves and community forests as well as reorganization and strengthening of the forestry department. The implementing agency for the component was the forestry department.

Component 3. National Parks and Ecotourism (CAPE) (US$ 43.1 million)
The focus of this component was expanding the protected area network and improving the capacity for their management. The implementing agency for the component was the national park service (ANAE).

Component 4. Marine and Coastal Environment (EMC) (US$ 6.6 million)
The focus of this component was formulating of policies for management of coastal and marine zones and improvement of the relevant legal framework.

Sub-set 2. Regional Programming and Local Management (AGIR)

This sub-set comprised the following three components:

Component 5. Support to Local Natural Resource Management and Land Tenure Security (GELOSE) (US$ 6.9 million)
The focus of this component was to set-up the appropriate legal and regulatory framework for the transfer of management from state to communities, and test the implementation of the management transfer for about 150-200 villages.

Component 6. Support to Regional Programming and Spatial Analysis (AGERAS) (US$ 4.3 million)
The focus of this component was establishing six regional technical units to provide support to EP2 Regional Programming Committees (RPCs), and to formulate local environmental strategies and sub-projects financed by the Regional Fund.

Component 7. Regional Fund for Environmental Management (FORAGE) (US$ 3.3 million)
The focus of this component was to finance environmental management activities on a demand-driven basis.

Set II. Strategic Activities (US$ 4.2 million):
This set had the following two components:

Component 8. Upgrading of the Legal Framework and Formulation of Environmental Policies (US$ 2.8 million)
This component included upgrading of the legal and regulatory framework and development and adoption of environmental policies, strategies and instruments.

Component 9. Assisting Sector Ministries in Implementing Policies and Making Environmental Impact Assessment (EIA) Operational (US$ 1.4 million)
This component focused on strengthening EIA regulations and procedures and establishment of environmental units within the sectoral ministries.

Set III. Support Activities
This set had the following five components :

Component 10. Research (US$ 2.5 million)
The focus of this component was to establish a research coordination committee to identify priority research areas and support applied environmental and biodiversity research. The implementing agency for the component was ONE.

Component 11. Education and Training (US$ 2.0 million)
The focus of this component was to improve the environmental content in general education, as well as in vocational training. The implementing agency for this component was CFSIGE.

Component 12. Geographic Instruments (US$ 1.2 million)
The focus of this component was to build geographic information system (GIS) capacity to

produce key geographic information. The implementing agency of this component was FTM.

Component 13. Environmental Information System (US$ 1.7 million)
The component focused on building capacity of various environmental management agencies to produce and exchange information necessary for informed environmental management.

Component 14. Communication, Monitoring, Evaluation, Program Coordination and Management (US$ 5.8 million)
The focus of this component was to support operation of ONE and other coordinating bodies such as the National Environment Council and the Interministerial and Steering Committees.

3.4 Revised Components:

Restructuring and simplification of the project in 2001 resulted in regrouping and reducing the original components into the following four revised components:

Component 1. Sustainable Soil and Water Management in Priority Target Zones (US$ 29.53 million)
Component 1 after project restructuring remained as originally designed. It focused on increasing the capacity of the rural population to sustainably manage natural resources, particularly land (soil) and water. The main interventions under the component were 4,000 community and family mini-projects in 500 target communes (districts). It included the establishment of watershed management schemes.

Component 2. Forest Eco-systems Management (US$ 24.02 million)
Component 2 after project restructuring remained as originally designed. It focused on improving the management of forest ecosystems by transferring about 150,000 hectares of forests under the management to the communities and bringing about 580,000 hectares of forests under multiple-use management schemes.

Component 3. Protected Areas Management (US$ 56.93 million)
Component 3 after project restructuring remained as originally designed. It focused on expanding the protected area system to achieve more comprehensive protection of Madagascar's representative ecosystems. It also focused on improving protected areas management through institutional strengthening of the management agency (ANGAP) and through greater involvement of communities.

Component 4. Environmental Policies and Institutions (US$ 39.36 million)
Component 4 underwent significant changes during project restructuring. The revised component took over key activities of several original components, including the Environmental Information System component, EIA component, and Environmental Education component. The thrust of the revised component 4 was to (i) to develop a legal and regulatory framework for environmental management; and (ii) to strengthen regional environmental planning and management including the Environment Management Support Services Agency (SAGE).

The relationship between the original and revised components is summarized in the following table.

ORIGINAL COMPONENTS (Implementing Agency)	**CHANGE AT RESTRUCTURING**	**REVISED COMPONENTS** (Implementing Agency)
Component 1 Sustainable Soil and Water Management (ANAE) USD 43.5 Million	Transformed into the revised Component 1	***Revised Component 1*** Sustainable Soil and Water Management in Priority Target Zones USD 29.53 million (ANAE)
Component 2 Multiple-use Forest Ecosystem Management (ESFUM) USD 29.9 million (Forestry Department)	Transformed into the revised Component 2	***Revised Component 2*** Multiple Use Forest Eco-system Management USD 24.02 million (Forestry Department)
Component 3 National Parks and Ecotourism (CAPE) USD 43.1 million (ANGAP)	Transformed into the revised Component 3	***Revised Component 3*** Protected Areas Management USD 56.93 million (ANGAP)
Component 4 Marine and Coastal Environment (EMC) USD 6.6 million (ONE)	Partly absorbed under the revised Component 4, implemented by Services d'Appui à la Gestion de l'Environnement (SAGE)	
Component 5 Support to Local Natural Resource Management and Land Tenure Security (GELOSE) USD 6.9 million (ONE, Land Tenure Department)	Partly absorbed under the revised Component 4, implemented by SAGE; Land Tenure Department activities dropped	
Component 6 Support to Regional Programming and Spatial Analysis (AGERAS) USD 4.3 million (ONE)	Partly absorbed under the revised Component 4, implemented by SAGE	
Component 7 Regional Fund for Environmental Management (FORAGE) USD 3.3 million (ANAE)	Dropped	
Component 8 Upgrading of the Legal Framework and Formulation of Environmental Policies USD 2.8 million (ONE)	Transformed into the revised Component 4, implemented by ONE and MOE	***Revised Component 4*** Environmental Policies and Institutions USD 39.36 million (ONE)
Component 9 Assisting Sector Ministries in Implementing Policies and Making Environmental Impact Assessment Operational USD 1.4 million (ONE)	Partly absorbed under the revised Component 4, implemented by ONE and MOE	
Component 10 Research USD 2.5 million (ONE)	Partly absorbed under the revised Component 4, implemented by	

	SAGE	
Component 11 Education-Training USD 2 million (CFSIGE)	Thematic training and its implementing agency, CFSIGE, dropped. Environmental Education absorbed under the revised Component 4, implemented by MOE	
Component 12 Geographic Instruments USD 1.2 million (FTM)	Dropped	
Component 13 Environmental Information System USD 1.7 million (ONE)	Partly absorbed under the revised Component 4, implemented by ONE	
Component 14 Communication, Monitoring, Evaluation, Program Coordination and Management USD 5.8 million (ONE)	Partly absorbed under the revised Component 4, implemented by ONE	

3.5 Quality at Entry:

Quality of the project at entry is rated as unsatisfactory. While the project was conceptually and technically progressive and well-timed, it had significant weaknesses that hampered its implementation. In particular, the inaccurate and inconsistent presentation of project objectives created unnecessary confusion among the implementing agencies; its complex and impractical design lead to serious implementation difficulties; its economic analysis was incomplete and weak; and its monitoring and evaluation system provided little information for project management.

This retrospective assessment of the project quality at entry differs from the contemporary assessment by the Quality Assurance Group (QAG). In 1998, (QAG) carried out a quality at entry assessment (QEA) and rated EP2 as satisfactory, with elements of best practice in project concept, objectives, approach, technical analysis, participatory process and readiness for implementation. QEA considered EP2 design an improvement on EP1, particularly because of the move beyond the traditional protected areas approach, and focus on integration of sustainable resource use with development.

QEA commended EP2 for its progressive features including the following: (i) programmatic approach that addressed environmental degradation – such as deforestation, bush fires, soil erosion, land degradation and loss of biodiversity – through targeting their root causes, such as extreme rural poverty, low agricultural production, and high population pressure in ecologically sensitive areas; (ii) institutional capacity building through developing capacities in the new environmental management agencies including national park service (ANGAP), environmental protection agency (ONE) and soils and water conservation agency (ANAE), and through establishing the Multi-donor Secretariat to coordinate donor support for environmental

management; and (iii) flexibility and adaptability built into the project design through participatory and well structured annual programming and budgeting process that included both donors and implementing agencies.

It is important to note that the focus of the 1998 QEA was on biodiversity conservation projects, and the biodiversity conservation aspects in EP2 were indeed strong. Nonetheless, the QEA concluded that the project had "great promise and great flaws", and recommended addressing several internal problems including "clarifying goals, specifying realistic objectives, broadening commitment, and realizing some quick, visible outcomes which benefit affected people."

In 2001, a Quality Enhancement Review (QER) broadly reflected the QEA views of the project mixed design quality. It recognized that the Madagascar Environment Program was "notable for its innovative and far-sighted approach" which encompassed long-term support for institutional development and environmental management; collaborative and coordinated interaction of donors; programmatic, comprehensive and cross-sectoral approach; and flexibility, adaptability and learning. QER highlighted the progressive nature the environment program by observing that it: "in some respects, adopted the approach of a Comprehensive Development Framework before there was a CDF, an Adaptable Program Loan before there were APLs and a Learning and Innovation Loan before there were LILs."

Nonetheless, QEA was critical of four EP2 shortcomings. First, EP2 was not sufficiently integrated – either in terms of Bank or Government staff cooperation or in terms of links between EP2 work program and Bank's rural development strategy – into the broader rural development agenda in Madagascar.

Second, the semi-autonomous parastatal implementing agencies established under EP1 and strengthened under EP2 attracted competitive staff away from the line ministries responsible for rural development and environment. The agencies absorbed as much money as all four ministries responsible for rural development (agriculture, water and forests, fisheries, and livestock) together. The new Ministry of Environment was involved in EP2 only marginally while the EP2-supported environmental protection agency (ONE) grew considerably.

Third, EP2's original objective as presented in the SAR was unrealistic and its original quantitative targets were ambitious and not sufficiently linked with EP2 objectives or ultimate goals of the entire 15 year environment program. Importantly, EP2 did not have adequate interim benchmarks or performance measures that would allow periodic monitoring of its progress towards the achievement of targets and accomplishment of objectives. Finally, the originally envisaged EP2 work program was beyond the implementation capacity of EP2 agencies.

Fourth, EP2 lacked genuine local and community level ownership. While it generated substantial support from the Malagasy executing agencies, and included extensive regional consultations on some design aspects, e.g., selection of biodiversity priority conservation zones, it did not generate sufficient tangible benefits to improve welfare – and generate genuine local ownership – on the ground

Although some of shortcomings of EP2 quality at entry were not avoidable (e.g., there are few effective alternatives to establishment of semi-autonomous implementing agencies to ensure effective program implementation), many of the key shortcomings, e.g. unclear objectives, ineffective monitoring and evaluation system and complex should have been addressed before project's entry into implementation. In retrospect, these shortcomings outweigh the progressive design features and earn an unsatisfactory rating of the quality at entry.

4. Achievement of Objective and Outputs

4.1 Outcome/achievement of objective:

The achievement of EP2 objectives was satisfactory. Measured against the key performance indicators, EP2 largely met or exceeded the planned targets and brought significant accomplishments in both (i) increasing the sustainable use of natural resources in target areas; and (ii) establishing conditions for mainstreaming sustainable environmental and natural resources management at the national level. There were several areas, however, particularly in regard to the second objective, where EP2 achievements remained short of targets.

In respect to the first objective – increasing the sustainable use of natural resources (e.g., soil, forests, biodiversity) in the target areas – EP2 achievements were satisfactory. Concerning **forest and land management**, EP2 substantially contributed to reducing the deforestation. The NASA satellite imagery and the decadal deforestation map constructed by Conservation International show that deforestation rate in protected areas is four times lower than outside the parks. Importantly – both for confirming the positive impact of EP2 and guiding the future interventions under EP2 – an ongoing multivariate analysis of the data by UC Berkeley, Conservation International and the World Bank suggests that the relationship between the parks effect and decreased deforestation is causal, and cannot be explained just by the placement of parks in less accessible or agriculturally less attractive areas. EP2 interventions also contributed to controlling the incidence of unsustainable slash-and-burn tavy agriculture in the target areas. Tavy incidence decreased by 72% during the first 4 years of the project.

Following EP2 mix of interventions promoting **conservation agriculture and soil management**, soil erosion diminished from the prevailing 8 tons per hectare to 1.6 ton per hectare annually, a substantial 80% decrease while the agricultural productivity remained stable or increased. This reduction is particularly valuable given that the target areas were areas selected because of their high population, high soil vulnerability and sizeable agricultural sector.

Conservation agriculture lead to improved soil fertility as measured over a three-year period (1997-2000). Particularly significant was increase of soil fertility on soils applying direct sowing with (zero tilling) with permanent or seasonal soil cover. In these soils, the activity and content in soil fauna increased, soil humus content improved, soil compaction diminished and soil structure improved. The thickness of top soils increased from 10-15 cm to 20-25 cm. A soil analysis of basic nutrients showed that organic matter content increased by 45%, nitrogen by 440%, phosphorus by 600% and potassium by 218%. Improved soil fertility contributed to improved yields for green beans, soybean, maize, and rain-fed rice which showed a yield increase of 99%, 170%, 201%, and 188%, respectively when compared to typical yields under traditional farming

methods.

The improved use of forest resources in the target areas reduced degradation of sensitive ecosystems and decelerated the loss of **biodiversity**. Measured through a biodiversity index, the loss of biodiversity diminished from a level of 1.66% to a level of 0.62% during EP2. The expansion of the protected areas based tourism that EP2 catalyzed strengthened the sustainable, non-consumptive uses of biodiversity resources and demonstrated potential to generate new revenues while meeting global conservation objectives.

In respect to the second objective – establishing conditions for mainstreaming sustainable environmental and natural resources management at the national level (e.g, through improved local practices, national policy reform, environmental management, environmental education) – the achievements were also satisfactory. Awareness of government authorities, local communities, and civic society about environmental protection and biodiversity conservation is high. The target communities in different areas, e.g. Fianarantsoa, Sakatia, Montagne d'Ambre, have perceptibly changed their approach to environment and use of natural resources away from unsustainable practices towards seeking more livelihoods that are more sustainable and derive greater value from the natural assets, such as improved agriculture, handicraft work and ecotourism. The challenge remains to sustain the positive changes without continued support of donor funds and technical assistance.

Policy reform to mainstream environmental considerations into economic sectors with greatest impacts on the environment have advanced substantially in mining, fisheries, aquaculture and industry sectors. Under EP2, the government approved and implemented key new policies, including policy on protected areas (POAP), policy on integrated marine and coastal zone management, national biodiversity management policy, national environmental education policy and environmental policy for road and infrastructure sector.

The policy reform, however, progressed less than planned. Several policies – tourism development policy, intellectual property protection policy, urban development policy and pesticide use policy were drafted, however not adopted or implemented by the government. The forestry policy, which was developed and adopted during EP2 preparation as a condition of EP2 effectiveness, was not adequately implemented. Incomplete progress of the policy reform was a significant shortcoming of EP2.

EP2 supported the strengthening of **environmental management** at various levels through capacity building and support to the regional environmental management offices; creation of regional environmental cells which act as an interlocutor between the government, donors and local communities; transfer of natural resource management to local communities; and transfer of management and budget decisions to the local environmental authorities and the resident staff of protected areas. Importantly for the further mainstreaming of environmental management into national development, EP2 supported adoption of advanced environmental impact assessment (EIA) legislation and improvements to the EIA system. Finally, to streamline institutional arrangements, under EP2 assistance, the two ministries which previously oversaw different aspects of environmental management – the Ministry of the Environment and the Ministry of

Water and Forest Resources – merged into a single institution which enabled better coordination of their activities, and reinforcement of the network of their regional and local offices.

Environmental education during EP2 implementation became integrated in primary and secondary schools and in the curriculum of graduate programs. Staff of agencies working in areas related to the environment received training on environmental management. Environmental considerations have been integrated into the extension services provided through NGOs and GOM staff.

It is important to note that this ICR judges EP2 outcome against the intended project objectives which are captured better by the revised objectives than by the misstated original objectives. While the revised objectives are not significantly different from the misstated original objectives they do present much more accurately the scope of anticipated EP2 activities and accomplishments. Normally, the ICRs judge the project outcomes against the original objectives (except in cases where project objectives were revised due to external factors). In the case of EP2, however, this would inappropriately lead to judging the EP2 achievements against a clearly misstated and unachievable objective – reversal of environmental degradation for all of Madagascar in five years – which, as both the SAR, Memorandum of the Managing Director to the President of IDA (October 28, 1996) and project design suggest, was the objective of the entire fifteen-year program, not of the five-year EP2.

4.2 Outputs by components:

Component 1. Sustainable Soil and Water Management in Priority Target Zones (satisfactory)

This principal output of this component, implemented by the national soil and water management agency (ANAE) was preparation and implementation – through community involvement – of about five thousand mini-projects in 500 target communes. The component implemented four types of mini-projects:

(i) Sustainable management of soil and water resources mini-projects. This type of mini-projects represented 55% of all mini-projects and focused on tanety management – watershed management with anti-erosion measures like terracing, reforestation, gully stabilization and fruit trees planting.

(ii) Diversification and agricultural intensification mini-projects. This type of mini-projects represented 38% of the component and included intensive rice cropping systems (SRI), horticulture, out of season cultivation, small livestock husbandry, forage production, fish farming, rizipisciculture (fish farming in rice paddies), beekeeping, village granaries, stables, composting and green manure fertilization.

(iii) Social program mini-projects. This type of mini-projects represented about 6% of all mini-projects. It included provision of potable water, protection of springs, construction and rehabilitation of wells and markets, promotion of improved cooking stoves, and support for construction, rehabilitation and equipment for schools, rural libraries, environmental awareness and literacy programs.

(iv) Farm production infrastructure mini-projects. These represented about 1% of mini-projects and included construction of small irrigation networks, dams, bridges and rural roads.

The component exceeded its targets, in some instances by several times (see Annex 1). It implemented 5,072 conservation agriculture mini-projects, 1,072 more than planned. The areas where mini-projects applied conservation agriculture technologies reached more than 82 thousand hectares, which was 256% of the target. The number of rural households that participated in mini-projects reached 369,000 which is more than 3.5 times the target. Spontaneous replication of mini-projects outside the areas the component targeted was 25 % higher than anticipated, reaching 75,140 families. Important from the sustainability perspective, a follow up survey indicated that after two years, 96 % of families continued using conservation agriculture methods.

Soil fertility in target areas improved significantly as a result of applying a combination of conservation agriculture technologies, particularly direct sowing, with accompanying increases in yields and total production. Studies of soil under direct sowing with permanent or seasonal soil cover between 1997 and 2000 showed a significant increase in number and activity of soils micro and macro fauna, higher humus content, improved structure and reduced compaction. Soil erosion decreased and the average depth of top soil increased from 10-15 cm to 20-25 cm. Organic matter in the soil increased by about 45%, nitrogen by 440%, phosphorus by 600% and potassium by 218%. Improved soil fertility combined with the use of improved seeds contributed to significantly higher yields. After the first year under direct sowing, yields for green beans, soybean, maize and rainfed rice showed an increase of 99%, 170%, 201% and 188% respectively. Soil erosion in target areas decreased by up to 80%.

Despite the highly satisfactory results, retrospective studies of the components identified several shortcomings. First, the component geographic coverage was out of sync with geographic coverage of the protected areas component (Component 3). Due to the selection criteria – high population, soil erosion and agricultural production – the geographic distribution of the mini-projects was such that the majority was outside the buffer zones of protected areas. While such a geographic distribution facilitated broad dissemination of conservation agriculture know-how, it did not sufficiently enable the capture of potential synergies from coordinating interventions in protected areas and around them. It points to a lack of strategic coordination between the implementing agencies of the two components and a confusion caused by the lose formulation of the original project development objective.

Second, spontaneous adoption of conservation agriculture, while greater than planned, varied according to the type of activity, technology, and socio-economic conditions. Some effective but knowledge-intensive technologies did not lend themselves well for spontaneous replication, e.g., direct sowing or intensive rice systems which require precise water management. Similarly, conservation agriculture technologies which require start up funding are difficult for farmers to adopt without external assistance.

Third, experience showed that promotion of agricultural intensification and emphasis on

conservation, while increasing yields, did not necessarily substitute for unsustainable subsistence agriculture, and that the aggregate impact on food market was limited. Farmers continued to grow food crops under slash and burn systems that required very little labor, rather than buying food stuffs with revenues from cash crops generated under the intensified systems. It appears that system intensification is a necessary, but not sufficient, condition to reduce slash-and-burn agriculture. More emphasis on land tenure security arrangements, improved and enforced slash-and-burn regulations, and better market to ensure adequate supplies of food stuffs at reasonable and predictable prices may be necessary to facilitate an increased adoption of conservation agriculture technologies. The impacts of agricultural intensification appeared too limited to influence the national food market. For example, production of staple food – rice – did not change to the extent where it would affect the level of imports or market prices.

Fourth, mini-project cost recovery was not feasible, making the mini-projects a difficult development proposition outside of the donor funded interventions. Mini-project cost recovery, when tested in 2002 on inputs such as seeds, pesticides and small equipment was not successful. Only 17% of costs were recovered. A number of factors contributed to this, including the fact that the mini-project beneficiaries were mainly among the poorest, least willing to return the input costs; mini-project facilitators responsible to collect the funds were not motivated, especially since cost-recovery was usually scheduled at the end of the project; and some mini-projects failed to bring sufficient returns.

Fifth, while conservation agriculture mini-projects exceeded their quantitative targets in terms of their number, area, and households reached, their quality varied depending on the quality of facilitators engaged in mini-project preparation and implementation. Economic benefits of mini-projects depended on the crop and access to market and also varied widely from one geographical area to another. Economic benefits also varied with the type of mini-project (see section 4.3 for additional discussion of costs and benefits of mini-projects).

Component 2. Forest Eco-system Management (satisfactory)

The key outputs of this component were (i) transfer of management of selected forest areas to local communities in target areas; and (ii) strengthening of the forest management capacity at the national level. To facilitate transfer of forest management to communities in target areas, the component supported participatory development and implementation of natural resource management plans for about 320,000 hectares of forests – 20% below the target. It also supported development and implementation of forest management plans for 180,000 ha in four pilot gazetted forest reserves – which was 100% of the target.

In the target areas, the component also rolled out a pilot program on community forest management (GELOSE). The pilot involved 278 villages and encompassed 174,132 ha, exceeding the targeted number of villages by 39% and the targeted area by 16%. The communities and the government prepared 200 natural resource management transfer contracts which are under implementation. The concept of transferring natural resource management to local communities was well accepted by all key stakeholders and bilateral donors and international NGOs developed a simplified system – the GCF (Gestion Contractuelle des Forêts) – which was

implemented in about 56% of the component area starting in 2001. Overall, the management transfer to communities was successful, although with some shortcomings. For example, the simplified GCF system did not address the issue of land tenure security, which is important for creating conditions for long-term stewardship of natural resources. In some areas the capacity of communities to manage forests was insufficient; in other areas the forest department continued to issue private logging licenses for areas already under community management, which was a breach of the management contract.

At the national level, the component was instrumental in bringing about measures to ameliorate very poor governance situation in the forestry sector where high tolerance for corruption, poor enforcement of forest code and cumbersome regulations were prevalent at project outset. In particular, the component worked with the new government to restate its high level commitment to enhanced forest sector governance. It supported formulation and implementation of a series of specific forest sector action plans. It supported establishment of a Forestry Sector Observatory (OSF), an independent, multi-stakeholder watchdog to oversee the sector and identify areas in need of management improvements. It also supported review of logging contracts, cancellation of illegal contracts and legal contracts in arrears, and restructuring of payment arrangements with operators in good standing. As a result, the fee collection from logging permits increased from 17% to 68%. Finally, the component supported strengthening of the controls for endangered species exploitation and export, which were implemented in 2002 in response to Madagascar's non-compliance with CITES in 2000 and 2001.

Considering the poor situation in the sector that the component had to address with insufficient support from the previous cabinet, good outputs in the target areas and successful implementation of important governance measures, the component is rated satisfactory. The sector, however, remains in need of a continued reform and additional increase of the national capacity for forest resources management.

Component 3. Protected Areas Management (satisfactory)

The key outputs of this component were (i) expansion of the protected area system; (ii) improved capacity of the national park service (ANGAP) for protected area management; and (iii) promotion of ecotourism.

The system of protected areas grew from 21 areas established under EP1 to 46 areas under EP2. At the end of EP2, protected areas covered roughly 3% of the country's total area and 15% of the country's forests. ANGAP directly managed thirty eight of these protected areas – one short of the target – and oversaw others indirectly through management agreements with international NGOs. The protected areas under ANGAP's direct management included areas that were initially established as stand-alone conservation projects and brought under the national system of protected areas during EP2.

The capacity for protected area management increased significantly although less than anticipated. The IUCN independent assessment of ANGAP – based on parameters such as staff qualifications, adequacy of equipment, bushfire prevention, community involvement, patrolling regime and

human pressure within protected areas – rated the ANGAP management capacity as satisfactory in twelve protected areas, including the Madagascar's five most popular national parks which generate the majority of the revenues from ecotourism. IUCN rated the management of another 3 protected areas as average, while in 23 recently established areas the management was found marginal. Staffing and management planning was adequate in most protected areas, including the recently established ones. The weak aspect was the availability of equipment and vehicles, particularly in the new protected areas, which suggests that expansion of the protected area system somewhat outpaced the funding for the proper management regime.

Improvements in capacity for protected areas management was reflected in improvement of two key indicators – tavy incidence and biodiversity index. The incidence of slash-and-burn (tavy) encroachment in the protected areas – decreased from the original 2% to about 0.6% while the target was 0.8%. The biodiversity loss index was reduced as well, from a 1.66% level to 0.62% level over the duration of EP2.

ANGAP developed a five-year action plan for the management and expansion of the protected area system, until 2006. The action plan provides a comprehensive overview of the existing protected areas network and a proposed expansion based on the priorities identified for each of the Madagascar six eco-regions and three transitional zones.

Ecotourism based on the protected areas system increased significantly during the project period from about 50,000 visitors in 1997 to about 100,000 in 2001.(The growing trend was disrupted by government instability in 2002). At EP2 mid-term, tourism represented about 8% of GDP. A visitor survey in 2000 confirmed that the protected areas were the principal tourist attraction and accounted for 55% of the time spent by tourists.

The revenues from park entrance fees increased from 493.8 million FMG before EP2 to about 2,808.6 million FMG in 2001. The increase was due to both an increase of park fees in 1997 and a growing number of visitors.
Following an agreement between GOM and the donors, a half of the earnings was allocated to the local communities through financing of local development projects. Feedback from the communities indicated that the impact of such benefit sharing was positive, however, it would be greater if the funds were transferred directly rather than through development projects under ANGAP oversight.

The component achieved its key targets: the number of protected areas under ANGAP management, number of visitors, reduction of tavy incidence and biodiversity index. It is, therefore, rated satisfactory although it did not fully achieve its targets for the quality of management and number of interpretation centers established (see Annex 1 for targets and achievements).

Component 4. Environmental Policies and Institutions (satisfactory)

The key outputs of this component included (i) institutional capacity for environmental management; (ii) development of environmental policies and regulatory instruments; (iii) environmental management support services; and (iv) environmental education, training and

awareness.

***Institutional capacity*:** The component supported institutional strengthening at the central, regional and local levels through establishing environmental management units. The strengthening was significant, however, it did not fully meet all targets. At the central level, the component established fourteen environmental units to improve environmental management within government ministries, including the ministries responsible for mining, agriculture, fisheries, transport, civil works, tourism, industry, livestock, energy and forestry. At the provincial level, the component established 15 regional environmental planning cells – 9 above the target as large provinces established more than one cell – to improve the provincial level capacity for formulating local and regional environmental strategies (e.g., for watershed management, establishment of eco-corridors and management of urban environment) designing regional environmental management projects and implementing nationally coordinated environmental initiatives. At the local level, the component established 29 community cells for implementing the integrated management of the marine and coastal zones.

Institutional strengthening supported by the component was enhanced by the establishment of the Center for Governance Enhancement (CNE), the Center for Inter-institutional Dispute Settlement (CIME) and creation of the Forestry Sector Observatory (OSF) with participation from civil society. The component also supported harmonization of accounting and financial monitoring among all EP2 implementing agencies.

***Environmental policies, tools and instruments*:**

The component implemented about half of its ambitious policy agenda aiming to integrate environment into key economic sectors. The component supported formulation of new policies for all of the nine key sectors it targeted, but only in five sectors were the policies adopted and implemented by the government. The adoption of new policies took place in mining, fisheries, aquaculture and industry sectors. In other sectors – including critical sectors such as tourism, urban development and agriculture (pesticides) – the policy reform did not progress from drafting to implementation stage. In another environmentally critical sector, forestry, the new policy, adopted as a condition of EP2 effectiveness, was not adequately implemented. Overall, incomplete progress of the policy reform was a major shortcoming of EP2 and requires vigorous pursuit under EP3.

In another critical area, the component supported strengthening of the environmental impact assessment (EIA) system, substantial revision of the national EIA legislation and production of seven sectoral EIA guidelines. The national environmental agency (ONE) processed 103 EIAs during EP2. While this was about 30% below the target, it is necessary to note that the number EIAs processed is driven by demand and the 30% deviation from the target is not necessarily a sign of lacking performance. There were, however, shortcomings in the component's accomplishments in the EIA area. For example, the EIA processing often took longer than allowed by the environmental law. Also, the coordination between the Ministry of Environment and ONE on EIA was inadequate. Finally, the EIA system was also negatively affected by the government failure to allocate sufficient resources for meeting the costs of EIA to the sectoral

ministries responsible for new public projects.

The component also provided support to ratification of several environmental conventions including conventions on climate change, desertification and wetlands, and supported the ongoing process of adjusting the national legal texts accordingly. It also supported revision of various legal texts reflecting the reformed management practices for natural resource and environmental management.

Environmental Management Support Services

The component delivered a number of environmental management support services for coastal zones and land management. It supported development of a national integrated marine and coastal zone management policy. It produced pilot integrated coastal zone management plans for seven coastal and marine areas – five more than the target – paving the way for community coastal zone management and establishment of new marine and coastal zone protected areas. It identified five new coastal and marine protected areas, one more than originally planned.

On land, the component supported formalized transfer of management rights of public lands from the government to the village communities. The management transfer and corresponding land tenure arrangements were implemented on 109,000 hectares, slightly short of the 120,000 hectares target. This was an important output of the component since the land tenure issue is a linchpin of community based natural resource management.

Finally, the component supported applied research on sustainable utilization of biodiversity resources. The research focused on establishing the baseline, defining acceptable exploitation levels and providing guidance on community based commercial management of biodiversity resources such as endemic marsh plants, raffia (endemic palm for fiber production), orchids, aquarium fish, natural silk, shellfish, reeds, satrana palm and cinnamon.

Education, training and awareness

In this area, the component supported the development and implementation of a national environmental education policy, a substantial training program and integration of environment into national curricula at various levels. With EP2 assistance, 256 environmental staff, 941 trainers and teachers, 111 graduate students and 1,030 other students received environmental training. Eighty six environmental facilitators received training and accreditation for community based natural resource management.

The component supported regular environmental programs in national TV and radio, produced national information campaigns (e.g., against bush fires) and contributed to public awareness events such as the World Day for the Environment for which Madagascar was awarded a prize in 2000. The component also supported regional and local dissemination of environmental messages through local media and cultural events.

Overall, the component is rated as satisfactory since it delivered substantial results in the key

areas, although it did not meet all of its quantitative targets and lacked qualitative performance indicators.

4.3 Net Present Value/Economic rate of return:

Economic analysis of EP2 was an important element of project evaluation as it confirmed the development hypothesis that conservation, rather than exploitation, can be the guiding principle in developing the natural resources – soil and water, forests and biodiversity – for economic benefit of Madagascar.

Soil and Water Management

The costs and benefits of selected EP2 soil and water management interventions were analyzed to facilitate the evaluation of EP2 and inform the preparation of EP3. The analysis concluded that EP2 interventions were economically justified, as the economic rate of return (ERR) ranged from 19% to 202 % and the net present value (NPV) reached up to 4,500 FMG per hectare, depending on the type of intervention. The results are summarized in the following table.

Ex post Cost-benefit Analysis of Mini-projects Near Completion in 2001

Type of mini-projects	**Net Present Value** (1000 FMG/ ha, discount rate = 12 %)	**Economic Rate of Return** (%)
Tanety Management	100 – 850	20 – 82
Dam and Irrigation Construction	226 – 4,500	25 – 105
Reforestation	- 69 – 850	12 – 18
Support to Agricultural Production	141 – 727	19 – 202

The results are based on a September 2001 *ex-post* cost-benefit analysis of four different types of mini- projects implemented by ANAE. The analysis considered four types of mini-projects: (i) slope cultivation using terraces (tanety management); (ii) small dams and irrigation systems; (iii) reforestation; and (iv) agricultural extension.

The analysis assessed 1,000 households within seven target zones. The results broadly indicate that in all four types of mini-projects the benefits exceeded the costs. The returns were the greatest in agricultural extension mini-projects and smallest in the reforestation mini-projects. The extrapolated ERR for all mini-project under Component 1 ranges from 13% to 25% depending on the target zone.

These results are consistent with an *ex ante* cost benefit analysis carried out during EP2 preparation. According to the *ex ante* analysis, the ERR ranged from 11% to 149 %, depending on the type of intervention, and the net present value reached up to $820 per hectare. The results according to the type if intervention are summarized in the following table.

Ex ante Cost-benefit Analysis of Mini-projects at Appraisal

Type of mini-projects	**Net Present Value** (1996 $ per ha, discount rate = 12 %)	**Economic Return Rate** (%)
Improvement of slope cultivation with	672 – 820	34 – 61

utilization of live fences		
Improvement of water management and irrigated areas productivity	102 – 587	21 – 75
Community Reforestation	-387	11
Improvement of vegetable production	10,866	75
Improvement of domestic cooking stoves	34,084 (no surface equivalent)	149

The *ex ante* analysis assessed expected costs and benefits of five types of mini-projects on soil and water conservation: (i) slope cultivation with the utilization of live fences; (ii) small scale agricultural irrigation and water management; (iii) reforestation; (iv) improved domestic cooking stoves; and (v) vegetable production. The typology for categorizing the mini-projects in this analysis differed from the one used for the *ex post* analysis. Direct comparison, therefore, is not possible.

The analysis compared several scenarios of yield and price using the discount rate of 12% over a 25 year period. It showed that for all mini-projects except reforestation, the benefits exceed the costs. The net present value of benefits was greatest for the improved of domestic cooking stoves, while it was negative for reforestation mini-projects. The assumptions on which the analysis was predicated are described in Annex 3.

It is important to note that the results of both analyses underestimate the total benefits as they do not factor in the benefits of substantial positive downstream impacts of reforestation and soil conservation, e.g., from decreased sedimentation of streams and increased life and productivity of irrigation infrastructure. It is, therefore, likely, that the ERR and NPV are, in fact, greater than captured by these two analyses, particularly in the case of the interventions targeting slope cultivation and reforestation.

Forest Management

A comprehensive cost benefit analysis of forest ecosystem management produced after EP2 showed the overall ERR of 25% and NPV of $16.7 per hectare (using 10% discount rate over 15 year period). The analysis compared costs and benefits of natural forest ecosystem management in all target areas under the Madagascar environment program (EP2 areas as well as EP1 areas and future areas targeted by EP3) totaling 6 million hectares of the protected areas, conservation sites and community management schemes. The ERR and NPV for each of the three different regimes are in the Table 2 and reflect the direct and indirect use values as well as non-use values. For detailed presentation of this analysis as well as discussion of transfer and distribution of benefits, please refer to Project Appraisal Document of EP3.

Table 2: Natural Forest Conservation Cost/Benefit Analysis

Present value (10%, 15 years, $ million)	Protected areas	Conservation Sites	Management transfers	Total
Management costs	($79.39)	($31.48)	($10.38)	($121.25)
tavy foregone revenues	($37.26)	($42.86)	($14.29)	($94.41)
fuelwood foregone revenues	($11.07)	($13.38)	($4.46)	($28.91)
NTFP foregone revenues	($12.42)	($14.29)	($4.76)	($31.47)
Total costs	($140.14)	($102.01)	($33.89)	($276.04)
Biodiversity conservation	34.60	35.91	-	$70.51
Eco-tourism	60.28	-	-	$60.28
Watersheds Protection	58.91	68.67	-	$127.58
Sustainable fuelwood collection	-	-	13.62	$13.62
Sustainable NTFP collection	-	-	20.75	$20.75
Total benefits	153.79	104.57	34.37	$292.74
NPV	**13.66**	**2.56**	**0.48**	**$16.70**
ERR	**32%**	**20%**	**12%**	**25%**

The results are consistent with an *ex ante* cost-benefit analysis of forest management component prepared during EP2 design. Based on the two EP2 activities – (i) implementation of pilot management plans for 180 000 ha of forest reserves; and (ii) implementation of participatory forest management plans at 400,000 ha – the ERR was calculated at 17% and the total NPV at $10 million, using the discount rate of 12%. The *ex ante* analysis did not value the benefits from water and soil conservation and from the exploitation of non- timber forest products, which may explain the lower values of ERR and NPV than in the case of the comprehensive analysis. Other assumptions that were used for this analysis are summarized in Annex 3.

4.4 Financial rate of return:

As typical for environmental projects of this kind, EP2 did not include the calculation of financial rates of return.

4.5 Institutional development impact:

The project's institutional development impact was substantial. The institutional impact were noticeable on several levels: (i) national level; (ii) sectoral level; and (iii) project level.

On the national level, environmental themes became commonplace in mass media and public debate. Environmental and natural resource considerations have started becoming an integral part of the national development strategy and planning. An understanding that Madagascar natural resources represent a unique opportunity for the country's development increasingly penetrates all levels of national and regional leadership.

On the sectoral level, EP2 brought important progress through development of new environmental policies in key sectors and improved management of the country forest, soil and biodiversity resources in the target areas. Creation of the Forestry Sector Observatory and cancellation of the illegal and non-paying concessions were important gains in the forestry sector.

Continued expansion of the protected areas system and biodiversity conservation was accompanied by strengthening and enlarging the national park service. Important across sectors was the EP2 strengthening of the EIA legislation and making the EIA review system operational (although not always timely.) EP2 also established basic environmental management capacity in the line ministries through creation of environmental units.

On the project level, EP2 streamlined the institutional and implementation arrangements by reducing the number of implementing agencies from seven to four, while turning the remaining three into independent service providers. It harmonized financial management and accounting systems among the implementing agencies. The implementing agencies under EP2 support achieved various degrees of institutional maturity but all made significant progress in solidifying gains from EP1 and EP2. ANGAP and ONE achieved particularly good progress, documented by a positive external evaluation of ANGAP by IUCN and improved EIA performance and creation of Environmental Information System by ONE.

Through training and accreditation of environmental facilitators, broad environmental training program, establishment of regional environmental cells and implementation of mini-projects, EP2 strengthened the capacity of local and regional institutions for environmental and natural resource management. This is particularly valuable given the continued move toward decentralization in Madagascar.

The areas where EP2 institutional impact remained below potential despite the progress made were: (i) improving the efficiency of the EIA process; (ii) addressing the structural issues of land tenure security; and (iii) improving the ground-level management capacity of the forestry sector.

5. Major Factors Affecting Implementation and Outcome

5.1 Factors outside the control of government or implementing agency:

A major factor that heavily affected implementation of EP2 the disruptive political crisis of 2002. The crisis effectively brought EP2 implementation to a halt. While the crisis lasted only 6 months, some of its impacts, e.g., on decentralization or relationships with local communities, lasted significantly longer. The crisis also set back some of the conservation accomplishments in the protected areas and elsewhere, as it created conditions for uncontrolled exploitation of forest and biodiversity resources. The impact of the crisis and the attempt to put EP2 implementation back on track required two extensions of the EP2 closing date.

5.2 Factors generally subject to government control:

Three factors under the government control negatively affected EP2. The first factor was the weak governance in the forestry and biodiversity sector, particularly during the first half of the project (before restructuring). Corruption, exertion of political pressure on forestry and environmental staff, issuance of illegal permits for logging and bioprospecting negatively affected EP2 performance and reflected uneven commitment of the government to sustainable environmental and natural resource management.

The second factor was irregular and untimely provision of counterpart funding. The government honored about a half of its overall funding commitment, the funding was often late and lead to frequent and significant delays in EP2 implementation.

The third factor was the failure of the government to allocate sufficient budgetary resources for ensuring effective compliance of public investments with the country's new EIA legislation. While the EIA legislation and system were in place, the sectoral ministries who were proponents of new public projects did not have sufficient financial resources to meet the costs associated with proper EIA preparation and review. The underfunding compromised the efficacy of the EIA system and resulted in lower numbers of EIAs than would be otherwise expected.

5.3 Factors generally subject to implementing agency control:

Two factors under the implementing agencies control negatively affected EP2 implementation. First, implementing agencies had considerable difficulties with managing procurement. This lead to overuse of certain procurement methods, e.g., national shopping, and failure to capture anticipated savings from international bidding for large procurement packages for standard products, e.g., vehicles.

Second, implementing agencies' financial management and accounting systems, particularly during the first two years of EP2, were inadequate and mutually incompatible. This lead to delays in payments to contractors, accumulation of significant arrears and disruptions of EP2 implementation.

5.4 Costs and financing:

EP2 projected costs were US$ 155.0 million. US$ 118.9 million was available from financing through the Bank and from donors pledges, while a US$ 31.0 million was to be financed by the government. This left a financing gap of US$ 5.1 million which was to be covered during EP2's implementation by additional donors.

The Bank financing for EP2 totaled the equivalent of Standard Drawing Rights (SDR) 35.2 million (equivalent to US$ 48.2 million in 1997 and 44.1 million in 2003). This was through an ITF/IDA credit (Cr. N009 MAG) of SDR 20.8 million (about US$ 28.2 million in 1997, and 25.8 million in 2003), a Bank-disbursed Global Environment Facility (GEF) grant (TF028499) of SDR 8.9 million (about US$ 12.2 million in 1997, and 11.2 million in 2003), and a Bank-managed International Fund for Agricultural Development (IFAD) loan (441 MAG) of SDR 5.65 million (about US$ 7.8 million in 1997, and 7.1 million in 2003). A multitude of other multilateral donors (EU, GEF through UNDP, UNDP), bilateral donors (the Dutch, France, Germany, Japan, USAID), and international NGOs (WWF, CI, WCS) had pledged a sum of US$ 77.1 million in 1996 towards the implementation of EP2.

At the time of the Implementation Completion Report (ICR) preparation, the total cost of EP2 was US$ 132,55 million (85% of the anticipated cost). The Bank fully disbursed its committed funds. The government disbursement of counterpart funding amounted to US$ 16.6 million. This corresponds to 54% of its original pledges of US$ 31 million for EP2. The donor financing was

18% below the original pledges in 1996. Nonetheless, the sizeable donor financing demonstrates the high interest that the international community places on conservation of Madagascar's environment and natural resources.

It should be noted that a number of donors (French Cooperation, USAID, WB, FIDA, UNDP) contributed US$ 266,799 through a Trust Fund to finance operations of the Multi-Donor Secretariat (MDS). Since 2000, the MDS has coordinated donor funding for the development and food safety activities – a crucial and cumbersome task given the number of donors active in Madagascar.

6. Sustainability

6.1 Rationale for sustainability rating:

EP2 sustainability is rated as likely. EP2 introduced key elements of sustainable financing of biodiversity conservation and environmental management, including (i) improved system of logging fees for financing of the forestry department (DGEF); (ii) adjusted park entrance fees to increase revenues for the national park service (ANGAP); (iii) transfer of natural resource management to the communities, thus lowering the exploitation pressure on protected areas and forests and reducing the enforcement and operating costs of the management agencies; and (iv) preparatory work for establishing conservation endowment trust to generate revenue for conservation activities in perpetuity.

Other EP2 accomplishments also enhance its sustainability. At the national level, these include, for example, effective long-term mobilization of donor resources, permanent integration of environmental education into national curricula, institutional integration of ministries responsible for environment and natural resources management, sectoral policy reform and strengthening of the EIA system, continued presentation of environmental issues in the mass media, and high profile of natural resources utilization in the public policy debate on Madagascar development. These EP2 outcomes are likely to ensure that environment will actively remain in the forefront of general awareness, government action and donor support in the medium and long term. At an agency level, successful conversion of some of the EP2 implementing agencies into independent service providers after project restructuring demonstrated that these were able to sustain themselves in a competitive environment from the revenues earned for their services.

It is important to note that the EP2 sustainability is evaluated in the context of the entire Madagascar environment program, which will continue, as originally designed, for another five years with support from EP3. Many of the interventions of EP2 will be expanded or enhanced under EP3, and their long-term sustainability should be evaluated after the completion of EP3. The new Policy Letter on Environment that the government issued in 2003 – in which it reconfirms its commitment to conservation of natural resources, reforestation and establishment of a conservation trust in the long-term – offers support for the view that the sustainability of EP2, as a part of the long-term environment program, is likely.

6.2 Transition arrangement to regular operations:

EP2 is the second of three phases of the 15 year environment program which has another five years of donor support and funding under EP3 remaining. Transitioning to regular operations after EP2 was not planned. An exception is transformation of the Environmental Management Support Services Agency (SAGE) into an independent service provider, which successfully took place after the closing of EP2. A similar transformation, albeit originally unplanned, took place after EP2 restructuring when three former EP2 implementing agencies – Environmental Information Training Center (CFSIGE), the Land Entitling Directorate (DD), and the National Geographic Institute (FTM) – became independent service providers. In all cases, while the transition of former EP2 funded implementing agencies to independent private sector service required some downsizing, the agencies retained highly professional and capable leadership and were able to raise operating funds independently through provision of their services. For example, ANAE has already signed an agreement to provide services associated with implementation of the Bank-financed Rural Development Support Project and is seeking to provide services to other international and national entities; ANGAP is able to make a significant contribution to covering its costs with revenues from eco-tourism in the protected areas; and DGEF is offsetting a part of its operating costs with revenues from permits fees for timber and biodiversity exploitation.

The continued functioning of these agencies during the ongoing one year period between EP2 and EP3 indicates that they are able to operate independently of Bank funding. It is anticipated that these agencies will be able to bid successfully on delivery of services necessary for implementing EP3.

7. Bank and Borrower Performance

Bank

7.1 Lending:

The Bank’s lending performance is rated as unsatisfactory. The Bank’s lending had many strong aspects, however, as discussed earlier, the shortcomings of design, monitoring and evaluation, and, particularly, misstatement of project objectives caused difficulties during project implementation and rendered the overall lending performance marginal .

There were many strong aspects of the Bank's lending. For example, EP2 was highly consistent with the Government’s development strategy and the Bank's CAS. The design, although it suffered from serious shortcomings, had several cutting-edge features. It improved on EP1 and built lessons from EP1 experience into EP2 preparation, reflected the right development hypothesis that conservation must be integrated with development and livelihoods, incorporated long-term, flexible and multi-sectoral approach to developing environmental management capacity, and focused on developing institutional capacity for natural resource and environmental management.

The appraisal was technically well supported and highly participatory, reflecting a considerable effort to solidify government commitment and involve all stakeholders (multilateral and bilateral donors, international and domestic NGOs, government officials, and already existing implementing agencies).

The financing of EP2 was generous and delivered through an appropriately selected lending instrument. The Bank mobilized considerable GEF and other donor funding. It also created and hosted in the Country Office the Multi-donor Secretariat to systematically coordinate support from various donors.

The key shortcomings included unclear presentation of the development objective, overly complex and ambitious work program and a weak monitoring and evaluation system. In addition, the Bank did not sufficiently recognize the risks associated with such a complex and sizeable development intervention, and was slow to promote harmonization of donor fiduciary and reporting procedures early in EP2. The Bank prepared only a limited economic and financial analysis of the project, and handled compliance with social and environmental safeguards considerably below current standards.

Overall, the Bank's performance during identification, design and appraisal of EP2 was mixed, with many positive and negative aspects. In retrospect, the consequences of the negative aspects during implementation were significant enough to consider the lending performance unsatisfactory.

7.2 Supervision:

The supervision performance is rated as satisfactory. The Bank's overall handling of the project, particularly during the post-restructuring period, overcame the shorcoming of project design and brought strong results.

The Bank subjected EP2 to a Quality Enhancement Review (QER) when regular supervision and QAG reviews identified significant implementation obstacles. It aggressively followed up on recommendations of the QER and QAG and initiated a substantial restructuring and simplification of the project, its implementing arrangements, and its monitoring and evaluation system. It moved the project management from headquarters to the country office to facilitate closer contact with the client. The Bank sectoral management traveled to Madagascar to review project implementation, address governance issues with the government and solicit support from donors. The Bank supported the client in aggressively tackling long-term governance problems in the forestry sector and in carrying out important analytical work, such as a public expenditure review in the environmental and natural resource area. The Bank initiated and supervised revamping of the financial management system of project implementing agencies and facilitated harmonization of donor processing requirements. It also prompted significant institutional changes in the government by recommending a merger of the Ministry of Environment and Ministry of Water and Forests into the new Ministry of Environment, Water and Forests.

Quality of supervision strengthened particularly in response to the 2000 Quality of Supervision Assessment (QSA) which rated the quality of early supervision as marginal. QSA criticized the quality of supervision reporting, composition of supervision missions and focus of the supervision on coordination and planning of inputs rather than development effectiveness and achievement of objectives. Subsequently, supervision reporting improved through accurate project status reports and extremely detailed Aide Memoires, supervision mode shifted from self-standing supervision missions to ongoing close supervision by an in-country task team leader and country office staff,

and the focus of supervision became heavily results oriented. In addition, supervision facilitated provision of strong technical and policy advice to the implementing agencies and the government, and cultivation of an effective relationship with the donors.

7.3 Overall Bank performance:

The overall Bank performance is rated as satisfactory. Despite the weak quality at entry, the Bank's exceptionally strong supervision effort succeeded in turning around a problem project. The excellent supervision during the second half of the project is a best practice example of focusing on development impact during implementation and responding to core problems with relevance, timeliness and effectiveness.

Borrower

7.4 Preparation:

The borrower preparation performance is rated unsatisfactory. The government fully and adequately participated in EP2 preparation, made the necessary policy and financing commitments, and timely met the conditions for project effectiveness by carrying out the necessary studies and creating the new implementing agencies. At the same time, the government promoted the project with its unclearly stated objectives, overly complex design, poor monitoring and evaluation system and other shortcomings. The unsatisfactory rating reflects the responsibility of the government for its role in launching EP2 with serious shortcomings of design and implementation arrangements.

7.5 Government implementation performance:

The government implementation performance was uneven but is rated satisfactory overall. The weak aspects of government implementation performance included high turnover in the leadership positions; high turnover of technical staff in the environment sector; weakened commitment at the highest levels of the government during the first half of EP2; poor governance in the natural resource sectors, particularly forestry; and weak support of the policy reform in some sectors. During the second half of EP2, the main weakness of government performance was its inability to promulgate several of the new sectoral policies required to improve environmental and natural resource management in the country.

The strong aspects of government implementation performance were the efforts to improve governance in the forestry sector by tightening controls on logging and biodiversity permits, canceling illegal or non-paying contracts, establishing a transparent oversight mechanism through the Forest Sector Observatory, and imposing a moratorium on the transportation and export of species listed under CITES.

The government streamlined its central sectoral structures by merging the Ministry of Environment and the Ministry of Water and Forests to improve planning and coordination of natural resource management with environmental conservation and protection. Importantly, it maintained continued commitment to decentralization of environmental management and the transfer of natural resource management to local communities. Finally, in 2003 the government

issued a new Policy Letter on Environment, in which it confirmed its commitment to conservation of natural resources, reforestation through the HIPC initiatives and support for creating a biodiversity conservation trust fund.

While the government crisis of 2002 disrupted the project implementation considerably, it is considered an exogenous factor and not a direct responsibility of the government. It, therefore, does not affect the satisfactory ratings for government performance.

7.6 Implementing Agency:

Performance of implementing agencies was satisfactory, although with some gaps. The agencies management was effective. The management personnel was recruited competitively. The agencies generally met or exceeded their performance targets. They operated in a decentralized manner and provided strong field support, which was crucial for successful implementation of community level activities.

The weak aspects of implementing agencies performance were procurement and financial management which caused implementation delays before the financial management systems were harmonized; poor coordination of their activities in the field, especially between ANGAP and ANAE, uncoordinated performance reporting which made it difficult to provide a consolidated picture of EP2 progress as well as high staff turnover and overstaffing.

7.7 Overall Borrower performance:

The overall borrower performance is rated as satisfactory, particularly in light of reconfirmed government commitment and significant improvements that the government implemented in the second half of the EP2, and in light of solid performance of the implementing agencies.

8. Lessons Learned

Project Design Lessons

Make PDO clear. It is essential to formulate the PDO with maximum clarity, accuracy and realism in mind. Carelessly worded PDO unnecessarily mis-represents the project, confuses implementation and hampers evaluation.

Prepare robust economic analysis. Robust and credible economic analysis of environmental projects is important, particularly as the ample availability of concessionary funding, enthusiasm for preserving unique natural resources for future generations and sense of urgency tend to detract from rigorous selection, design and implementation of interventions. A lack of good economic analysis makes it difficult to integrate environmental and natural resources management considerations into the mainstream of the country’s economic development. A lack of good economic analysis also makes it difficult to assess efficiency and effectiveness of various interventions and determine how to best allocate resources in the future.

Define triggers for the next phase. In multi-phase programs, it is important to define targets the

achievement of which will trigger the launch of the next program phase. Otherwise, difficult but critical issues – such as implementation of key policies or fiscal sustainability of key agencies – may be carried over to the next phase without being properly addressed. In the case of EP2, the carryover of outstanding issues from EP1 – for example the failure to integrate conservation and development – handicapped the start of EP2. Similarly, EP2 insufficient progress on the policy and financial sustainability fronts is likely to handicap implementation of EP3.

Institutional Lessons

Avoid brain-draining line ministries through project implementing agencies. Creation of overly strong implementing agencies drains qualified staff and lowers morale in the line ministries. To balance the short term interests of the project with long term interest of sector development, it is important to approach sector capacity building comprehensively, with a clear understanding of division of responsibilities among the line ministries and implementing agencies, especially those envisioned to stay in place permanently as service providers. A lack of comprehensive approach leads to staffing strain on line ministries and high staff turnover among implementing agencies as they compete for qualified staff.

Coordinate environment with other programs. To integrate environmental program into the mainstream development agenda, maximize development effectiveness and capture potential synergies, environmental projects should coordinate their focus and interventions with other development projects in the country. This is particularly important since environmental protection depends on improved natural resource management, better agricultural production and social development interventions. In Madagascar, EP3 should coordinate with projects such as the rural development, rural roads, rural infrastructure, micro-finances, energy and tourism. The coordination should focus on both policy level and implementation level, where different sector operations target the same area, such as buffer zones surrounding the protected areas.

Develop regional and local environmental management capabilities. Strategically placed regional and local capacity for environmental management – in terms of trained staff and basic office support – is essential for efficient implementation of field-level project activities in target zones. Such capacity forms an important link between central structures and local communities. In EP2, such capacity created in the regional environmental cells and ANGAP officers proved effective in successfully implementating the community level activities.

Use results-based implementation. For complex projects with a large number of multiple implementing agencies (key implementing agencies, local governments, NGOs, independent service providers) use results-based or performance-based contracts as a main vehicle of project implementation insteadof the traditional disbursement arrangements. Results-based contracts simplify the management of multiple implementers and enhance their independent functioning as service providers.

Sustainability Lessons

Ensure financial sustainability of environmental agencies. Fiscal sustainability of environmental agencies established under the project is crucial in ensuring overall sustainability of project achievements. The project should develop a fiscal sustainability strategy appropriate for the specific conditions in the country and in the sector, and a timeline for achieving fiscal independence overtime. A lack of such strategy in EP2 made transition of some implementing agencies to independent service providers risky and difficult.

Address weak governance. To contribute to sustainability of specific measures that improve natural resource management, the general governance in the key sectors must be addressed. Focusing on technical aspects of environmental degradation without giving adequate attention to governance issues will not generate satisfactory results – as demonstrated in the forestry sector during the first half of the implementation period before EP2 introduced an action plan to address key governance issues. For new operations, it is preferable to identify weak governance during preparation and address it systematically from the project beginning rather than reactively during project implementation.

Support modern resources management technologies with adequate extension services. Adoption of modern natural resource management technologies – e.g., various conservation agriculture technologies – introduced by environmental projects frequently requires intensive knowledge and efficient initial promotion. Their firm establishment within the target areas and their spontaneous adoption outside of the target areas requires availability of adequate extension services. The quality of extension service providers, as EP2 showed, is instrumental in the success of the project.

Focus on rural livelihoods. To ensure sustainability, environmental projects must complement the field-level conservation measures with a provision of alternative livelihood opportunities. Alternative livelihoods, based, e.g., on agricultural intensification or ecotourism, help to reduce the pressure on natural resource overexploitation and degradation, and enhance the effectiveness and sustainability of direct conservation measures.

Monitoring an Evaluation Lessons

Do use monitoring and evaluation for project management. A clear and practical monitoring system is essential, not only for assessing final outcomes of the project, but also for periodic evaluation of interim progress, particularly in complex projects. Monitoring indicators should be simple, robust, easily measurable, and, most of all, continuously used as one of the basic project management tools. Quantitative monitoring indicators should be complemented by enough qualitative data to determine not only how much output did the project generate but also how good the output was.

9. Partner Comments

(a) Borrower/implementing agency:

The Borrower prepared an evaluation report for EP2. The English translation of the Executive

Summary of the report is provided below.

Executive Summary of the Government Achievement Report

Initially, The Madagascar Environment Program II ("EP2") was comprised of 14 components. The overall estimated cost was of $155 million USD. The general objective, which consisted of the development of field-actions, was on the rural communities. Indeed, rural communities being the target group of the poverty-reduction programs. However, the general objective's complexity was reduced half-way through EP2. Some of the executing agencies were seen as service providers and priorities were reoriented towards a sustainable use of the natural resources, as well as the establishment of favorable conditions for their management.

All in all, EP2's main objectives, in regards to the SAR and the credit agreements, were reached despite some delay in asserting the official-character of environmental laws and policies.

Specialized direct components

Since the updating of forest data inventory and forest zoning only started in 2001, the forest rehabilitation plans were delayed. Management of the forest by basic communities has suffered from their lack of capacity and means. The observatory of Forest Sector assisted the DGEF in controlling the rules for good governance, the implementation of its action plan and its personnel efficiency and effectiveness.

The ANGAP directly managed 28 PA, from which 5 used to be managed by operators through the PCDI system. Ecotourism was developed, leading to an increase of incomes gained from the PA entrance fees. Furthermore, the mini projects are half-financed by incomes in aid, provided by the surrounding populations. Its difficulties were essentially due to several factors. First of all, to the exploitation of sapphire in and around some PAs. Secondly, to the delay in ratification of the PA Codes. Thirdly, to the disastrous impact on infrastructures generated by cyclones. And finally, to arbitrary rules enacted by some civil and/or military authorities.

The number of rural development mini-projects set-up using the approach of consultation with the Communes, was over expectations. Although appreciated by the inhabitants, the new techniques were only adopted by few households for soil conservation purposes.

Two watersheds undertook management plans and protocols of agreement for the transfer of their management to the basic communities. It was decided that from then-on, this issue would be placed under the PADR's responsibility.

An orientation document was elaborated for the purpose of formulating a policy on coastal zones integrated management and the choice of the implementing institutions. This document was discussed at five regional consultation meetings, during which dispositions on the scenarios to be applied at the decentralized levels were also approved. However, the national consultation proposed another scenario and its results have been submitted for study to an ad'hoc committee. The implementation of rehabilitation plans, for the proposed priority coastal zones and the community

based management of the marine resources, have generated significant enthusiasm within the populations. The proposed sites to be future marine and coastal PAs are not officially instituted. However, four other sites are already operating as zones of "special management". For all these activities, the COI Regional Environment Program has offered precious help.

Transversal components

"Communes"-inspired Programming Regional Committees were established in 25 regions throughout the country, within the framework of the component AGERAS. This approach was adopted while elaborating the PCD. The sub-projects included in the PCD may be applicable to many kinds of activities, which should be financed altogether.

Half of the sub-projects to be financed by FORAGE had already been achieved prior to the latter's cancellation. This cessation was decided in an effort to reduce the complexity of EP2.

Within the framework of the component GELOSE, approximately fifty contracts with local basic communities were approved. However, since application texts on management transfer were not yet promulgated, some confusion persists within these communities. The inhabitants are very interested in the relative land tenure security, but the establishment of one of its elements, the parceling plan, became optional due to the difficulties this may later generate. The process of reviewing the land tenure Code was stepped up as this code does not only concern the environment sector.

Strategic Components

In addition to environmental policies and other such approaches in components, tools for pollution management were developed and experimented in some localities. Three environmental sector-wise policies elaborated during EP1 have reached implementation phase.

The new version of the MECIE decree and its special directives were used in the EIA performed by the Ilmenite exploitation project in the region of Tolagnaro. A regional environmental assessment was also carried-out. The number of EIA performed by the new investors is steadily increasing. However, the issue of "Conformity to the rules" in the existing projects remains at an embryonic state. Efforts should be provided while monitoring the requirements of environmental management plan for projects which received environmental advice.

The mission of EP2, in regards to the locust-fight program, consisted of monitoring the risks of pesticides on public health and their environmental impact in pilot sites. Even without funding, such a monitoring process should be pursued.

Supporting components

The efforts related to environmental research were focused on the valorization of biodiversity resources, of which some were subject to product channel studies. The national Strategy for biodiversity management was elaborated, but still awaits its judicial version. Also, neither texts on access rights to biological resources and on industrial property protection rights have been enacted.

The Policy of Education Relative to the Environment, an education and training policy, was established and ratified. Efforts were provided in training at the DESS level and in the section called Training Engineering Section, in the section-level.
The National Geographic Institute's (FTM) geographic information production has decreased, given that some executing agencies also have competencies in this field.

A national environmental chart is broadcasted through Internet and on CD-ROM. Regional environmental charts are also being established. The NOE software which offers information on biodiversity is subject to usage conventions between a dozen institutions. Information system management training was provided. Two reviews, on the state of the environment, were published. The Environmental Information System Association was created, but validation of the judicial framework for the management and diffusion of environmental information is still underway.

Organization and management of the Program

Since the review of EP2, organizational changes within the institutions are still pending. The hiring of staff is demand-driven, rather than strategy-influenced. However, every departing management staff still works, either directly or indirectly, for the environment and is registered with the Indian Ocean Environment Specialists Network.

Coordination of the Program is on three levels:

- the strategic coordination by the CFE,
- the financial coordination of the World Bank, UNDP, and Government credits by the ONE,
- the operational coordination also by the ONE through meetings of the CFE and the AGEX directors' core group.

Monitoring and evaluation of activities are operational within the ONE as well as within the AGEX. The evaluation system is only applied by the ONE and part of the AGEX.

The generic communication defined by the Ministry and carried out by the ONE is not prioritized within the AGEX, which have their own specific priorities. As the budget allocated to it is insufficient, this component is not correctly valued despite the establishment of a communication plan and adequate policy.

Strategic and financial supervisions of the Program are performed by the CFE. It would, however, be more judicious if the results of the Program were first discussed among the Malagasy, prior to any submission to the funding organizations.

Achievement of the development objectives

The rural communities are the principal users of the services of EP2. They are most appreciative of the techniques which help them gain additional short term revenues, of the principle of transferring the natural resource management to them, of the implementation of a marine and coastal ecosystem

management plan and finally, of their empowerment as per participatory approach. A better standardization of these approaches can be seen in the one that integrates development factors and the environment with the program approach at the Commune level, which has been encouraged since 2001.

Training workshops, on various fields, were continuously organized for the users' capacity building.

Decentralization of the AGEX was effective. To standardize the elaboration of the Annual Work Plan at all levels, a regional programming system was established.

The participation of the private sector has always been requested at every level. Women participation rate is high for all components. This rate even reached 75% of the population for activities improving rural living conditions.

The AGEX have always been in search of strategic partners. So far, however, these partnerships have mostly been brief and limited to technical and financial cooperation.

The "development-environment" approach enabled to update some forestry, industry and tourism laws and policies. As well, sectoral procedures were reviewed in terms of impact assessment. However, the innovative tools were mainly participatory, regional and GELOSE approaches. They deserve consolidation and vulgarization to be reusable in other zones during EP3.

Financial evaluation of the Program

The financial management system was improved thanks to six measures: 1) decentralization; 2) the understanding of fund release and usage procedures by the AGEX; 3) the installation of the TOMPRO software; 4) the support from funding institutions; 5) personnel competency; and finally 6) the AGEX financial Directors' coordination meetings. However, weaknesses were noticed in reporting and in operating accountancy.

Fund transfer was also improved as the AGEX were authorized to call for private accounts. Furthermore, the accounting audit was satisfactory.

The World Bank and UNDP respected their engagements in financing the Program, but the other funding institutions offered less than what was agreed-upon without giving any information about the funds released. The contribution of the State was also reduced, especially for the VAT payment and for fiscal exonerations. It was, however, respected in terms of operational fees.

The incomes which contributed to the achievement of EP2 activities were the PAEF (PA Entrance Fees) and the revenues gained from the EIA fees, which grossed a little over 5 billion FMG each.

On December 31st 2002, fund releases reached 85% for ITF, 84% for FIDA and 61% for FEM. The study of the expenditures showed that the savings on "Civil Works" and "Study and Training" costs have been re-allocated to the "Operating" costs. Aside from in 2000, the "Operating" cost regularly increased every year.

Economic Assessment of the Program

The cases of ecotourism and mini-projects, which have direct impacts on the population's living conditions, were illustrated.

In regards to ecotourism, visitations in the PAs have generated over $48 million US in 2000 at the national level and $5.8 million US at the PA level. Among the revenues gained at the PAs level, 50% come from the DEAP and are estimated at $361,000 US per year. The annual income from guiding is estimated at $122,000 US. The contribution of the PAEF to the operational costs of the ANGAP remains low (5% in 2000). A study of the six most visited PAs showed that the global surplus obtained from tourism-generated income of PA visits is almost equal to that of the PAEF. It clearly indicates that the PAEF has low tariffs.

The assessment of the economic impacts of the mini-projects was carried-out in seven zones.

The mini-projects on production infrastructures generated a 5 million FMG/hectare revenue in Anjozorobe and 8.8 million FMG in Andapa. Reforestation-ones generated anywhere from 110,000 FMG in Marovoay to 849,000 FMG in the Manakara region. Farming activity support-ones generated 143.7 billion in Manakara. Agriculture activity support mini-projects generated 700,000 FMG in Anjorobe, Ranohira and Sakaraha. Finally, Tanety rehabilitation and agro-forestry mini-projects generated a revenue varying from 100,000 FMG in Marovoay to 1.85 million FMG in Anjozorobe.

Assessment of the Program Sustainability

At the institutional level, the executing organisms are managed by competent managers having benefited from specific trainings. The local structures also benefited from various trainings. However, it remains difficult to discern the impact of such trainings.

The implemented technologies have had satisfactory results. The AGEX master such technologies. But departure of their personnel may affect such ability.

With regards to financial sustainability, the results of the studies performed by the AGEX remain unknown.

Performance of the funding and loan institutions

The supervision and follow-up missions performed by the funding institutions were appreciated by the loan institutions. The Multi-Donors Secretariat (MDS) played an essential role in the coordination of supports from funding institutions and in the procedure for market contracting and the World Bank's procedure of non-objection.

The Malagasy State respected its engagements abiding by the terms of credit–agreements. However, delays in fund release and on policy decisions occurred.

Conclusions

The following recommendations are provided as orientations for EP3, so as to improve its efficiency: indications on its strategic orientation, on its orientations on the activities of some components and finally, on improvements in organization and management.

In addition to the government evaluation report, implementing agencies provided the following comments.

(i) The TA needs changed over time both in terms of content and length. The implementing agencies would like to connect the TA offered to them to objectives, quality and results achieved.

(ii) Too many concepts related to forest and biodiversity conservation and management were generated under EP2 which created a slight sense of confusion to all parties involved. In particular the case of GELOSE was mentioned, whereby it was felt that the modus operandi was not tested long enough to solidify lessons learned before another system, GCF, was elaborated and implemented in parallel by bilateral donors and their implementing partners.

(iii) The success of biodiversity conservation is dependent not only on better technical managementbut also on the elaboration of a policy and legislative framework. Adequate attention also needs to be given to upgrading knowledge of biodiversity, enforcement of rules, and customs (including forestry service attached to ports of access), capacity building, and control. In addition, biodiversity conservation cannot be disassociated from tackling the issues of forest fires and savannah fires.

(iv) It was mentioned that an alternative to management transfer to communities could be, at an initial stage, a management transfer to the private sector, with oversight by both the local authorities and communities, especially in the case of industrial afforestation. This should be viewed as an alternative particularly where it is not yet possible to provide adequate funding and capacity building to the local communities to ensure good implementation.

(b) Cofinanciers:

EP2 cofinanciers provided the following comments to the ICR team.

The financial conceptualization of EP2, whereby donors' pledges were entered against the components of EP2 to be implemented by the AGEXs, was somewhat misleading to the AGEXs and the Bank.

EP2 has emptied the line ministries of their most capable human capital, as most of the AGEXs were created as parallel institutions and had a higher salary scale in comparison.

ANAE's performance was satisfactory. What it lacked was a strategy (not within the soil and water management component but rather at the overall EP2 and NEAP levels) to disseminate and mainstream promising technologies and practices generated within the susainable soils and water management component, namely by the implementing agencies involved in the forest and wildlife conservation areas. Naturally, these technologies and practices cannot be disseminated through a national extension system, since this is lacking in Madagascar.

Dissemination of soil and water management technologies should be provided under EP3 as it would help all rural development actors working to reconcile natural resources conservation human poverty reduction and economic development. It would be particularly valuable to assemble knowledge on adoptability of the different technologies based on their knowledge and asset intensity, and reflecting different categories of farmers (according to the level of poverty and location relative to markets). This would design "technology packages" for increasing smallholder agricultural production while reducing environmental degradation. Ideally, this exercise should combine the learning from the soil and water management component, implemented by ANAE, with the learning from bilateral actors especially USAID, Germany, and the Swiss Cooperation.

USAID supported many activities focused on the financial sustainability of the EP2 environmental institutions, particularly ANGAP and ONE. A Sustainable Financing Commission was set up in July 2000 and became the key focal point in the development of the Trust Fund for Biodiversity and Protected Areas. USAID also supported ONE's development of a sustainable financing strategy based on the investors' contribution to the environmental impact assessment review. USAID worked with several implementing agencies to improve their financial management systems as a basis for a financial sustainability strategy. Other financing mechanisms were also explored, such as carbon offsets, conservation contracts (direct payments for conservation), national and regional forestry funds, and the petroleum fund.

During the EP2, the MDS played a very active role in facilitating dialogue among the donors on different environmental issues. This was complemented by bi-annual EP2 joint GOM–- Donor Steering Committee meetings (COS/CFE) that fostered a dialogue between the GOM and donors. While discussions during these meetings were at times contentious, there was generally a positive atmosphere of dialogue where different perspectives were taken into consideration. This served to build a level of trust and confidence among the donors and the GOM that continues to be reinforced with the establishment of the EP3 Task Force.

It was noted during one of the EP2 Steering Committee meetings that too many environmental policies were developed without adequately implementing them. It was repeatedly noted that most of the policies developed just collected dust on the shelves. One of the COS recommendations was to reorient policy development to "tool development". It is important that a clear signal be provided to the GOM on the necessity of whether to continue the development of environmental policies.

USAID carried out several field-based research studies on slash-and-burn agricultural practices and their implication on the forest cover. BEMA and Swiss Cooperation conducted field-based research. The French also carried out numerous studies on different biodiversity "filières". The

research was not adequately capitalized and taken into consideration during the EP2.

(c) Other partners (NGOs/private sector):

GELOSE was found to be unwieldy, (an opinion shared by many other EP2 partners), and thus the creation and implementation of the parallel GCF system was supported by different donors and international NGOs. (However, the results of this parallel system are not yet clear, since GCF is still was only recently implemented.).

Co-management of APs (by ANGAP- and an international NGO) might be a most more desirable scenario, rather than ANGAP or international NGOs managing different APs. In such a case, partnerships between the authorities and these NGOs would need to be reinforced, especially at the field level.

Long-term planning (which was not practiced in EP2), especially for communications and funds transfer, could have mitigated the devastating effects of a crisis such as the one in 2002, when almost all project activities came to a halt.

Research was a neglected topic under EP2. The practice of tavy practice (slash-and-burn agriculture) is cited to be one of the most important causes of deforestation, if not the most important. Thus research on this topic should have been one activity of EP2. Although the French International Center for Research (CIRAD) and the Malagasy Agricultural Research Institute (FOFIFA) submitted a proposal for research on Tavy at the instigation of ONE, it was not financed by EP2, which is thought to be an important omission.

10. Additional Information

Additional Information for GEF purposes

10.1 Analysis of attainment of global environmental objectives

The global environmental objective was to establish conditions for maintaining an environment that contributes to support a long term perspective of an economic growth. Overall, degradation of critical habitats was slowed done and the biodiversity index in protected areas has improved over the lifetime of the project. These positive outcome has been achieved as a result of putting a functional park management network in place and continuing transfer of natural resource management to communities. As a consequence, direct economic benefits were gained by local communities and illegal exploitation of natural resources and destructive activities were reduced.

Environmental degradation trends were reduced at the national level in general, and specifically where GEF intervened. Indeed, Landsat satellite images taken in 1992-94 and 1999-2000 indicated that tavy practice decreased by 72% in the APs during the first 4 years of EP2's implementation. In addition, surveys conducted showed that primary forest loss in the APs was at an average annual rate of 0.6% compared to 1.6 +% in forests outside the APs. Further analysis of forest loss in 3 forest corridors on the East side of Madagascar, 2 of which (North and South parts) were priority target intervention zones for EP2 partners (and hence of GEF), and the middle portion where interventions were minimal was taken as a control. It was found that the rate of forest loss was lower in the 2 priority target zones as compared to the control: 1.7% and 2.4% forest loss in the humid forest (above 800 m altitude), and 3.7% and 6.4% forest loss in the lowland forests (below 800 m altitude) in the 2 zones versus 6.3% and 7.7% in the control zone, respectively, between 1993 and 2000. Measures taken on the ground concluded that the rate of sensitive ecosystem degradation slowed down to 0.37% in the dense humid forests of low altitude, to 1.13% in the western dry dense forests, and to 1.29% in the southern spiny forests .

It can be concluded that EP2 in general, and GEF financing in particular, helped reduce forest loss. By the same token, fauna and flora biodiversity loss, by virtue of the reduced loss in forest cover in the priority forest corridors and the APs, has slowed down as well, from a 1.66% index to 0.62% when measured over the 5 year implementation period of EP2. Governance in the management of the sector regarding the CITES and endangered biodiversity sector and the delivery of logging licenses has been considered as a major factor addressed at the time EP2 was restructured . Starting 2001, GEF helped create the OSF which was instrumental in the overall drive to improve governance in the sector.

10.2 Country ownership and drivenness

For additional information and analysis, please refer to sections 3.1 (Assessment of original objective), 3.2 (Assessment of revised objective), and 7.5 (Government implementation performance) of this document.

EP2, and hence GEF financing, are deeply rooted in GOM development objectives, and environmental management and poverty reduction strategies. It is the tool to implement GOM's NEAP which objectives are to: a) develop human resources through environmental education, training and active participation; b) improve environmental management; c) promote biodiversity conservation and management; and d) improve living standards for both urban and rural areas.

Madagascar's Interim Poverty Reduction Strategy Paper (PRSP) prepared jointly in 2000 by the Bank with Government, argues that disastrous consequences accrue to the environment, biodiversity, the climate, and the economy due to poverty. The PRSP states that Government believes that the future of agriculture, the

development of the rural world, and its relief from poverty cannot be disassociated from the conservation of the unique Malagasy biodiversity capital, from sustainable management of natural resources, increased wooded space areas and forest potential. The present pace in which the forest disappears dictates immediate measures. Achieving the objectives of projects favorable to the environment would be highly enhanced by the participation of the poorest rural population in order to ensure efficiency and sustainability. Government pledged to complement with necessary measures so that the micro-economic benefits can accrue to the poor: relative land security, temporary jobs in the frame of a high-intensity labor job situation, and enhanced soil fertility conservation. In this respect and from a larger perspective of productivity growth, the Government believes that the poor should benefit in priority from the extension and the support to the adoption of cultural practices which respect the environment and develop watersheds by restoring soil fertility (e.g. minimal tillage, direct seeding with cover, slow soil burning). EP2's interventions also fit well within the framework of the PRSP by addressing several of the root causes of poverty (as relating to the environment, biodiversity, soil and water conservation, and natural resources management), and mitigating their effect.

GOM participated fully in the preparation of EP2, and implemented important policy/legislative formulation and reform to streamline environmental concerns in the overall national development strategy. It also agreed to reform governance in the sector and took important steps towards that objective: creation of bodies for governance enhancement (CNE), and for interinstitutional dispute settlement (CIME), and the Forestry Sector Observatory (OSF) with participation from civil society and financing from GEF to oversee activities in the sector and improve governance. Also, GOM reviewed the forest/biodiversity exploitation permits, canceling the non-performing ones, and imposed a moratorium on CITES species transports and exports. Several international conventions concerning the environment were ratified by GOM during EP2, and processes are under way to adjust national texts accordingly. The same applies to adoption of texts and laws reforming some practices among both natural resource management or the environment in general. Environmental units have been instituted in various Ministries, and the Environment has a preponderant place in various blueprint documents of economic policy and, recently, in Madagascar's PRSP.

However, GOM did not meet all its counterpart funding agreements (54% only), did not develop/implement all policies agreed during preparation, and has not yet taken a clear decision on the distribution of funds acquired by ANGAP and DGEF from AP entrance fees, and logging/biodiversity permits, respectively. The earnings are sitting in the central offices of ANGAP and DGEF and are not being distributed to the APs and the regions to sustain the decentralization process and the benefits accrued by EP2 so far.

10.3 Stakeholder participation and public involvement (including gender)

All stakeholders were involved to a great extent in EP2's preparation and implementation (GOM, AGEXs, multilateral and bilateral donors, international and local NGOs, local communities, and the private sector (mainly the forest/biodiversity contractors who were willing to cooperate for a better management of the sector.

The public, civil society, has been greatly involved in EP2's and GEF-financed activities: zoning, delimitation of APs, elaboration and implementation of natural resources/forest/general development management plans, transfer of natural resources management, land use planning, and to some extent, monitoring, have all been done in a participatory fashion with civic society in general, and local communities in particular. It should be noted here that several of EP2's activities are "demand driven" with validation mechanisms among regional bodies, which implies the public's involvement. The development of the "Plan GRAP" for management of Madagascar's protected areas, in particular, was based on

participatory principles. It was developed through a series of regional workshops involving a board range of stakeholders and accompanied by an extended consultative process. For example, the individual management plans (or under development) for each protected area were developed in collaboration with local stakeholders and then widely publicized. In terms of organized stakeholder groups, communities were and are represented within the Regional Steering Committees (CRO) through representatives of each village in order to allow input in PA management and planning. The multi-stakeholder structures within the CRO also provide for transparency, governance and accountability concerning natural resource access and benefit sharing.

EP2 gave attention to gender. Training on integration of women in development, has taken place and several EP2 components/activities integrated gender considerations in their design and implementation (GELOSE, AGERAS, EMC/ONE, ANAE). However specific gender-sensitive interventions were spot activities and ended with the specific activity, not at all in line with the general concept of development. Information is skimpy and does not permit an evaluation of the results (whether successful or not). Despite that, it is noticed that the impact of gender-sensitive interventions is negligible on women, and that gender is a lacking aspect in all economic and productive sectors in Madagascar and not only the environment (poor economic power of women, under-representation in political and technical places of authority and decision-making, etc.).

10.4 Replication approach/potential

For additional information and analysis, please refer to sections 6 (Sustainability) and 8 (Lessons learned) of this document.

There was not replication per se developed as part of project preparation. However, towards the end of EP2 working groups were established to identify successful approaches under EP2 that should be scaled up under EP3 and to assess achievements and weaknesses of EP2 in order to systematically build on lessons learned when preparing EP 3. Detailed description on these assessments are documented in project documents for EP3.

GEF was mostly involved in the following activities to which an assessment of replication potential is relevant: decentralized environmental management, AP management, gazetted forest management, natural resources management transfer to local communities, and training of agents on NRM for extension of NRM sustainable technologies. All have been successful so far in the opinion of this ICR. Adequate financing, supervision, and capacity building are of essence to replicate successful interventions.

Adequate financing includes:

- Adequate (commensurate with their agreed work programs), and timely replenishment of funds for operation of AGEXs to enable synergy among their interventions;
- Transfer of agreed resources to the APs from the ecotourism earnings (which are currently sent back to central ANGAP but not redistributed) to enable them maintain and develop the APs;
- Better recovering, and adequate allocation and transfer of earnings from environmental/biodiversity exploitation contracts to the regional/local DGEF authorities (which did not happen so far) to enable them adequately supervise and finance the implementation of NRM transfer to local authorities;
- Additional economic incentives and funding for development activities for the local communities (those who have benefited from NRM transfer and those who did not but whose economic activities are of great impact on sustainable environmental/biodiversity management) to help them keep their agreements with local authorities to protect and sustainably use neighboring environmental/biodiversity resources (this could come from the agreed 50% of ecotourism earnings (which did not happen so far) and from partnering

with other development programs);

Capacity building includes:

- Improved governance;
- Focused/targeted/result-oriented TA;
- Training in management and economic concepts for all stakeholders;
- Reinforcing/equipping the regional environmental cells (which are working so far pro bono) and the regional/local authorities and communities;
- Facilitating marketing channels;
- Encouraging local industries and ecotourism;
- Equipping local communities with adequate tools to manage and protect their resources;
- Improved law enforcement;
- Better selection/training of environmental mediators and operators which implement and follow up miniproject activities. Sustainable natural resources management technologies are knowledge intensive which makes adoption and further scaling-up a challenge in the absence of adequate extension services.
- Improving performance in sectors relevant to ecotourism (e.g. improving access to the country, in this case reforming air travel to Madagascar).

All these points were treated within EP2, except reallocation of earnings from ecotourism and forest/biodiversity exploitation contracts, and access to Madagascar. However, the level at which they have been provided is not sufficient for a successful scaling up.

10.5 Monitoring and evaluation

The indicators selected at the beginning of EP2 were elaborate, complex, and difficult to measure. At restructuring, they were scaled down along with the components and activities of EP2, focused on most important results to measure, and simplified which facilitated their measurement and interpretation. EP2's monitoring of indicators operated at different levels of effectiveness according to indicators concerned. Monitoring mechanisms involving donors and the Government were instituted, the Funds Committee and the Steering Committee, with the MDS facilitating information flow and monitoring which also helped donors which did not have permanent representation in Madagascar.

Spot evaluations were made: independent external assessment in 2000, assessment by beneficiaries in 1999, and various evaluations executed internally by each AGEX (e.g. deforestation, biodiversity and endemism status, soil erosion, adoption of technologies, etc.) throughout EP2's implementation which were supported by appropriate training. Several donors also had their own evaluations (e.g. USAID/CI: satellite imagery and interpretation to evaluate progress in forest and sensitive habitats degradation).

Learning from experience under EP2, it is recommended that any follow-on phase to EP2 would have a detailed M&E plan with realistic and measurable indicators that would be identified upfront during the project preparation phase and revised at mid-term if necessary. All indicators should be quantifiable and a baseline, as well targets for the time of the midterm review as well as the end of the project should be established. Experience in EP2 has shown that there was a lack of clear M&E arrangements for continuous tracking, recording and interpreting indicators. Thus an M&E plan clearly describing the process of monitoring including responsibilities of M&E personnel is necessary. The plan would also provide guidelines for interpretation of monitoring results and a schedule for semi-annual or annual quality control by an independent reviewer. It is further recommended that the M&E plan is reviewed by all major constituencies of the project as to ensure that indicators cover the different focus that different constituencies may have (e.g. development perspective, global environment perspective, etc.). As funding

for national programs as EP2 is coming from a variety of sources, it is important not only to track progress in terms of project implementation and disbursement of funds, but also in terms of impact towards project development objectives and towards global environmental impact since future follow-up funding may be subject to the program's ability to proof lasting results and impact.

Annex 1. Key Performance Indicators/Log Frame Matrix

Outcome/Impact Indicators (targets vs. actual at end of project)

Indicators and targets per component at restructuring	Target	Actual
Sustainable natural resources management (soil, forest cover, biodiversity)		
Measures of soil loss in target areas under conservation management	<12 t/ha/year	From 1.6 to 8t/ha/year
Measures of economic benefits to families participating in soil conservation	10%	+ 26%
% of households applying conservation technologies after 2 years	70%	26% still applying
Forestry		
Tavy practice in target areas	% change	7% down from 13%
Measures of forest cover loss in target areas	< 2 %/year	0.6% annual deforestation in the PAs and 1% in Classified Forests
National Parks and Ecotourism		
Measures of biodiversity in target areas	0,62	0,74
Increased management quality of 12 protected areas	62%	41%
Illegal tavy practice in 12 Protected Areas	<0,8%	0, 34% in rain forest and 0,49 in dry forest
Environmental Policies, Instruments, Information and Programming		
Policy reform index	100%	52%
Systems in place for environmental management, including those for transfer of management rights/decentralization.	Index = 90%	81%

Output Indicators (targets vs. actual at end of project)

Indicators and targets per component at restructuring	Target	Actual
Sustainable NRM (soil, forest cover, biodiversity)		
# of conservation agriculture mini-projects	4,000	5,072
Area under direct conservation agriculture from mini projects	32,000 ha	82,100 ha
Measures of rural households who have participated in mini-projects	100,000	389,600

Watershed mgmt plans created for X # Ha	5,000 ha	6,900 ha
# of communal development plan	20	44
Families outside project adopting techniques	50,000	75,140
# of projects financed by FORAGE	35	18
Forestry/Natural Resources		
Area subject to management transfer in target areas	150,000 ha	174,132 ha
Area under management scheme	400,000 ha	320,000 ha
Area under management plans for classified forests	180,000 ha	180,000 ha
National Parks and Ecotourism		
# of protected areas managed by ANGAP	39	38
# of visitors	368,500	410,023
# of interpretation centers	8	5
Environmental Management Support Services (SAGE)		
# of pilot integrated management plans (marine/ coastal) completed with lessons learned for wider replication	2	7
Area under relative land tenure security	120,000 ha	109,000 ha
National level spatial management plan developed (marine and coastal zone)	80%	100%
Marine protected areas with plan	4	5
# of operational participative multi-local structures	6	15
Policy, Instruments, Information, and Programming (PIIGE)		
# Environmental policies developed and adopted	11	6
# of targeted (sectoral) policies harmonized with EIA system	9	5
# of EIAs processed	145	103
# of operational environmental units created in different sectors	24	14
# of environmental information sub-systems (dashboards)	1	4
# of convention ratified	7	7
Environmental Education		
Environmental education activities reinforced	80%	80%
# of curricula in place	3	4
# of students attending courses	1200	1387 (staff, trainers, graduates)

Annex 2. Project Costs and Financing

Table 1: Project Cost by Component (in US$ million equivqlent)

Component at Appraisal	Appraisal Estimate	Components at Restructuring	Estimate at restructuring	Actual	Percentage Actual of restructuring
I. Field Operations					
I.A. Specialized soil and water management	**112.6**	**1. Protected areas mng.**	56.93	52.47	92.17%
Sustainable soil and water management	39.7	**2. Forest ecosystems mng.**	24.02	20.94	87.16%
Multiple-use forest ecosystem management	27.1	**3. Sustainable soil and water**	29.53	25.67	86.94%
National parks and ecotourism	29.5		39.36	24.70	62.75%
ICDPs and post-ICDP transition	10.2	**4. Environmental policies and institutions**			
Marine and coastal environment	6.1				
I.B. Regional programming and local management	**13.1**				
Local resource management and land tenure	6.3				
Regional programming and spatial analysis	3.8				
Regional Fund (STORAGE)	3.0				
II. Strategic Activities	**3.8**				
Formulation and transfer of environmental policies, strategies and instruments	2.4				
Making EIA operational	1.4				
III. Support activities	**11.8**				
Research	2.2				
Education-training	1.8				
Geographic instruments	1.1				
Environmental Information System	1.5				
Coordination and management	5.2				
Total baseline cost	**141.3**				
Physical contingencies	6.4				
Price contingencies	7.3				
Total Project Costs	**155.0**		**149.84**	**123.78**	**82.6%**

Table 2: Project Costs by Procurement Arrangements for ITF/IDA, WB-managed GEF, IFAD (Appraisal/Restructuring estimates) (US$ million equivalent)

Expenditure Category	Procurement Method 1/						NBF	Total Cost	
	ICB		NCB		Other 2/				
Civil works	Appraisal	Restr.	Appraisal	Restr.	Appraisal	Restr.	Appraisal/Restr.	Appraisal	Restr.
			2.3 (1.1) (1.2) (0)	1.5 (0.9) 0.6) (0)			7.9	10.2 (1.1) (1.2) (0)	9.4 (0.9) (0.6) (0)
Goods and vehicles	3.5 (2.6) (0.9) (0)	3.8 (2.5) (1.3) (0)	1.1 (0.8) (0.3) (0)	1.1 (0.7) (0.4) (0)	0.7 (0.5) (0.2) (0)	0.7 (0.5) (0.3) (0.6)	14.0	19.3 (3.9) (1.4) (0)	19.6 (3.7) (2.0) (0.6)
Consultant services, studies, training					6.6 (3.0) (2.7) (0.9)	6.6 (3.1) (3.3) (1.2)	22.1	28.7 (3.0) (2.7) (0.9)	28.7 (3.1) (3.3) (1.2)
Grants for subprojects					15.0 (8.9) (0) (6.1)	12.3 (6.4) (0.5) (5.9)	1.9	16.9 (8.9) (0) (6.1)	14.2 (6.4) (0.5) (5.9)
Operating costs					16.9 (11.4) (5.5) (0)	18.0 (11.7) (7.3) (0)	20.5	37.4 (11.4) (5.5) (0)	38.5 (11.7) (7.3) (0)
Unspecified					6.2 (4.0) (1.4) (0.8)	0 (0) (0) (0)	36.3	42.5 (4.0) (1.4) (0.8)	36.3 (0) (0) (0)
Total	**3.5 (2.6) (0.9) (0)**	**3.8 (2.5) (1.3) (0)**	**3.4 (1.9) (1.5) (0)**	**2.6 (1.6) (1.0) (0)**	**45.4 (23.8) (9.8) (7.1)**	**40.8 (21.6) (8.9) (7.1)**	**77.1**	**155.0 (28.2) (12.2) (7.8)**	**149.8 (25.8) (11.2) (7.1)**

1/ Figures in parenthesis are the respective amounts financed through the Bank: ITF/IDA (1st line), WB-managed GEF (2nd line), and IFAD funds managed by the Bank (3rd line);
2/ Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, technical assistance services, and incremental operating costs related to managing the project, and re-lending project funds to local government units.

Table 3: Project Costs by Procurement Arrangements for ITF/IDA, WB-managed GEF, IFAD (Actual) (US$ million equivalent)

Expenditure Category	Procurement Method 1/			NBF 2/	Total Cost
	ICB	NCB	Other		
Civil Works		1.1 (0.8) (0.3) (0)	0.2 (0) (0.2) (0)	0.1	1.4 (1.0) (0.4) (0)

Goods and vehicles	2.1 (2.1) (0) (0)	1.7 (0.9) (0.8) (0)	0.9 (0.8) (0.1) (0)	0.2	5.0 (4.0) (1.0) (0)
Consultant services, Studies, training	0.2 (0.1) (0.1) (0.1)	2.0 (1.3) (0.6) (0.1)	3.4 (1.8) (0.9) (0.7)	1.1	6.8 (4.3) (1.6) (0.9)
Grants for subprojects			12.3 (5.9) (0) (6.4)		(12.3 (5.9) (0) (6.4)
Operating costs		7.8 (7.7) (0.1) (0)	5.0 (4.5) (0.5) (0)	2.5	15.3 (12.2) (0.6) (0)
Total	**2.4** **(2.3)** **(0.1)** **(0)**	**12.6** **(10.6)** **(1.8)** **(0.1)**	**21.8** **(13.1)** **(1.6)** **(7.1)**	**3.9**	**40.7** **(29.3)** **(4.1)** **(7.3)**

1/ Figures in parenthesis are the respective amounts financed through the Bank: ITF/IDA (1st line), WB-managed GEF (2nd line), and IFAD funds managed by the Bank (3rd line);
2/ GOM counterpart financing

Table 4: Project financing by Component (US$ million equivalent)

Component	**Restructuring estimate**			**Actual**		
	Bank 1/	GOM	Cofinance	Bank	GOM	Cofinance
Protected areas management	14.7 (6.0) (8.7) (0)	8.7	10.5	11.9 (5.6) (6.3) (0)	5.1	25.63
Forest ecosystems management	4.5 (0.3) (4.2) (0)	6.0	27.4	4.9 (2.3) (2.6) (0)	4.3	22.2
Sustainable Soil and Water Management	19.4 (12.6) (0) (6.8)	7.3	18.0	15.5 (9.1) (0) (6.4)	2.6	7.55
Environmental policies and institution	10.9 (9.6) (0) (1.3)	7.7	29.5	10.5 (9.6) (0) (0.9)	4.6	9.65
Total Project Costs	**48.2** **(28.2)** **(12.2)** **(7.8)**	**29.7**	**77.1**	**44.1** **(25.8)** **(11.2)** **(7.1)**	**16.6**	**65.05**

1/ Total figure is the cumulative amount financed through the Bank. Figures in parenthesis are the respective amounts financed by: ITF/IDA (1st line), WB-managed GEF (2nd line), and IFAD funds managed by the Bank (3rd line);
2/ Actual cofinancing is estimated US$ 65.05 million.

Table 5: Actual Cofinancing by Component (US$ million equivalent)

Component	Cofinancing 1/														
	Total	EU	GEF/ UNDP	UNDP	Dutch	Norweg	French	Germany	Japan	Swiss	USAID	CARE	CI	WCS	WWF
							Coop.								
Protected areas mgt	25,63	4.6	2.0		2.9		0,5	1,8	0.03		12	0.4		0,6	0,8
Forest ecosystems mgt	22,2	0,0	1.9				0.2	10,8		1.8	5,3		0.9		1,3
Sustain. Soils & W Management	7,55	0,0				0,32	1,23				6,0				
Env. policies & institut. & Environmental service	9,65	0,0	4.1	1,6			0,55				0.0				3,4
Total Cofinancing	65,05	4,6	8.0	1,6	2.9	0,32	2,48	12,62	0.03	1,8	23.3	0.4	0.9	0,6	5,5

1/ At the writing of this document, no cofinancing figures were yet available for the French AFD and CIRAD.

Annex 3. Economic Costs and Benefits

As section 4.3 on net present value (NPR) and economic rate of return (ERR) notes, EP2 prepared two cost benefit analyses of selected conservation and resource utilization interventions. The first was prepared at project preparation (*ex ante* analysis), while the second was prepared near project completion for evaluation purposes (*ex post* analysis). Both sets of results confirm that EP2 was economically justified, however, since the *ex post* analysis used a more elaborate methodology, direct comparison of the results is not appropriate.

This annex notes several assumptions or qualifications that may have systematically affected the results of the analyses. The *ex ante* analysis was based on data (labor costs, the farm-gate price for products, and the yield data with and without the intervention of an ANAE mini-project, labor cost and products farm-gate price) which originated from ANAE's own assessment. The source of data is not viewed as independent, and the results based on the data must be, therefore, considered with caution.

Second, the *ex ante* analysis did not consider key factors that would allow extrapolation of results to the aggregate level of the entire Component 1. The factors omitted from consideration were, among other, the following: (i) synergistic benefits derived from combination of several types of mini-projects within the same area (EP2 experience showed that mini-projects were almost always implemented in a combination) (ii) variations in agricultural productivity within target zones (agricultural productivity significantly varies substantially from zone to zone); and (iii) presence of economic infrastructure and access to market. The ERR from the *ex ante* analysis, therefore cannot be reliably compared with the overall ERR of the *ex post* analysis which did allow extrapolation to the level of the overall component.

Third, both analyses excluded some indirect benefits, e.g., from soil conservation, improved water resource management, maintenance of the fuel wood supply, and decrease of deforestation pressure due to improved productivity of the existing agricultural land. It is likely, therefore, that the overall benefits of the project are greater than reflected by the results of these cost benefit analyses.

The *ax ante* analysis of forest management used two assumptions that require caution in interpreting results. First, assumed the opportunity costs of using land for forestry was zero, which may have underestimate the cost side of the cost-benefit comparison. Second, in valuing forest products, it used their nominal purchase price instead of their economic value, which may have introduced additional inaccuracies in the analysis. Third, it ignored indirect benefits from the analysis, which may have lead to underestimation of the overall benefits.

Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating	
Month/Year	Count	Specialty	Implementation Progress	Development Objective
Identification/Preparation				
06/19/1995	*4*	TTL-Env.Economist (1), Biodiversity Specialist (1),Operations Analyst (1), Marine Environment Specialist (1)		
09/12/1995	*1*	TTL-Env.Economist (1)		
11/27/1995	*1*	Natural Resources Economist (1)		
Appraisal/Negotiation				
03/22/1996	*5*	TTL-Env.Economist (1), Info Sys/Monitoring (1), Natural Resources Economist (1), Operations Analyst (1), Economist (1)		
06/18/1996	*4*	TTL-Env.Economist (1), Info Sys/Monitoring (1), Lawyer (1), Env. Specialist (1),		
09/16/1996	*2*	TTL-Env. EconomiSt (1), Lawyer (1)		
Supervision				
12/12/1997	*4*	TTL-Env.Economist (1); Info syst/ Monitoring (1); Economist-MDS(1); Forester - MDS (1)	S	S
06/22/1998	*4*	TTL - Env.Economist (1); Env.Info & Fin.management (1); Env.Economist(1); Forester (1)	S	S
04/19/1999	*3*	Management Info(1); Env.Spec. (1); MDS.-Env.Economist(1)	S	S
07/04/1999	*2*	TTL-Env.Economist(1); Env.management spec. (1)	S	S
11/24/1999	*4*	TTL-Env.Economist(1); Env. Specialist(1); Env. Program Offcer(1); Sociologist(1)	S	S
11/18/2000	*3*	TTL-Env. Economist(1); Env. Specialist(2)	S	S
03/24/2001	*4*	TTL-Env. Economist(1); Env/Info.System Spec. (1); Envir. Specialist (1); Env.Safeguard Spec. (1)	S	S
02//28/2002	*3*	Financial Management Spec. (1); Procurement Spec. (1); Program Assistant(1)	U	U
09/06/2002	*3*	TTL-Env. Specialist(1);	S	S

			Financial management Spec. (1); Procurement Spec. (1)		
ICR					
	05/16/2003	*2*	TTL-Environ. Spec.(1); Env. Economist(1)		
	07/27/2003	*3*	TTL-Env. Specialist(1); Natural Resources Mngt. Spec. (1); Env. Economist (1)		
	11/14/03	*3*	TTL-Env.Spec. (1); Natural Resources Mngt Spec.(1); Env.Economist (1); Financial. Spec. (1); Proc. Spec. (1) Prog.Assistant Consultant. (1)		

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US$ ('000)
Identification/Preparation	6	24,000
Appraisal/Negotiation	11	44,000
Supervision	*30	120,000
ICR	13	56,000
Total	60	244,000

*30 staff participated in missions (at an average of 2 SW/staff) + 6 SWs for supervision with no mission; all at an average of USD 4,000 per SW

Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating
☐ *Macro policies*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☒ *Sector Policies*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☒ *Physical*	○ *H* ● *SU* ○ *M* ○ *N* ○ *NA*
☐ *Financial*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☒ *Institutional Development*	○ *H* ● *SU* ○ *M* ○ *N* ○ *NA*
☒ *Environmental*	○ *H* ● *SU* ○ *M* ○ *N* ○ *NA*
Social	
☒ *Poverty Reduction*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☒ *Gender*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☐ *Other (Please specify)*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Private sector development*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☒ *Public sector management*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☐ *Other (Please specify)*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*

Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

6.1 Bank performance	*Rating*			
☒ *Lending*	○ *HS*	○ *S*	● *U*	○ *HU*
☒ *Supervision*	○ *HS*	● *S*	○ *U*	○ *HU*
☒ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

6.2 Borrower performance	*Rating*			
☒ *Preparation*	○ *HS*	○ *S*	● *U*	○ *HU*
☒ *Government implementation performance*	○ *HS*	● *S*	○ *U*	○ *HU*
☒ *Implementation agency performance*	○ *HS*	● *S*	○ *U*	○ *HU*
☒ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

Annex 7. List of Supporting Documents

- ANGAP. 2003. Various topical reports. Antananarivo, Madagascar.
- Conservation International. 2002. Priorities for Biodiversity Conservation in Madagascar. CDRom format. Antananarivo, Madagascar.
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- FTM. 2003. Report on Activities and Achievements. Antananarivo, Madagascar.
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  . 2003. Report on Improving Governance of Madagascar's Fauna and Flora Exports. Antananarivo, Madagascar.
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  . 2003. Report on Achievements and Impact of EP2. Antananarivo, Madagascar.
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- PAGE (Projet d'Appui à la Gestion de l'Environnement). 2001. PAGE: Helping Manage Madagascar's Environment for Economic Growth. USAID. Antananarivo, Madagascar.
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