Document of
The World Bank

Report No: ICR00001171

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-21160 TF-51308)

ON A

GRANT

IN THE AMOUNT OF SDR 4.2 MILLION
(US$ 5.3 MILLION EQUIVALENT)

TO THE

REPUBLIC OF TUNISIA

FOR A

PROTECTED AREAS MANAGEMENT PROJECT

July 14, 2009

Sustainable Development Department
Maghreb Country Department
Middle East and North Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 2009)

Currency Unit = Tunisian Dinar, TND
TND 1.00 = US$ 0.71
US$ 1.00 = TND 1.4

FISCAL YEAR
January 1-December 31

ABBREVIATIONS AND ACRONYMS

AAD	Association (formal) for Agricultural Development / *Groupement de développement agricole*
CAS	Country Assistance Strategy
CGF	*Contrôle Generale des Finances*
CDP	Community Development Plan
GEO	Global Environmental Objective
GDEQV	General Directorate of Environment and Quality of Life / *Direction Générale de l'Environnement et de la Qualité de Vie*
GEF	Global Environment Facility
GDF	General Directorate of Forestry / *Direction Générale des Forêts*
GOT	Government of Tunisia
ICR	Implementation Completion Report
IUCN	International Union for Conservation of NatureM&E Monitoring & Evaluation
MoA	Ministry of Agriculture / *Ministère de l'Agriculture et des resources hydrauliques*
MoE	Ministry of Environment / *Ministère de l'Environnement et du Développement Durable*
NGO	Non Governmental Organization
PMP	Park Management Plan
PMU	Project Management Unit
UNDP	United Nations Development Program

Vice President:	Daniela Gresani
Country Director:	Mats Karlsson
Sector Manager:	Luis Constantino
Project Team Leader:	Ayat Soliman
ICR Team Leader	Ayat Soliman

REPUBLIC OF TUNISIA
Protected Areas Management Project

CONTENTS

A. Basic Information

Country:	Tunisia	Project Name:	PROTECTED AREAS MANAGEMENT PROJECT
Project ID:	P048315	L/C/TF Number(s):	TF-21160,TF-51308
ICR Date:	06/10/2009	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	GOVERNMENT OF TUNISIA
Original Total Commitment:	USD 5.1M	Disbursed Amount:	USD 5.1M
Environmental Category: C		**Global Focal Area: B**	
Implementing Agencies: Ministry of Agriculture and Water Resources Ministry of Environment and Sustainable Development			
Cofinanciers and Other External Partners:			

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/22/2001	Effectiveness:	10/11/2002	10/11/2002
Appraisal:	02/25/2002	Restructuring(s):		
Approval:	06/27/2002	Mid-term Review:	11/06/2006	11/27/2006
		Closing:	08/31/2008	02/28/2009

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Global Environment Outcome	Moderate
Bank Performance:	Moderately Unsatisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Satisfactory
Quality of Supervision:	Moderately Unsatisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Unsatisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
GEO rating before Closing/Inactive status	Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Central government administration	29	20
Forestry	61	70
General education sector	10	10
Theme Code (as % of total Bank financing)		
Biodiversity	34	60
Environmental policies and institutions	33	40
Export development and competitiveness	33	

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Daniela Gressani	Jean-Louis Sarbib
Country Director:	Mats Karlsson	Christian Delvoie
Sector Manager:	Luis F. Constantino	Petros Aklilu
Project Team Leader:	Ayat Soliman	Shobha Shetty
ICR Team Leader:	Ayat Soliman	
ICR Primary Author:	Jean-Marc Bisson	

F. Results Framework Analysis

Global Environment Objectives (GEO) and Key Indicators(as approved)

The project's main development objective is improved management and protection of selected national parks for the purposes of conserving biodiversity of global importance and contributing to the overall improvement in welfare of local populations.

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Biodiversity degradation is stopped or reversed and animal population is increased.			
Value (quantitative or Qualitative)	ICHKEUL: Potamogeton population: 14% Scirpaies cover: 15% Frequency of geese: 500 BOUHEDMA: Population Dorcas (107), Mohr (25), Oryx (124). Acacia density 17 trees/ha) JBIL: Gazelles: traces	ICHKEUL: Sirpaies cover: 50% Potamogeton cover: 20% Frequency of geese: +20%. BOUHEDMA: Dorcas (150); Mohr (40), Oryx (150). Acacia density (15%) JBIL: Gazelles: +15%		ICHKEUL: Sirpaies cover: increased by 80% Ptamogeton cover: 60% Freq. of geese increased by 5 times BOUHEDMA: (i) gazelles dorcas (124), mohors (26), oryx (117), (ii) Acacia density: 23 trees/ ha, increase of 35%. JBIL: 7 gazelles sighted
Date achieved	08/01/2002	08/01/2002		02/28/2009
Comments (incl. % achievement)	BouHedma fauna was affected by 3 years of consecutive drought. Final oryx count includes translocation of 10 oryx to 3 other parks in 2007. At Jbil, animal traces were used as proxy for a population count. The original target is estimated to be achieved.			
Indicator 2 :	Improved management of the three parks contributes to the improved welfare of the populations within and around the parks.			
Value (quantitative or Qualitative)	A. % population convinced of the economic interest of the 3 parks is insignificant. B. Money benefit	A=20% B=15%		A. Surrounding communities recognize the direct and indirect benefits of the

	captured by local population at start of project: 0%			parks (10% in Y3; 20% in Y6). B. 16% of Park budget (40% of civil eng budget) goes to services rendered by local communities.
Date achieved	08/01/2002	08/01/2002		04/17/2009
Comments (incl. % achievement)	The monetary benefits consisted mainly of salaries and other revenues paid to local community for civil works, incl. rehabilitation of park and social infrastructure. Gender disaggregation was not undertaken.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Capacity of the administration and their partners, for biodiversity conservation and protected areas management, is improved			
Value (quantitative or Qualitative)	No annual programs for the 3 parks, limited capacity and no training for permanent staff, communities not involved in park activities.	At least 80% of the annual work programs are implemented every year. 100% of permanent staff have received training to upgrade their skills. Results from research used in mgmt plans, SSEPN is used in daily management of 3 parks from Y3 on.		Over 80% of the annual work programs have been implemented every year. 100% permanent staff of the 3 parks received managerial and technical training. Results of research have been applied to park mgmt. SSPEN functioning, yet link to planning needs support
Date achieved	08/01/2002	08/01/2002		02/28/2009
Comments (incl. % achievement)	Planning, monitoring and budget control are considered adequate. Procurement is done according to plan in 90% of cases.			
Indicator 2 :	% of local communities who have benefitted from training are involved in a park management related activity			
Value (quantitative or Qualitative)	No community members involved in park management	50%		Almost all GDA members are involved in park management activities

Date achieved	08/01/2002	08/01/2002		02/27/2009
Comments (incl. % achievement)				
Indicator 3 :	The 3 parks are better managed, suitably integrated in the rural economy, and contribute to local development			
Value (quantitative or Qualitative)	Very little management planning is taking place and is not carried out through a participatory process	The participatory process with the local councils and populations, for the formulation and implementation of the park management plans, is functional		The participatory process with the local councils is functioning adequately and has been used to produce three park management plans and three community development plans.
Date achieved	08/01/2002	12/31/2006		
Comments (incl. % achievement)	. Also, the result of the various research works carried out in the 3 parks are being incorporated by the park staff in the management plans.			
Indicator 4 :	Park management has influence on regional plans			
Value (quantitative or Qualitative)	insignificant	Three parks have influenced the regional plans for water, livestock, agriculture, forestry and tourism		Ichkeul: water, agric., animal husbandry mgmt. Bou HedmaL water and agriculture mgmt, school map, high school construction
Date achieved	08/01/2002	08/01/2002		02/27/2009
Comments (incl. % achievement)				
Indicator 5 :	% implementation of the park action plans			
Value (quantitative or Qualitative)	0%	At 50% in Year-3 and 100% in Year-6.		Over 80% of annual work programs implemented every year.
Date achieved	08/01/2002	08/01/2002		02/27/2009
Comments (incl. % achievement)				
Indicator 6 :	Reduction of illegal activities index between Y1 and Y6			
Value (quantitative or Qualitative)	0%		Ichkeul: Brac (na) Graz (2) Circul(na) cut (2) BouHedma:	Ichkeul: in distinct decline Bou Hedma: in decline Jbil: reduction from

			(na) (2) (na) (2) Jbil: (2) (na) (2) (2)	32 (2004) to 1 (2007)
Date achieved	08/01/2002	08/01/2002		02/27/2009
Comments (incl. % achievement)				
Indicator 7 :	Water management plans lead to expected results on the physio-chemical parameters of the waters of Lake Ichkeul			
Value (quantitative or Qualitative)	unsatisfactory	distinct improvement		Satisfactory water quality and restoration of critical vegetation
Date achieved	08/01/2002	08/01/2002		02/27/2009
Comments (incl. % achievement)	Lake Ichkeul was removed from the list of World Heritage Sites in Danger at the 30th session of UNESCO World Heritage Committee in 2006.			
Indicator 8 :	Score cards for three parks general management indicate improved management			
Value (quantitative or Qualitative)	not measured	5% in Y3 and 10% in Y6		Improved by 5% in Y3 and 10% in Y5.
Date achieved	08/01/2002	08/01/2002		03/15/2008
Comments (incl. % achievement)				
Indicator 9 :	A position of one deputy conservators in charge of relations and communication created for each of the 3 parks.			
Value (quantitative or Qualitative)	0	3		3 deputies designated and are operational.
Date achieved	08/01/2002	08/01/2002		02/27/2009
Comments (incl. % achievement)	The DPM role and mandate in terms of communication with the public remains to be clarified.			
Indicator 10 :	% of activities of the annual work programs entrusted with communities			
Value (quantitative or Qualitative)	nil	Ichkeul, Bouhedma: 15%Jbil: 10%		At least 25% on average
Date achieved				
Comments (incl. % achievement)				
Indicator 11 :	% population sensitive to key themes			
Value (quantitative or Qualitative)	negligible	25% in each park		Ichkeul: 37% BouHedma: 30% Jbil: 53%
Date achieved				

Comments (incl. % achievement)				
Indicator 12 :	% of pupils having received a 70% score on a test on the park and its value			
Value (quantitative or Qualitative)	NA	70%		Degree of awareness: 90% low (Y3), 0% (Y6) 10% average (Y3), 9% (Y6) 0% satisfactory (Y3), 40% (Y6) 0% very satisfactory (Y3), 51% (Y6)
Date achieved				
Comments (incl. % achievement)	This original indicator has been replaced by a qualitative survey of 100 pupils to determine the degree of sensitization of pupils, justified by the lack of data before the creation of the env. clubs.			

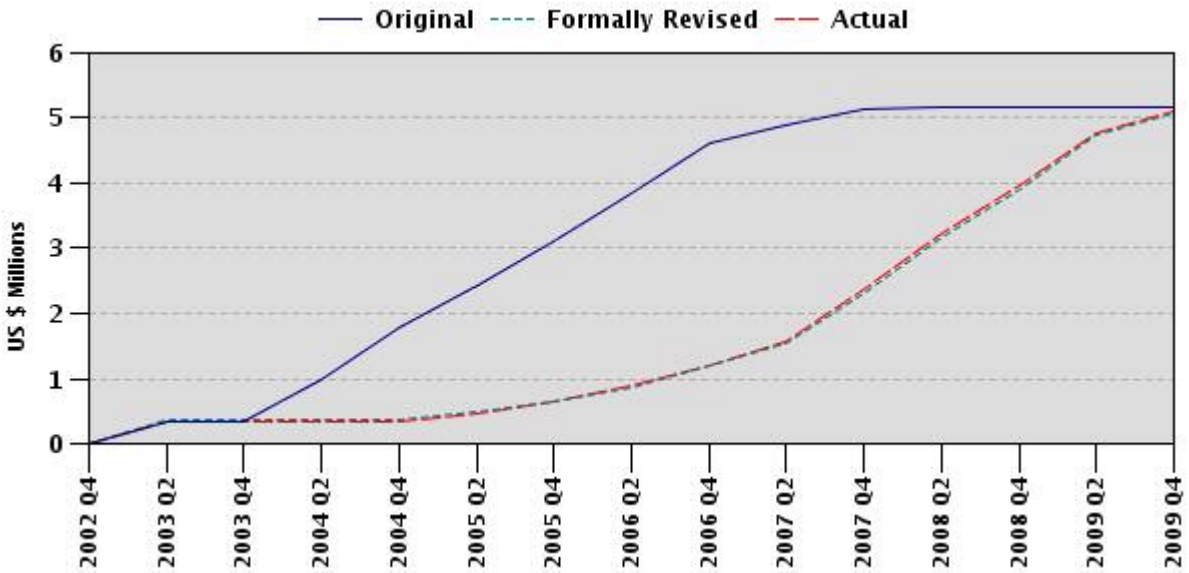
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	10/29/2002	Satisfactory	Satisfactory	0.00
2	01/08/2003	Satisfactory	Satisfactory	0.35
3	05/07/2003	Satisfactory	Satisfactory	0.35
4	11/06/2003	Satisfactory	Satisfactory	0.35
5	05/12/2004	Satisfactory	Unsatisfactory	0.35
6	11/23/2004	Satisfactory	Satisfactory	0.47
7	04/27/2005	Moderately Unsatisfactory	Moderately Unsatisfactory	0.59
8	06/27/2005	Moderately Satisfactory	Moderately Satisfactory	0.66
9	03/02/2006	Moderately Satisfactory	Moderately Satisfactory	0.88
10	08/01/2006	Moderately Satisfactory	Moderately Satisfactory	1.21
11	03/20/2007	Moderately Satisfactory	Moderately Satisfactory	2.05
12	10/08/2007	Moderately Satisfactory	Moderately Satisfactory	2.79
13	05/19/2008	Moderately Satisfactory	Moderately Satisfactory	3.75
14	10/25/2008	Satisfactory	Moderately Satisfactory	4.53
15	05/08/2009	Satisfactory	Moderately Satisfactory	5.06

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Project Context, Global Environment Objectives and Design

(this section is descriptive, taken from other documents, e.g., PAD/ISR, not evaluative)

1.1 Context at Appraisal

At appraisal, it was indicated that out of the 2 200 species of plants in Tunisia, some 150 were considered rare, threatened or endemic. Many of these plants are valuable as a genetic resource; mainly for food, forage and medicine. Unfortunately, there had been a decline in forest cover, from 3.3 million hectares in the Roman period to less than one million hectares in 2002. Furthermore, Tunisian fauna included 80 species of mammals, 362 species of birds and more than 500 species of reptiles and fish. Several of the mammal species were endemic to North Africa. But there was evidence of a substantial decline in the populations over the previous century. Around 110 animal species were threatened, including all large mammals. Generally speaking, the principal threat to biodiversity was (and still is) habitat degradation; mainly because of overgrazing, fuelwood and fodder collection. This, in turn, had exacerbated erosion and contributed to desertification.

Already in 2002, biodiversity conservation constituted an important element of the Government strategy. Reportedly, there was a strong political commitment towards improving conservation *per se* as well as its integration into the economic, social and cultural context. There was also a growing realization that earlier protected areas management interventions had sometimes failed because community participation was too limited. A participatory National Biodiversity Strategy and Action Plan were therefore formulated and adopted by the Government in 1998. The strategy's key priorities were to : (i) improve the biodiversity knowledge base, (ii) prevent the erosion of the genetic resources, (iii) reinforce the management/protection of critical ecosystems, (iv) integrate biodiversity conservation in relevant sectoral strategies, and (v) strengthen the institutional/regulatory framework.

The present project was the first to give concrete content and initiate implementation of this strategy. It was designed mainly to assist the Government in the formulation/implementation of park management plans, with direct community participation ; providing thereby a basis for replicability in other protected areas. The capacity of the relevant Government structures – to plan, implement and coordinate biodiversity conservation – would be strengthened, at the local as well as national levels. Also, the project was meant to build on the momentum generated by previous projects – such as the Second Forestry Development Project closed in 2001 – and to link with ongoing national and donor-financed projects. The objective set for the project was fully consistent with the Bank's CAS of the time.

Tunisia has ratified the following major international environmental conventions and agreements : CITES (1974), UNESCO World Heritage (1974), Ramsar Convention (1979), Bonn Convention (1986), Desertification Convention (1979), Berne Convention (1995) and the Biological Diversity Convention (1993). In particular, the project was designed to support the articles 6, 7, 8, 11 and 13 of the latter convention.

1.2 Original Global Environment Objectives (GEO) and Key Indicators (*as approved*)

The project's main development objective is improved management and protection of selected national parks for the purposes of conserving biodiversity of global importance and contributing to the overall improvement in welfare of local populations.

The GEO was to improve the management and protection of selected national parks (Ichkeul, Bouhedma and Jbil) for the purposes of:

1. Conserving biodiversity of global importance. The key indicators for measuring the achievement of this goal were: (i) stabilization or improvement of the demographic status specific to each national park (vegetative cover/distribution, local animal/bird populations, etc.) ;
2. Contributing to the overall improvement in welfare of the local populations. The main key indicators for this goal were: (i) % of activities of the annual work program that are entrusted to local communities, (ii) the participatory process for the management plans and annual work programs, through the local councils for development and the project management team, is functional, (iii) number of tourism concessions in each of the three parks, (v) overall improvement in management effectiveness as defined by the IUCN scorecard; and (iii) creation of permanent deputy conservators in the 3 parks in charge of community and public relations.

1.3 Revised GEO (*as approved by original approving authority*) and Key Indicators, and reasons/justification

The original GEO has not been revised.

1.4 Main Beneficiaries

The project was to contribute to sustainable conservation management in 3 well-known national parks, covering about 180 000 hectares and representing three different ecosystems with biodiversity of regional/global importance (wetland, arid-mountain / pseudo savanna and desert, respectively). The benefits were therefore expected to reach far and wide and generally be as follows :

At the local level. The project would contribute to alleviate poverty among local populations dependent on the resources of the protected areas; the majority of them deemed to be destitute. This will be achieved mainly by supporting community development including the establishment of social infrastructures, the promotion of income generating activities and the development of ecotourism. There would be a positive gender impact since many of the off-farm income generating activities (like handicraft) are being carried out by women who are also involved in collecting fuelwood.

At the national level. The beneficiaries would include the staff of the General Directorate of Forestry (GDF) of the Ministry of Agriculture (MoA) as well as the staff of the General Directorate of Environment and Quality of Life (GDE) of the Ministry of Environment (MoE), whose institutional capacity to deal with biodiversity conservation will be strengthened. The project would also raise the awareness of the public at large concerning biodiversity conservation in general and the importance of protected areas in particular.

At the global level. The project would establish linkages with biodiversity conservation initiatives in neighboring countries. The conservation models and techniques developed would be of great help for similarly critical Saharan and Mediterranean habitats.

1.5 Original Components

The description of the components, as given in the appraisal report, is as follows :

Component 1 : Institutional Strengthening (US$ 2.02 millions [with physical/price contingencies]). This component is aimed at reinforcing the institutional capacity of the GDF and GDE – at the national, regional and local levels – in sustainable protected areas management. The sub-components are : (i) strengthening of the Project Management Unit (PMU), (ii) training (on-site, of trainers, academic), (iii) carrying out technical and scientific studies, and (iv) setting up of a scientific monitoring system for protected areas.

Component 2 : Protected Areas Management (US$ 7.18 millions). This component is aimed at : (i) managing/restoring the ecosystems in the three parks of Ichkeul, Bouhedma and Jbil, (ii) formulating [with the local populations] community development plans compatible with biodiversity conservation, and assisting in the development of ecotourism. Park management plans would be formulated and carried out ; equipment/materials, training and infrastructure facilities would be provided for the three parks. Measures would be taken, including the setting up of resting areas (for regeneration), in order to reduce/eliminate the overexploitation of natural resources, particularly those shared in common such as grazing lands. The management plans would focus not only on the technical aspects but also on negotiations with communities for the purpose of reducing human pressure on the park areas. Incentives for the communities to participate would include the establishment of social infrastructures (electrification, rural water supply, etc.) and the promotion of alternative income generating activities. Developing ecotourism would include feasibility studies, construction of tourism infrastructures (parking, recreation areas, etc.) and the training of specialized staff (mainly eco-guides).

Component 3 : Public Awareness (US$ 0.68 million). This component is aimed at building public support for biodiversity conservation at the local/park and regional/governorate levels. Information/ sensitization campaigns would target mainly local governments, park visitors and school children. This would be achieved through the use of mass media as well as formal/informal education, and the establishment of linkages with NGOs, schools, tourism agencies, etc. Flagship species/themes would be chosen for each park and community activities carried out to develop grass-root awareness.

1.6 Revised Components

The original project components were not revised.

1.7 Other significant changes

The grant agreement was initially denominated in Special Drawing Rights (virtual currency used by the International Monetary Fund) and converted in 2004 into US$. This conversion, plus the gradual depreciation of the US$ in the following years, resulted in a reduction of the grant amount equivalent to US$ 1.2 million when measured against the Tunisian Dinar. In addition, the financing of some categories of expenditures was modified in 2008, to accommodate the need for more civil works and equipment/materials than planned at appraisal. These additional needs emerged from the Park Management Plans (PMP) and Community Development Plans (CDP), which were formulated and implemented in close participation with the populations (see later). The additional funds needed for these categories were met by the use of unallocated amounts as well as savings under the Technical

Assistance category. Finally, the grant's closing date was extended by 7 months (from 08/31/08 to 02/28/09), to allow for the completion of activities already committed.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

Generally speaking, the project was well suited for an intended first phase of implementation of the Government's National Biodiversity Strategy. Its GEO was fully consistent with the Bank's CAS of the time. Also, the general description of the project components and sub-components was adequate and relevant to the set GEO. The project design had two important innovative features. First, it pioneered the introduction of participatory planning and management tools into biodiversity conservation, and second, it included alternative livelihood activities as an important element of sustainable natural resources management. These features are now being considered for scaling-up in other parks in Tunisia. Overall, the project design can be considered ambitious given its wide scope and multiple goals, particularly when compared to the limited institutional capacities of the existing implementing agencies (even with project strengthening). It is the ICR's view that the project design had two specific shortfalls which impacted on the implementation later on. First, several of the impact and output indicators under the M&E framework set at appraisal were not sufficiently defined, and therefore difficult to measure. With no established baseline values; thereby exacerbating the problems encountered in the monitoring/evaluation of the project. In particular, the indicators selected for assessing improved welfare of the populations within and around the park were hard to measure objectively.

Second, the design did not pay adequate attention to readiness for implementation, particularly in view of the limited capacity at the local level. Several activities to be carried out were not formulated in sufficient details, thereby causing delays during project implementation – for example: the definition/organization of the research activities, the setting up of the scientific monitoring system for protected areas, and the process for elaborating the Park Management and Community Development Plans. Finally, the price contingencies estimated at appraisal were clearly insufficient (7% over six years). This explains partly the under-estimation found during project implementation of several of the project costs.

Quality at entry is therefore rated moderately satisfactory.

2.2 Implementation

Overall, the project set out to achieve its stated objectives, and implemented the majority of the planned activities with visible results in terms of the improvement in biodiversity conservation, and the overall management of the three parks. One of the key factors affecting implementation was the delays in start-up of the activities. The grant agreement was signed in July 2002 but the bulk of the project activities started only in the second part of 2004. The two main reasons are : (i) most of Year 2003 was devoted to putting into place the institutional setup (mainly national steering committee, PMU and park staff) as well as preparing the bid documents and conventions; and (ii) the procurement procedures were found to be numerous, complex and relatively rigid. For instance, the PMU had to prepare 12 conventions with different research institutions and science faculties, in addition to bid documents for the carrying out – by various consultancy firms, NGOs and consultants – of several project activities (for example) : the

formulation of 3 Park Management Plans (PMP) and 3 Community Development Plans (CDP), and the preparation of information/sensitization campaigns for public awareness.

The problems encountered include: (i) the obligation for the procurement procedures to meet the terms/conditions of both the Government and the Bank ; (ii) delays in obtaining non-objections from the Bank, (iii) several unsuccessful bids, and (iv) lack of knowledge at the regional/park level about Bank procedures. For instance, the bids for the formulation of the PMPs and CDPs were initially regrouped to simplify procedures, but had to be subsequently launched in separate packages because the consultancy firms did not have sufficiently large capacities. Even then, three attempts were necessary for finding a suitable candidate in the case of Bouhedma's PMP. It must be pointed out however that the problems were much less acute for the MoE/GDE because a full-time consultant was hired in Year 2005 for carrying out most of the activities planned under the project component 3, and also due to the fact that the number of contracts to process was limited. The situation was exacerbated by the considerable period of time (almost one year) between the departure of the first Bank TTL and the nomination of the successor. Finally, another constraining factor was the substantial cost inflation of several of the equipments and materials provided during project implementation, which created difficulties in finding suitable products.

The approach under project component 2 was to formulate and implement a comprehensive PMP in each of the 3 parks, complemented by a CDP aimed at gaining the proactive support of the local populations living within and in the vicinity of the parks. To this effect, the CDPs were to be composed of motivating investments for the benefit of the populations, mainly in the form of community development programs (essentially the construction/rehabilitation of social infrastructures, the promotion of income generating activities and the provision of basic training). Some of these investments were also meant to compensate for opportunity costs incurred by these populations, following for instance the establishment of closed resting areas for vegetative regeneration within the parks (consequently restricting livestock movements). Unfortunately, mainly because of the procedural problems indicated previously, the formulation of the PMPs and CDPs was finalized much later than planned : 2005/6 for Boujedma, 2006/7 Ichkeul and 2008 Jbil. In the meantime, given the growing impatience of the populations – expectations having been raised by the information campaigns already carried out – the PMU was compelled to start carrying out in 2005 the most obvious investments included later in the CDPs. This reversal in approach created initial confusion, although it helped in responding to most urgent needs and thereby gaining the confidence of the communities. Due to limited remaining time and overall resource envelope, it was not possible to complete all of the activities under the PMPs and CDPs, whose budgets and timeframe are much broader than that of the project.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Two M&E systems were planned for different purposes: the first to monitor the physical status of protected areas (scientific monitoring system for protected areas), and the second to monitor/evaluate the project's realizations and impacts (project M&E system).

(i) Concerning the scientific monitoring system, a specialized consultancy firm was contracted in 2008 after several procurement delays, for the purpose of setting up the scientific monitoring system. The base data on the three parks, including topographical maps and satellite images, have been assembled and the system has been designed and installed at the GDF's Information System for Forest planning in Tunis. Moreover, the necessary equipment and materials for the three parks have been acquired and specialized training given (in Tunisia and abroad) to selected staff at the central and regional/park levels.

The set up of the system and the generation of information and results for the purpose of tracking different aspects of biodiversity status was completed by the end of the project, and have been reflected in the updating the relevant key performance indicators. However, since, the three parks do not yet have internet connections, supplying the system with timely data (particularly given the distances) – as well as its regular use by the park staff – remains weak.

(ii) Concerning the project M&E system, the system was set up, however it was fragmented and did not realize its full potential as a dynamic management tool. The first two project components were under the responsibility of the GDF whereas the third component was implemented by the GDE. The necessary data were therefore collected separately and integrated only when required for the production of progress reports. The monitoring of the project's financial realizations and the progress in terms of the technical aspects of biodiversity conservation were carried out in a satisfactory manner. On the other hand, some of project's impacts, particularly with regard to the contribution to community welfare, were not being monitored continuously and consistently. The relevant community surveys were only conducted in the last two years of the project life. This shortcoming is mainly due to the limited capacity and experience on the part of GDF with instituting similar M&E systems and utilizing them as a live management tool.

Overall, the ICR found the main weakness to be related to monitoring the outcomes in terms of the impacts on the welfare of the communities and their perception and level of awareness of the value of the park. The number of indicators for these aspects proved to be too many and in some cases difficult to measure, requiring strong baseline information and rigorously designed follow up surveys. For this reason, as well as the fragmented institutional responsibilities, the evaluation of this aspect of the project's realizations and impacts tends to rely more on partial evidence than on full scientific analysis. Nevertheless, the information available is deemed sufficient to demonstrate substantial positive project outcomes.

2.4 Safeguard and Fiduciary Compliance

Financial management generally was globally acceptable. The PMU prepared the financial statements, covering commitments and disbursement by components, sub-components and category and also by financing sources. Audits were conducted annually by CGF (Contrôle Général des Finances), delivered to the Bank, and revealed no particular accounting issues. Initial financial management shortfalls included delays in communication of financial information from regional level (CRDA) to central level (PMU), delays in transmission of Interim Financial Reports and audit reports. These were identified during the first supervision missions and successfully rectified over the course of the project. The procurement management issues faced during implementation have been outlined under section 2.2 above, and relate to the limited knowledge at the regional and park levels with Bank procedures and the complications resulting from the need to adhere to both Bank and GOT guidelines. These led to implementation delays, but overall the procurement procedures during implementation were in line with Bank guidelines and requirements.

2.5 Post-completion Operation/Next Phase

The continued operation of the park management activities fall under the responsibility of the DGF, which will continue to manage the staff and assets established under the project. As such, the institutional structures set –up during implementation will continue to operate under the jurisdiction of the relevant authorities. However, the challenge will be to ascertain that adequate levels of funding are

allocated for long term operation and maintenance, as well as for the support of the Associations for Agricultural Development (AADs) and environmental clubs created under the project.

At the national level, the project was meant to be the first phase of implementation of the Government's National Biodiversity Strategy. There is now a Tunisian Program in place and aimed at establishing 9 new parks and 11 reserves, in addition to the existing 8 parks and 16 reserves. Hence, the aim of providing a replicable model under this project has been achieved. When considering a scaled-up national park management structure, adequate running costs for the three project parks as well as all the others remain a question. In particular, with the limitation on revenue generating activities, such as tourism concessions, the reliance on Government funding will continue in the near future. In this regard, refining the participatory methodology for prioritizing investments introduced by the project becomes an important tool to promote efficient resource allocation in a constrained budget environment. Finally, the MoE is in the process of formulating a program for submission to the GEF, which would draw from the lessons of the present project, with a focus on expanding the ecotourism potential.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Biodiversity conservation in general, and the establishment of protected areas in particular, remain high priorities for Tunisia, in political as well as in economic terms. Indeed, the existence of a Tunisian Program for new parks and reserves is a concrete evidence of this. Moreover, the use of participatory approaches with populations is now a mandatory feature of all rural development projects in Tunisia. The benefits of such approaches are well known and accepted by most people involved ; in the public sector as well as with the private sector and consultancy firms, at the national and local levels. Finally, the Government is keen to unlock the potentials of ecotourism, which if properly managed would bring new economic opportunities and local jobs.

The project fits well within the Bank's evolving assistance strategy in Tunisia. When the project was designed, it contributed to the 2000 Country Assistance Strategy objective of supporting human development by consolidating long-term development, and addressed the management of natural resources and community participation in an integrated manner. The project continues to be relevant to the current CAS approved in June 2004, and the CAS Progress Report of 2007, contributing to the outcome on improved competitiveness of agriculture and natural resources while ensuring that social and environmental concerns are properly addressed.

3.2 Achievement of Global Environmental Objectives

Conserving biodiversity of global importance. All 3 project components contributed directly or indirectly to conserving biodiversity (see annex 2 for details). Under project component 1, a wealth of research results has been produced about the fauna and flora in the parks. This precious information allows the staff to understand better the evolution of the specific biodiversity in each park and to intervene more effectively for improving and protecting it. The interaction of the several research institutes and science faculties undertaking the research has also created a new dynamic and these

entities are now more interested and competent to carry out similar works in the future. Under project component 2 : (i) the necessary basic infrastructures are now in place in each park (including fences/gates, resting areas and watch towers), (ii) significant works have been carried out for the regeneration of key vegetative species and the reintroduction/multiplication of rare animals, as evidenced by the surpassing of appraisal targets on most of the related indicators, (iii) for all three parks, the participatory park management plans (PMPs) and community-based development plans (CDPs) have been formulated and their implementation initiated; and (iii) the staff has been reinforced, mainly with the provision of additional eco-guards, transportation means, equipments/materials and training (covering park management, participatory approaches and communication techniques). This reinforcement has improved the staff's deployment capabilities and results in a better protection of the park areas and their biodiversity. Under project component 3, the numerous information/sensitization campaigns carried out and targeted at very diverse groups (from regional staff of the MoA and MoE to the local authorities , park staff and neighboring communities), plus the rich audio-visual support/documentation produced for the 3 parks as well as the creation of 14 environmental school clubs (with audio-visual equipment, training of selected teachers and guided tours for pupils), has certainly raised the public's awareness about biodiversity in general and protected areas in particular. Six formal Associations for Agricultural Development (AAD) have also been created to serve as interface between the public administration and populations. It should be stressed that, as will be indicated later, the AAD and school clubs created are still fragile and will need further support to remain functional. On the other hand, although not planned at appraisal, the MoE has almost completed the formulation of a national strategy in communication/sensitization about protected areas. A national workshop will be soon organized with a view to validate the strategy and find donors to co-finance its implementation.

On balance, as an overall result of the implementation, biodiversity is now better conserved in the 3 parks. The key indicators for measuring this achievement were based on the regeneration of the vegetative cover and the repopulation of animal species. The evolution of these indicators at project's completion was shown earlier in Section F. Flagship species/themes had been identified for each park. For Ichkeul, water resources was the theme and the indicators demonstrate that stands of *potamogeton* has been reestablished and the land coverage of *sirpaies* has increased by 80% (50% was the target at appraisal). The project was also instrumental in having the park removed from the the UNESCO list of World Heritage Sites in Danger. For Bouhedma, the *acacia (tortilis) radiana* was the species and their density per hectare has increased by 35% (no measurable target was given). Moreover, the substantial growth of hoofed animals in the park has allowed the transportation of addaxes to Jbil and of oryxes to the Dghoumes park in Tozeur. For Jbil, the sand gazelle (*leptoceros*) was the species and the target was a population increase of 15%. Although it was found impractical to quantify the population, three times as many traces of animals were detected at project completion, plus 7 gazelles were sighted. In addition, the establishment of resting areas has resulted in a noticeable vegetative regeneration and allowed the reintroduction of rare animal species such as the sand gazelle and the red neck ostrich.

Contributing to the overall improvement in welfare of the local populations. Project component 2 contributed directly to this goal. The opportunities for work created by the construction/rehabilitation of the park infrastructures (including for ecotourism), as well as the other civil works carried out for better enriching/conserving biodiversity within the parks, brought revenues to the populations. Moreover, the motivating investments in community development (particularly rural roads and income generating activities such as bee keeping, handicraft, etc.), certainly helped improve the living conditions. However, because of the lack of a proper M&E system, including structured surveys of the beneficiaries, the specific benefits (although certainly positive) are difficult to measure, particularly in the case of the income generating activities for which the current financial situation is not well known. As already

indicated, the CDPs were formulated towards the end of the project and the 2 NGOs in charge of realizing the community development investments, as part of the CDPs' implementation, were contracted in 2008 only. Consequently, only part of the investments (already agreed with the AADs) have been implemented.

The key indicators set at appraisal refer mainly to the communities' participation in the formulation of the parks' annual work programs as well as in their implementation. It should be noted that the three parks exhibit different characteristics in terms of the surrounding communities and the opportunities/ threats they pose. BouHedma had the highest number of surrounding communities, estimated at 320 households. Ichkeul's surrounding population is mainly concentrated in small settlements at the southern foot of Mount Ichkeul and is estimated at about 65 households and 320 people (2001). Finally, the communities at Jbil are the smallest, with unofficial sources indicating that about 200 nomads pass through the vast area in search of grazing. The project has concentrated its efforts in engaging the surrounding communities, with salaries and other forms of remuneration paid to the populations representing 40% of the civil works carried out for the construction/rehabilitation of the park and social infrastructures. The revenues obtained by the populations from the parks' annual operations are limited, for now, to the manual labor needed periodically and to incomes derived from some of the visitors' daily expenses. In addition, a total of 71 beneficiaries received small grants in support of apiculture, camel breeding and weaving activities. Ecotourism was also expected to bring revenues to the populations. Indeed, some tourist infrastructures were put into place in each park (eco-museums rehabilitation at Ichkeul and construction at Jbli, panoramic tracks, signalization, documentation) and specialized training was given to selected park staff (converting some eco-guards into eco-guides). Furthermore, a pre-feasibility study on ecotourism development was realized for the 3 parks and 8 other protected areas. In conclusion, the project achievements towards welfare improvement are positive and provide a good basis for long term collaborative engagement using the established participatory planning and management tools. .

3.3 Efficiency

The benefits of most of the project investments are dedicated to public commons, so they are not readily quantifiable. Also, cost recovery was not required except for the promotion of some of the small scale income generating activities. Consequently, it was not appropriate to attempt a calculation of the financial/economic rates of return. Nevertheless, the evidence from the activities in each park demonstrates that the project has achieved concrete/positive results.

3.4 Justification of Overall Outcome Rating

Rating: Satisfactory

In spite of the problems encountered during the early years of implementation, the project was able to achieve its set targets and to generate important and significant outcomes. The twin goals of conserving biodiversity and contributing to the improvement of the populations' welfare were achieved. The project was able to demonstrate significant conservation results in terms of the key flaura and fauna, as evidenced by the surpassing of appraisal targets on most of the related indicators, and manifested by the global recognition through removal of the Ichkeul park from the UNESCO list of World Heritage Sites in Danger (2006). A wealth of research results has been produced about the fauna and flora in the parks, and strong collaborative partnerships established with local research institutions. The management and

planning capacity of the parks has been upgraded, and the necessary basic infrastructures are now in place in each park. The staff has been reinforced, leading to improved staff's deployment capabilities for a better protection of the park areas and their biodiversity. Welfare of the communities has improved, and the local social capital has been fostered, including through the establishment and partnership with AAD's, NGOs and environmental clubs. Equally important, the project served as pilot for the formulation of PMPs based on a participatory approach with the populations involved. This experience and the learning by doing undertaken through this first such project has had important national level impacts. These are demonstrated at several levels, including the heightened awareness and attention to parks conservation and the increased number of officially declared national parks and reserves in the country, the transformation in terms of community perceptions of protected areas, the formulation of a strategy to enhance eco-tourism potential in all parks, and discussions for new programs to improve and replicate the experience gained in other protected areas. Finally, the project had important influence on the regional development plans, resulting in added attention and support given to the park's ecological needs and enabling infrastructure requirements (incl. transport and education), and to an increased awareness at the national level of the importance of the park systems in the country. The rating "Satisfactory" is therefore deemed appropriate.

3.5 Overarching Themes, Other Outcomes and Impacts
(if any, where not previously covered or to amplify discussion above)

(a) Poverty Impacts, Gender Aspects, and Social Development

While the primary objective of the project was the conservation of globally significant biodiversity, the projects contribution to the livelihood of the local communities has also demonstrated tangible benefits. The construction/rehabilitation of social infrastructures as well as the promotion of income generating activities resulted in concrete improvements in the living conditions of the local populations, the majority of which were said at appraisal to be destitute. In particular, women are benefiting since they are directly involved in several of the income generating activities, for example handicraft, carpet weaving and bee keeping. Furthermore, the work carried out in the context of the formulation of the 3 CDPs was deemed to have a positive impact on the social development of the beneficiaries, in particular because it offered them an opportunity to organize and discuss their needs and priorities. Finally, the establishment of the AADs assisted in building local social capital and an opportunity for longer-term collaboration among the communities and with potential financing bodies to sustain the efforts started in the development of income generating activities.

(b) Institutional Change/Strengthening

One of the specific aims of the project has been to increase local capacity of the administration (forestry, environment, tourism) and their partners (scientific community and local population) for biodiversity conservation, and towards that end the project has achieved the following concrete levels of institutional strengthening: (i) a better management structure in the three parks, by providing the minimum essential tools and staffing, targeted training of park management and rangers, setting up the systems for monitoring and follow up, (ii) initiation of partnerships with the scientific community for collaboration and integration of research results into management decisions, (iii) institutionalizing the mechanisms of involvement of the communities in park management and follow up. The ICR views these as important factors contributing to a change in the way park management is conducted in the three target parks as well as other parks in the future. However, there have been some limitations faced during

implementation; in terms of strengthening coordination mechanisms across relevant sectors, which has continued to be a challenge during implementation and required higher level political support. In particular, the partnership with tourism to enable the implementation of effective eco-tourism programs could have been strengthened. Also, the limited utilization of the M&E system as a dynamic management tool between the center and the local level has deprived the local park staff of an important mechanism for demonstrating results and linking them to central funding allocations.
All in all, given the scope and funds of the project, these activities should be seen as a key first step and pilot demonstration towards improved park management at the national level. The limited resources provided by the project (two vehicles and some computer equipment for the PMU; 2 vehicles, 3 pickup trucks, office and computer equipments/materials, plus 8 additional eco-guards, for the 3 parks) should be considered as a bare minimum given the role and responsibilities attributed to the park staff, and the vast geographic expanse of each of these parks.

(c) Other Unintended Outcomes and Impacts

There are several encouraging signs that the project's activities and outcomes are generating secondary effects : (i) the Ministry of Equipment has paved rural roads leading to the Bouhedma park and intends to pave some others constructed with the project, (ii) the Ministry of Transport is running buses on roads adjacent to the parks, and (iii) the Ministry of Environment and the Ministry of Tourism intend to build bungalows in the vicinity of the Bouhedma park. Furthermore, the MoE indicated that, in collaboration with German and Spanish aid agencies, it initiated a wide ranging program aimed at promoting environmental education, based on the experience of the project. Also, another program is being formulated for submission to the GEF and which would draw from the lessons of the present project. Concerning ecotourism, it is also worth signaling that the MoE is carrying out a national program aimed at capitalizing the existing natural resources; detailed studies have already been produced for a Sahara circuit and the oasis. Finally, the NGO involved with the CDP's implementation in Ichkeul has found other sources of financing from Spain, UNDP and also a Tunisian bank dealing with microcrédit (*Banque Tunisienne de Solidarité*). It therefore intends to continue providing support to the AAD put into place under the project.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops
(optional for Core ICR, required for ILI, details in annexes)

A beneficiary survey is not required for a core ICR. But a short socio-economic evaluation was carried out by the client in February 2009. The two main conclusions were that : (i) there is now a greater interest on the part of the populations within and in the vicinity of the 3 parks, reflected, among other things, by a reduction in illicit wood extractions, and (ii) the project had a definite positive impact, albeit limited, on the living conditions of the populations; mainly through the jobs/earnings created by carrying out civil works, the rural roads constructed/rehabilitated and some daily labor for maintenance in the parks.

4. Assessment of Risk to Development Outcome
Rating: Moderate

The project has achieved solid outcomes that have enhanced the local capacity to conserve biodiversity in the three target parks. Despite the encouraging signs already noted, the sustainability of the project's

outcomes is not without some risk. The new infrastructures and the reinforced staff in the three parks necessitate adequate financing for their efficient maintenance and operation; the annual (regular) budgets provided so far by the MoA are limited and may not be sufficient in the future. Financing should be found for the remaining activities under the PMPs and CDPs to be carried out. For example, it will be necessary to carry out dredging operations at the mouth of the Lake Ichkeul; a failure to do so could compromise the ecosystem in the park. Some encouraging signs of leveraging additional funding were seen in the case of the Ichkeul AAD, and this should be encouraged and replicated Also, the populations' support for sustainable park management necessitates the finalization of the CDP activities;. The 6 AADs and 14 environmental clubs are still fragile and need further support. In particular, now that the project is closed, the AADs must carry out new productive activities in order to stay fully functional.. It must be pointed out however that the Government has the means to finance some of these operations and that there are already discussions with donors including the World Bank concerning possible follow-up operations to the present project. Finally, an important factor contributing to sustainability would be an enhanced ability for these parks to generate and retain local revenues, including through the finalization and implementation of the national eco-tourism strategy, of which a draft is currently discussed by the Government.

5. Assessment of Bank and Borrower Performance

(relating to design, implementation and outcome issues)

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: Moderately Satisfactory

As previously discussed, the project was well suited for a first phase of the Government's National Biodiversity Strategy. The general description of the project components and sub-components was adequate and relevant to the GEO. However, the project design was somewhat ambitious given its wide scope and multiple goals, particularly when compared to the limited institutional capacities of the existing implementing agencies. In particular, the number of impact and output indicators set at appraisal was too high to efficiently monitor in a consistent manner, particularly in a project of this size, and some were vague and therefore difficult to measure. Moreover, insufficient attention was given to ensuring readiness for implementation by the time of project effectiveness. The limited focus in design on the institutional/organizational aspects given that more than one implementing agencies are involved, proved to be the main bottlenecks facing implementation in the first couple of years. This resulted in some of the activities to be carried out not being formulated in sufficient details, thereby creating some confusion/delay during project implementation.

(b) Quality of Supervision

Rating: Moderately Unsatisfactory

Bank supervision missions were staffed with specialists covering the main subject matters, who provided regular guidance and support to the client during implementation. The Bank supervision teams were proactive in addressing the funding shortfalls, and supporting the client in reallocation of funds to meet the priority needs. Also, the missions raised consistently and continuously the main issues as they

emerged – for instance: the shortcomings in the general management of the project, the absence of a comprehensive and fully functional M&E system, the difficulties with the procurement procedures, the delays in the production of the progress report as well as their shortcomings in content. Often, matrices were produced showing the situation concerning the main outstanding issues and proposing solutions. However, the missions did not succeed in improving markedly the situation, and it did not always reflect on an adequate rating implementation progress during the early period of the project which witnessed significant delays.
Over the life of the project, the frequency of supervision missions was less than every six months on average. Interestingly, it is indicated in the aide-mémoire dated November 2003 that the Government requested more frequent Bank missions. A stronger procurement involvement would have been merited, given the fact that procurement issues were a recurrent problem. A considerable period of time (almost one year) lapsed between the departure of the first TTL and the nomination of the successor. The borrower also noted recurring delays in communicating procurement non-objections. Indeed, the need was raised by commentators in some of the ISRs for closer supervision of the project and with more resources, including better support in the field of procurement.

(c) Justification of Rating for Overall Bank Performance
Rating: Moderately Unsatisfactory

While there has been significant technical guidance and support to the client during implementation, which has contributed to the overall successful project outcome, an overall moderately unsatisfactory rating is deemed appropriate due to the shortfalls in certain design aspects at entry in addition to the above mentioned inconsistencies in supervision over the life of the project. .

5.2 Borrower
(a) Government Performance
Rating: Satisfactory

The Government is lauded for embracing the new participatory park management approach and integrating it into its national biodiversity strategy. Central ministries provided regular supervision and guidance to the implementing agencies throughout the project life, and intervened to address bottlenecks as they occur. Over the life of the project, the government has also demonstrated continued commitment and increased emphasis on biodiversity conservation, as demonstrated by the declaration of 9 additional national parks, the formulation of the national ecotourism strategy, and supporting activities to enhance awareness at all levels of the importance of integrating biodiversity conservation into local development planning. Ideally, the Government could have reached out to engage the Ministry of Tourism in supporting the implementation of the ecotourism concessions, however given the need to first have the required park infrastructure in place and the limited remaining time under the project, this is now envisaged to be undertaken under a new proposed project encompassing a network of parks.

(b) Implementing Agency or Agencies Performance
Rating: Moderately satisfactory

The grant agreement was signed in July 2002, the launching seminar was held only in December 2002 and the PMU created in March 2003. As already indicated, the bulk of the project activities started only in the second part of 2004 because of the difficulties with the procurement procedures. The PMU was

staffed with the personnel recommended at appraisal but none of them (mainly the national coordinator and his assistant, plus 2 technical coordinators) were working full-time, which explains partly the delayed project start. Furthermore, project components 1 and 2 were implemented by the MoA whereas project component 3 was the responsibility of the MoE. The tendency to compartmentalize activities between the two ministries was found to be a real obstacle to a truly integrated management of the project as well as to the setting up of a comprehensive M&E system (even on an *ad hoc* basis with Excel sheets). Fortunately, these weaknesses were partly compensated by the admirable dedication of most of the people involved in project implementation, in particular the two technical coordinators at the central level and the conservators of the three parks, and the support and oversight from the central Government.

(c) Justification of Rating for Overall Borrower Performance
Rating: Moderately Satisfactory

On a whole, the performance of the Borrower is deemed moderately satisfactory. While the project was a pioneering pilot, which managed during the latter years to turn around its performance and meet, and in some instances surpass, its set objectives, the initial delays and limitations in coordination among the two implementing agencies reduced the opportunity to fully harness the lessons and benefits from the newly introduced park management tools beyond their first round of formulation and implementation.

6. Lessons Learned

Coupling park management activities with local partnerships and awareness raising programs has a strong positive impact on improving community perceptions. The project demonstrated that the partnerships with schools, research institutions, media and local private sector helped solidify the collaborative spirit towards nature conservation objectives in each of the regions, improved the understanding and positive perceptions of the local people and significantly reduced the number of illegal activities. Among the three parks, Jbil proved to be more challenging in this aspect given the small number of communities, many of which are not settled. In future, a dedicated awareness strategy based on the specific characteristics of each park is merited.

Fostering local partnerships for knowledge generation of the existing biodiversity in a park enhances its management capacity. Rather than mobilizing a large scale technical assistance, the PMU has contracted several research institutes, science faculties and consultants to carry out small-scale analytical works on very specific subject matters. This approach showed that a very rich and useful information base could be obtained at a lower cost than with classical technical assistance, and engages local institutions for more sustainable partnership relations

Phasing of park management programs is advised to establish strong institutional, participatory and infrastructure foundations before expanding to more ambitious goals of eco-tourism development. It is important to manage expectations about what can be achieved in a first phase of a participatory natural resources management project. The project required significant time and resources to set up the participatory planning methodology, with a strong element of learning by doing as it went forward. Also, there was a need to bring the parks to a level where the minimum infrastructure required for receiving increased visitor numbers are in place. These are prerequisites to the launch of successful eco-tourism activities, which require more sophisticated institutional collaboration structures across different sectors. and can be envisaged in a follow-on phase.

Integrating tools to prioritize allocation of investments can be helpful to promote efficiency in a resource constrained environment. The project served as pilot for the formulation of PMPs on the basis of a participatory approach with the populations involved. The experience was very enriching for all concerned and deserves to be improved and replicated in other protected areas. In the face of budget limitations, it would be useful to include a threat analysis when elaborating the PMPs so as to focus on the interventions that will mitigate against identified threats to the ecosystem. Also, informing the communities of the available budget when elaborating the CDPs avoids long wish lists and forces a prioritization towards most urgent needs.

Readiness for implementation is key to effective start up; participatory planning needs to be started at the preparatory phase. To allow for effective start-up upon effectiveness, the following items are critical: (i) to put into place the necessary institutional setup (steering committee, PMU, etc.) and (ii) to advance insofar as possible the required procurement procedures (preparation of bid documents, conventions and other agreements), and (iii) given the importance in this project of the participatory planning process, it is important to elaborate with the communities during preparation at least the set of activities for the first year to be able to be address priority needs at the onset of implementation start up

.**In setting up a results-oriented M&E systems that serve as dynamic management tools, baseline information, resource allocation and community involvement are critical.** To go beyond collecting data on progress indicators for the purposes of external reporting and make them an integral input into decision making, the following elements are essential: (i) define beforehand the baseline situation to give management the incentive to monitor improvement, (ii) set a small number of output and impact indicators that are clear and easily measurable, and within the technical/ financial reach of all users, and (iii) select a small number of indicators that can be monitored by community representatives to create a feedback system from the beneficiaries to the decision makers.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

The full summary of the Borrower's completion report is included in Annex 7.

The Borrower's report highlights the achievements of the project, and details the resulting impacts under the following categories:

- An improvement in the conservation of biodiversity in the three parks.
- An improvement in the living conditions of the local population
- An enhancement in the capacity of park management
- An integration of the park management in local development in the three areas
- A solidification of partnerships with scientific institutions and local communities in park management
- An enhancement in the capacity of monitoring of protected areas in Tunisia

In terms of lessons gained and future perspectives, the Borrower emphasizes that the dynamic unleashed byt his project should not be lost. The experience gained under PGAP should be extended to other parks, and the partnership and participatory process should be further pursued. On the other hand, the scientific

research in other protected areas should be intensified, building on the lessons and experiences gained under this project. Finally, the socio-economic aspects in research need to be strengthened.

(b) Cofinanciers

None

(c) Other partners and stakeholders
(e.g. NGOs/private sector/civil society)

None

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
INSTITUTIONAL STRENGTHENING	**1.81**	**1.94**	
PROTECTED AREAS MANAGEMENT	**6.39**	**6.91**	
PUBLIC AWARENESS	**0.60**	**0.66**	
Total Baseline Cost	**8.80**		
Physical Contingencies	0.42		
Price Contingencies	0.66		
Total Project Costs	**9.88**		
Project Preparation Facility (PPF)	0.00		
Front-end fee IBRD	0.00		
Total Financing Required		9.51	

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		4.24	4.22	99.5%
Local Communities		0.16	0.026	16.3%
Global Environment Facility (GEF)		5.33	5.11	95.9%
Foreign Multilateral Institutions (French GEF)		0.15	0.15	100%

Annex 2. Outputs by Component

The Protected Areas Management Project is the first major initiative to improve national parks management in Tunisia. This is the first World Bank GEF operation in this area, and is considered by the Government of Tunisia as a pilot project.

1. Component 1 : Institutional strengthening

With an initial cost of 2.02 million Euros, the component objective was to build the institutional capacity of the Directorate General for Forestry at the Ministry of Agriculture and Hydraulic Resources (*Direction Générale des Forêts du Ministère de l'Agriculture et des Ressources Hydrauliques -- DGF/MARH*) and the Directorate General for the Environment and Quality of Life of the Ministry of the Environment and Sustainable Development (*Direction Générale de l'Environnement et de la Qualité de Vie du Ministère de l'Environnement et du Développement Durable -DGEQV/MEDD*), with regard to sustainable management of protected areas. This component focuses on the following areas:

1.1 Support to the Project Management Unit (PMU);
1.2 Training (3 types): in-service-training, training of trainers, and certificate courses;
1.3 Technical and scientific studies;
1.4 Establishment of a National Parks Scientific Monitoring System (*Suivi Scientifique des Parcs Nationaux -SSSPN*).

The training program was designed with a strong regional emphasis, targeting parks management personnel, local administrations at the level of the Regional Commissariats for Agricultural Development (*Commissariats Régionaux de Développement Agricole -CRDA*), and for other potential partners (including the private sector and NGOS). Particular emphasis was given to participatory approaches regarding the management of protected areas. Training was also planned for DGF and DGQV staff at the central level.

1.1 Support to PIU

Expectations: The project aimed at strengthening PIU (within the DGF) monitoring and supervision capabilities through technical assistance. This included the recruitment of consultants specialized in monitoring and evaluation, and the acquisition of a software for financial management, as well as of a vehicle, office automation equipments and VHF radios. This sub-component also included the support for a mid-term review during the third year of project implementation.

Achievements: The establishment of PIU was performed in 2003. Employees working under contract have not been recruited because of a defective candidate selection procedure. Technical assistance to PIU for monitoring and supervision was not provided, but PIU technical capacity was strengthened through the appointment of three engineers in 2003/04. DGFIOP provided technical assistance in the areas of accounting and reporting during project inception, for DGF to acquire the necessary expertise in project financial management. This directorate has already gained substantial experience through projects like PISEAU and PISA.

At the regional level, three park keepers were targeted by the project, but only four of them were really involved; this is justified by the special situation of Bouhedma Park which belongs to the CRDA of Sidi Bouzid and Gafsa. A deputy park keeper was officially designated for each park, except for the Gafsa section of Bouhedma Park (covering 1/3 of the total park area) who was hired in a part-time capacity. Out of twenty four environmental protection guards (*écogardes*) anticipated in the beginning of the

project, only four were recruited, two for Jbil and two for Ichkeul. Two all-terrain vehicles instead of one initially planned were bought: one for DGF and another for DGEQV. The office automation equipment has not been acquired, and UGP got that equipment through other programs. Computer equipment has been provided to PIU, and VHF radios were supplied only at the regional level.

The final phase of the consultants recruitment process for project appraisal has been carried as initially planned. The acquisition of financial management software has not been carried out. PIU has used the software which has already been employed in the 2nd Forestry Development Project (PDF) financed by the World Bank. Equipment and computer software have been acquired for SIG. Although there has been a delay in the start of the project of about 2 years, while the acquisition of equipment and material needed for project implementation was carried out. This activity benefited from experiences that the implementing agencies gathered from several previous projects.

1.2 Training (in-service-training, training of trainers, and training leading to formal certification)

Expectations: Training programs were intended for employees in charge of the parks day-to-day management as well as for the staff of the concerned Ministries and their partners involved in the parks administration. This sub-component was considered essential to strengthening project implementation capacity. Indeed, the emphasis on the participatory approach for this project implied that the DGF staff acquires new skills. The training of individuals that are not part of the concerned administration (from local associations, tour operators, etc.) but closely involved in the management of the country's protected areas has also been envisaged. There are about one hundred of these individuals. A training consultant was supposed to be hired to, among others, identify domestic and international trainers needed to implement the proposed training program.

Training included: (I) training on the job comprising five modules: management of a GEF/World Bank project, conservation management, environmental education, improvement of public awareness regarding the importance of the environment, biological diversity centered on key species. The themes identified in each park include: white gazelle for Jbil, Acacia tortilis subsp. raddiana for Bouhedma and water resources management for Ichkeul); (ii) training of trainers with the formation of a group of five students who specialize in biodiversity management and conservation that would take more focused 13 weeks-long training courses abroad and in Tunisia; (iii) training leading to formal certification provided in order to fill the lack of specialists in the field of biological diversity conservation and management. Four scholarships would be provided in Mediterranean biology, ecosystems flora and fauna, biodiversity in Tunisia, and community socioeconomic development.

Achievements: Three types of training were included in the project:

In-service-training for conservation technicians and environmental protection guards from the three parks concerned by the project and other parks in various regions, including management of wildlife, and use of participatory approaches and communication techniques with regard to the environment. In-service-training was also provided regarding GEF project management (6 individuals trained in Sénégal), national parks management (two study tours of 20 days in Kenya for 15 district heads, 15 park keepers and 20 PIU members (hunting wardens and forest technicians), avian fauna management (20 environmental protection guards) and information for the general public (20 environmental protection guards). Four engineers have also participated in the 26th international conference on ESRI products use held in California (USA). Twenty (20) environmental protection guards and ten (10) park keepers were trained in avian fauna management, and ten (10) environmental protection guards in public reception. In

2008, training in herpetofauna and mammal population management has been provided to ten (10) park keepers and twenty (20) environmental protection guards, as well as in ornithology and GIS to technicians from 3 parks. In February 2009, a study tour in Spain on the theme of "management and investment in protected areas" has been organized for 5 technicians (4 from DGF and 1 from DGEQV). It should be noted that *In-service-training* has also been offered to individuals outside government agencies. Indeed, in 2007, training in community development has been provided in Tabarka, in collaboration with the NGO Appell, for twelve (12) GDA members. Members of the three (3) GDA parks have also received training. In addition, in 2006, twenty (20) members of local communities have also benefited from training in the Chaambi NP on how "To make the most of the environment by developing local activities".

(i) *Training of trainers:* this training program was scheduled in conjunction with the research program and contributed to the preparation of 28 master's degrees and 2 PhD dissertations. The program dealt with ecology and the functioning of natural ecosystems in protected areas. A similar training was provided for a DGF executive, during a 2-month period in France, in 2006.

(ii) *Training leading to formal certification:* PGAP allowed the preparation of several scientific works leading to formal certification. These are 6 PhD dissertations, 24 master's degrees and 4 research projects for leaving certificates (*Projets de fin d'études -PFE*). This is a first in Tunisia, which, thanks to the project, can benefit from specialists in fauna and flora who can contribute to the development of protected areas.

1.3 Technical and scientific studies

Expectations: The project supported four basic studies common to the three parks in the following areas: (I) monitoring of the parks vegetation dynamics and establishment of phytoecological maps; (ii) reptile population inventory and monitoring, (iii) ornithological population inventory and monitoring, and (IV) mammals inventory and monitoring.

Moreover, this sub-component was designed to support specific research studies in each park. For *Ichkeul*, the project supports research regarding a mathematical model for lake water resources management. The long-term viability of the lake depends entirely on the execution of a well conceived and scientifically proven plan, in order to release water in the lake taking into account the existing dams (old and new) located upstream of the lake. The mathematical model developed in 1995 by BCEOM, a German research entity, needs to be updated and improved by taking into account current physical realities and needs, and be calibrated (with experimental water releases) in order to become a genuine management tool.

The project will support this exercise of research of an appropriate model so that the Directorate for dams and large-scale works (Direction des barrages et des grands travaux hydrauliques –DGBGTH) within MARH benefits from a valid protocol (based on solid tested scientific data), in order to integrate the lake ecological requirements in the Master Plan for North Water (Plan directeur de l'eau du nord). The project will support research activities on the lake's biological and physical parameters to strengthen ANPE capacity in its monitoring scientific activities.

For Bouhedma, the project recommends undertaking two research studies, on the ecology and dynamics of Acacia tortilis subsp. Raddiana, and on the ecology of parasitic insects that prey on Acacia. For Jbil, the research studies will focus on the dunes gazelle's biology and ecology, and the Houbara bustard behavior.

Achievements: In order to carry out this sub-component, 12 research agreements were signed by DGF with research, higher education, and management organizations to perform research. These agreements aim at contributing to ensure the sustainability of Parks biodiversity, improve management and monitoring tools of the protected areas in Tunisia through the development of study techniques and appropriate scientific inventories, and define an adapted protocol for natural environments scientific monitoring. These agreements include 28 research actions spread between various research institutions: INRGREF (4), IRA Médenine (4), ANPE (3), SSNT-FS Tunis (5), ASTMer-FS Tunis (8), ATPNE-FS Sfax (3), INAT (1) and ENMV-Sidi Thabet (1).

Four (4) research actions are common to the three parks; the remaining ones are specific to each park: 8 for Ichkeul, 8 for Bouhedma and 7 for Jbil. Regarding the various research themes, 3 themes deal with aspects related to water in Ichkeul Park, 7 themes with the study of vegetation, and 18 themes with the study of fauna. Two research actions were not carried out, and the conventions signed with the association Friends of the Birds and with ENMV - Sidi Thabet, were cancelled. These cancellations are explained by the delay accumulated by signatory organizations.

The research actions carried out within the framework of the project have delivered products in the form of activity reports (annual), specific reports, guides, and fact sheets. A seminar was organized as part of the project, during which PGAP results were presented (November 2008). The quantity of results obtained within this sub-component is a very important element.

With regard to research common to the 3 parks, a monitoring of the vegetation dynamics for the 3 parks was carried out and phytoecological maps developed, which allowed knowing in a much clearer way than before the implementation of this project, the nature of the parks constituent units and the evolution of covers. In addition, plant groupings were identified and charted according to the type of soil and geomorphology of the area. Moreover, species on danger of disappearance have been the object of specific studies (census, multiplication techniques). In addition, reptiles and mammals population precise inventories and monitoring as well as an inventory of terrestrial invertebrates were developed in the 3 parks. For research specific to each park, they can be summarized as follows:

<u>For Ichkeul National park,</u> a study has been conducted in order to actualize the mathematical models and adaptat them to the current computerized information systems. Furthermore, the actualization of the Ichkeul entry parameters has also been done. These actions made it possible to accurately assess the contributions of the water released from the dams, which represented more than 50% of the total volume of the lake water. The results of the model application show on the one hand that forecasts are relevant, since the water and salinity levels planned for January 2008 are in conformity with the values recorded on the ground, and on the other hand that if we are dealing with an average year, salinity should be lower than 10 g/l; which should allow herbaria of potamots to remain in the lake. The model will continue to function after the end of the project.

A support has also been provided for the monitoring of scientific activities related to the biological and physicochemical parameters of the Ichkeul lagoon-lacustrine (*laguno-lacustre*) system, where it has been noticed that the lake water salinity level has been lowering by 7 g/l during the months of April and May 2008 (recorded for the fifth consecutive year). It should be noted here that several other factors, not all linked to the project, contributed to these results. These include in particular the startup operation of the lock. It is however certain that the project played a catalyst role in the re-establishment of normal hydrological conditions in the park.

A study of the Ichkeul PN entomofauna biodiversity has shown that there are 145 species distributed in 13 orders with a clear predominance of Coleopters (35% of the species), 5 aquatic species (new for Tunisia), and an Odonate species, new for North of Africa. The parasitic pathology study of Ichkeul National Park buffaloes made it possible to identify parasitic agents found in these animals, and to better determine the infestation level. The most outstanding conclusion is the absence of fasciola gigantea, a highly pathogenic parasite, particularly for young animals. Infestation by nematodes and protozoa is more frequent, though of low intensity, and could justify pest-control spraying with low cost molecules. Lastly, the presence of ticks on these animals and in the grazing areas constitutes a long-term risk and a more attentive monitoring of these parasites taking into account their vector role as disease-causing agents is needed.

An analysis of the Ichkeul water buffaloes population genetic variability was carried out showing that allelic diversity and heterozygosity are low and even very low by comparison to other European populations of buffaloes (using the same parameters). This is probably due to a certain degree of consanguinity. Currently, the obvious effect is a detrimental genetic depression.

Bouhedma National park: a research on the ecology and dynamics *of Acacia tortilis* subsp. *raddiana* (the key species of the park) concluded that the evolution of this species stand shows that the number of Acacia plants increases regularly every year, which indicates that there is natural regeneration and that efforts are made locally in this area. *A. tortilis* subsp. *raddiana* morphological variability has been displayed prominently in the park. The species phonological cycle was analyzed and important parameters for regeneration were identified. Acacia tortilis subsp. raddiana germinative behavior, with respect to osmotic and saline stress, showed that this species prefers high temperature to germinate, that the seeds are characterized by a tegumentary inhibition, and that it is very resistant to saline stress since it continues to germinate even with high NaCl concentrations (15 to 22 g/l).

The karyological study of *Acacia tortilis* subsp. *raddiana* has shown that there are two levels of ploïdy in the case of this species. The isoenzymatical characterization of *Acacia tortilis* subsp. *raddiana* has given prominence to a polymorphism rate of 45%. This shows that the studied population is in best condition when genetic diversity is maintained, and has a tendency toward a stable equilibrium of genotypical distribution.

The study of population distribution and overlapping with regard to Acacia tortilis subsp. raddiana has shown that there is an increase in density going from mountains to plains. The conservation of these stands with such a density allows the maintenance of the species and the reconstitution of the entire ecosystem specific to this species.

The study of *Acacia tortilis subsp raddiana* fructification has shown that its average rate of seed production is very low, and that the average rate of seeds attacked by beetles by tree is high (64%). Altitude does not seem to have a significant effect on the quality and quantity of produced seeds. On the other hand, the production of seeds varies significantly in the Park protected area.

Research undertaken to estimate the position of *Acacia tortilis subsp. raddiana* within the Bouhedma agro-forestry system shows that the presence or the absence of the Acacia tree in cereal fields does not have a notable effect on cereal production. On the other hand, Acacia *tortilis subsp. raddiana* has a significant effect on the herbaceous layer, attested by an increase in the density, cover, as well as biomass produced under canopy. Consequently, it is advised to preserve the trees belonging to this protected species in the areas where cereal cultivation is practiced.

The study of Oryx and Addax energy needs, and of the pastoral potentialities of Bouhedma National Park, made it possible to optimize the feeding of these two antelope species that were introduced, and to evaluate pastoral production and its seasonal availability. The impact of the availability of pastoral resources within the Park with regard to meeting antelopes, oryx and addaxes theoretical food needs has been estimated, and the feeding balance and the holding capacity determined.

The study of the ecology of parasitic insects found in the pods of *Acacia tortilis subsp. raddiana* in Bouhedma, has shown that this species seeds are attacked by two types of bruchids whose biological cycle was studied and the rate of seeds infestation assessed. The observation of the impact of infestations on seeds germination showed that no treated infested seed has germinated, whereas the visually healthy seeds have shown variable rates of germination according to time and to the type of treatment used. The natural enemies (parasites) of these bruchids were identified and the rate of seeds infestation by these parasites seems to be relatively low.

The study of the park avifauna diversity has shown that it shelters a diversified, original and rich avifauna. 127 species, with different phenologies and ecological requirements. They are sedentary species related to the open Tunisian steppe in the south, and species of migratory transient and wintering birds with very varied ecological requirements. This study showed in particular that the ecology of the fulvous babbler in the park depends on the areas and the size of the species groups. The fulvous babbler seems to take into account primarily acacias density, height and foliar, to establish its territory as a group. Old acacias seem to be important for this bird.

The Mhorr gazelle ecology, adaptation to the environment and genetic characterization were analyzed, and its reproduction parameters determined. The identification of species of ruminants' ticks, and that of antelopes' piroplasms species in Bouhedma Park was conducted.

Jbil National Park: The assessment of Jbil National Park pastoral activities was performed and has shown that grazing exclusion had a very beneficial effect on overall vegetation cover.

The analysis of certain plant species germinative aptitude found in Jbil Park revealed a general fall in germinative power related to a decrease of water potential of imbibition solutions. With the same water

potential, species are more sensitive to saline stress than to water stress.

The study of the houbara bustard ecology and behavior in Jbil national park, confirmed its status of endangered rare species in Jbil area. The houbara bustard is found in only one small section of the park.

The fennec fox ecology in Jbil Park was studied through prospections carried out in the park where fennecs were observed in day light and there tracks detected (footmarks, droppings,etc).

A closing seminar for the research component was organized by INRGREF (November 11 to November 13, 2008). The seminar gave the opportunity to present GAP project research outcomes, exchange information and strengthen co-operation between research and higher education institutions involved in the project.

It should be noted that the GAP project provided the opportunity to generate, through conventions with research organizations, a training program leading to formal certification, new in Tunisia. PhD dissertations, master's degrees and end of studies research projects benefited from the scientific dynamics created by the project, and their number testifies to the kind of interest that was trigerred.

The details on scientific productions (articles, booklets, data and technical sheets) and research projects prepared as part of the training program leading to formal certification are presented in the summary report of scientific outcomes generated through the said project.

1.4 Scientific Monitoring of National Parks

Expectations: One of the project's objectives is to support the establishment of SSSPN within the DGF Subdirectorate for National Parks. SSSPN will capitalize on existing results and data from the Information System for Forest Planning (*Système d'Information pour la Planification Forestière -SIPF*) which is currently under operation within DGF. A team of three technicians will be assigned to SSSPN and trained to meet the needs for monitoring and evaluation of the project, benefiting from the experience of the SIPF team already in place and its equipment. A node will be established in every park and within MEDD. The training of Parks technicians and keepers will address the use of SSSPN as a management tool. Basic spatial data are already available for Bouhedma and Jbil within the General Directorate for Spatial Planning (*Direction Générale de l'Aménagement du Territoire*), prepared by the National Remote Sensing Centre (*Centre National de Télédétection*), and data from the project SAIDE, using nomenclature "Corinne". Ichkeul will benefit from the acquisition of orthophotos (1/25.000), part of SIPF. Additional data will be obtained during project implementation, according to the needs. A specialized consulting firm will be hired to design and implement the system and train its users. SSSPN will use nomenclature Corinne (project SAIDE), which will be adopted at the national level as part of the GEONAT project (national maps actualization project).

Achievements: This system has been connected to the DGF's Information System for Forest Planning (*Système d'information pour la planification forestière -SIPF*). The launching of this activity has experienced considerable delay; it is only in 2008 when a contract was signed with a consulting firm to design and implement the system which has been conceived so that it can be accessible from DGF offices as well as from the 2 parks of Bouhedma and Ichkeul. Jbil Park was not included in this contract because of a lack of financing.

The implementation of this system was performed in 4 phases: the first one dealt with the study and design part (finished and approved), the second one with data collection, organization and harmonization (within a database), the third one concerned the development of the system, which was done directly on DGF server, while it was already hosted in MARH's FSI, and the fourth concerned the implementation of the System, which ended at the time of the evaluation mission.

Computer hardware acquisitions for DGF, DGEQV and the 3 regional Parks, as well as topographic maps and satellite pictures covering the 3 parks are completed. Training activities at the central and regional levels have also been completed with a training course in California on ESRI products for 4 engineers, and ISG training for 6 technicians from the Bouhedma, Jbil and Ichkeul Parks, and DGF and DGEQV technicians.

It should be noted that nodes planned in every park have not established for lack of Internet connection in these parks.

Component 1 implementation impacts

Component implementation indicators, as presented in the log frame, are: I) achievement of annual activity plans, ii) acquisition of equipments and contracting of works, iii) budgetary planning, monitoring, and control, iv) parks executives using methodological tools to raise awareness, planning/communication, v) parks executives have received training, vi) research outcomes are used in PAGs, vii), SIG-PN is used.

(I) More than 80% of annual activity plans has been implemented
(II) More than 90% of equipments and works have been acquired and contracted.
(III) Budgetary planning, monitoring and control are adequate even if there is room for improvement.
(IV) Parks executives are able to use methodological tools for awareness-raising, and planning / communication.
(V) Parks executives have all received the planned training, and their management skills have improved. It should be noted that some training topics did not receive the attention they deserve, particularly in environmental socioeconomics, ecotourism management, and sociocultural topics. Support for training activities in ecotourism would have been beneficial for the parks management. The same can be said for foreign languages training for young people living near the parks.
(VI) Research results have only been partially exploited in the PAGs because the said PAGs and research conventions have been launched simultaneously. However, results obtained at the end of the project are used as tools for decision-making and are likely to be useful to parks managers in future planning actions and PAGs revisions.
(VII) SSSPN is not used directly by the 3 parks, but has a website accessible through Internet (http://193.95.122.123/sigpn2/ennahli.php) and its evolutionary design allows regular update. It is hoped that the parks will be connected to this system, which is open and could be expended to all the APs of Tunisia.

2. Component 2: Management of protected areas

With an initial costs of 7.18 million $EU, this component aimed at (I) managing and restoring ecosystems in the three national parks of Ichkeul, Bouhedma and Jbil, in order to protect the important flora and fauna on a global level, (II) to assist with the development of ecological tourism, and (III) to

define community development plans with the local population, in order to ensure the sustainable conservation of biological diversity.

Expectations: The project included the design of detailed management plans; and the provision of equipment, training and small infrastructures for the three sites. It was also expected that mechanisms be put in place intended to reduce the excessive use of natural resources, in particular shared resources such as grazing lands. Ecological tourism strategies were to be formulated stressing the interactions between conservation and economic benefits for local communities. Land use and management plans were to highlight not only the technical aspects (inventory, infrastructure, monitoring) but also issues of strategy and sustainability. These plans were to be carried out throughout project implementation. This component also comprises an additional financing from the French GEF (CMS management), for Bouhedma and Jbil parks, which relates to sahelo-Saharan antelopes, particularly their translocation in the 2 parks.

Activities part of this component are: (I) general study about the potential and methods for the development of ecological tourism in national parks and reserves, including private tourist concessions, emphasizing the three project sites; (II) creation of leisure areas (*zones de loisirs*) and provision of their infrastructures and equipments, (parking spaces, main entrances/doors, botanical garden, enclosed park for animals, etc.); (III) provision of equipment and material for reception centers and ecological museums (including the construction of a new ecological museum in Douz for Jbil Park), (IV) purchase of horse-drawn carriages and other means of ecological transportation, (V) support for the launching of tourism products including visits/stays with Ichkeul Park local communities, (VI) information campaign and production of documents to promote ecological tourism (posters, charts, guides, postcards, etc.), and (VII) training of ecological guides as well as reception centers and ecomuseums personnel in management / conservation of the protected areas in accordance with the training component (component 1).

The promotion of ecological tourism in Ichkeul and Bouhedma parks is planned as part of PATC; with the development of support infrastructure outside the parks, including improvements in electrification, water provision in rural areas, communications, and access roads, as well as trees plantation, roads signaling, and construction of waste discharge systems, and a geological museum in Ichkeul.

Achievements

Development and Management Plans (PAG)

The 3 PAGs were developed in 2005 (Bouhedma), 2007 (Ichkeul), and 2008 (Jbil). The delay in the formulation of these PAGs did not allow implementing all planned actions in time. The delays can be explained by procurement and conventions procedures, and by the time needed for the no-objection from the World Bank.

These PAGs are considered orientation tools for future interventions, part of new projects; and are regarded satisfactory in terms of the analysis of the Park' situation and the suggested conservation, rehabilitation and development programs. These PAGs gave a response to the main questions and

include intervention programs to fulfill the requirements of conservation and sustainable development, integrating local populations, and proposing diagrams and development programs for ecotourism around the parks.

Each PAG includes a presentation of the park current situation, a synthetic description, and a vision for development in the mid-term (5 years) and the long-term (10 years), as well as a development and management program at the administrative and institutional levels. Technical, social and land measures have been recommended in various parts of the park (integral zone, buffer zone and peripheral zone). Emphasis was made on conservation and ecosystems protection aspects in the integral zone, and on the need for integrated economic development in the peripheral zone.

The awareness-raising, education, and training aspects in relation to each park, were also addressesd through a proposal for an awareness-raising and public education program, and the selection of target groups and pilot actions for that activity. There was also some discussion about developing an operational plan for the development of ecotourism. An investment and operational budget was adopted for each PAG. Every PAG included appendices with flora and fauna inventories and cartographic documents, one of them relating to ecotourism development. If the PAGs quality is considered satisfactory, they have been only partially implemented. This is explained in part by the delay in their development and by the lack of funding. Even without delay, the budget allocated within the framework of this project would not have allowed to implement the 3 PAGs.

Community-based Development Plans (PDC)

Each park has presently a PDC. These PDCs were developed in 2006 (Bouhedma and Ichkeul) and 2008 (Jbil). Each PDC includes a presentation of the park and its context, characteristics, natural environment degradation processes; as well as the socio-economic characteristics of the populations living within and in the periphery of the park, the main activities economic in the area, the reception in the park, unemployment and its causes, labor specialization, and the beneficiaries of the income-generating activities.

The end-results of the participatory diagnosis and planning processes were presented with these PDCs, including the concerns of the speakers, proposals for solutions, hierarchisation of the problems, and development main orientations. An action plan was also prepared, with costs estimates and financing schemes. The development of these PDCs included an animation and assistance component in the related area. PDCs were developed with the participation of agricultural development groups (*Groupements de développement agricoles -GDA*) from communities in the parks's periphery (1 in Ichkeul, 3 in Bouhedma, and 2 in Jbil). Compensatory and inciting activities were proposed and implemented as micro-projects in the areas of animal husbandry, bee-keeping and artisanat. GDAs capacity building through the provision of small equipments and training in various fields was also provided.

These plans were partially implemented thanks to agreements signed with some NGOs (ASAD for Ichkeul and FCTD for Bouhedma), and the PDC of Jbil regional administration. Participants / speakers at the local level expressed mixed opinions about the development of these PDCs. The methodology that

was used has obviously benefited from the capitalization of DGF in this area, but the implementation of these PDCs revealed some weaknesses (for example, some income generating actions were not carried out, although they were included in the agreements/conventions with 2 development NGOs).

It should be pointed out that the separation between PDC design and implementation was not a judicious choice in this type of situation. It is obvious that the period of time between the beginning of PDC implementation and the end of the project is very short, but the creation of GDAs, as part of the project, generated a better collective mobilization compared to the situation existing before project implementation. This dynamics continues at least with regard to the 3 GDAs. Monitoring, evaluation and giving specific supports to these GDAs by the Regional Development Councils (CRD) has proven to be necessary.

Developing ecotourism activities

The development of ecotourism activities around the parks is addressed in studies including all the parks development plans and in the PDC. These studies have proposed interventions in the parks and their peripheries in order to generate and support ecotourism activities to be carried out by small entrepreneurs from the local population or GDA, or by concessionaires under the condition that they hire members of these communities.

PAGs have studied the potential for sustainable ecotourism activities in each park, in terms of the approach strengths and weaknesses, ecotourism products to be developed, potential markets, promotional and marketing activities, potential profits from these activities, and ecotourism management and the involvement of local populations. An indication of the necessary measures needed for each park or its surroundings to develop minimal infrastructure for ecotourism services is provided. This, in addition to regulatory and support measures for local population involvement in ecotourism activities, to be integrated into national and regional strategies for sustainable development.

Moreover, a study entitled “Wildlife contribution to the development of ecotourism and improvement of local communities living conditions” was carried out (February 2009). Leisure areas infrastructure, including equipment, parking spaces, main entrances, botanical garden, enclosed plot of land for animals, have been built in the 3 parks. Equipment and material for the reception centres and ecological museums have been acquired for the 3 parks. Means of transport inside the parks have been acquired (quads, motorcycles, and VTT) as well as dromedaries (Jbil).

Support for the launching of new ecotourism products such as stays with the local community in Ichkeul Park did’nt materialize, in spite of efforts that were pursued after the end of the project. This type of activities requires authorizations from various government agencies. The information campaign and the production of documents to promote ecological tourism were carried out for Ichkeul and Bouhedma Parks. Posters and flyers were published and disseminated in addition to what was produced for the project component # 3. The training of ecological guides and reception centers and ecomuseums personnel in protected areas management/conservation was carried out according to the program planned for the three parks.

Achievements for each park may be synthesized as follows:

Ichkeul National Park: In this case, important works have started as part of the project. They concern marshes rehabilitation, infrastructures implementation (headquarter equipment, firewalls, avoids, and pedestrian paths). These actions have contributed to withdrawing Ichkeul NP from the UNESCO World Heritage list of sites in danger. External factors have also contributed to improving the situation, such as operating the lock. Other works could not be implemented for lack of funding.

The following actions were taken to improve the park condition : acquisition of office furniture, electronic office equipment, computer materiel, construction equipment, a boat, a tractor, a backhoe loader, a van, hydromechanical equipment to produce drinking water for the ecomuseum, electrical equipment; and construction of an entry hall, construction of a geological museum, purchase of woodwork, electrification of the ecomuseum in solar energy, kitchen equipment, purchase of observation materiel, and photocopiers.

Training has been provided to park technicians and environmental protection guards, and took place in Senegal for GEF project management, national parks management, procurement, ornithology, and SIG-related. Monitoring has improved thanks to the acquisition of watching material, transmitter-receivers, and 5 moppets, as well as the supply and installation of a mesh enclosure on 14 km to protect the marshes, and another one to protect the mountain (*Djebel*) on 7Km, the construction of fire-breaks (8Km) and pedestrian paths (5Km), and the rehabilitation of existing tracks (6.2 km). Activities of environmental conservation and rehabilitation were carried out through the spreading of Joumine wadi (river) and accommodation works of a tributary ravine of Tinja wadi.

The carrying out of PDC activities by the NGO ASAD led to the acquisition of equipment for the GDA buildings, the grafting of oleasters (households were given the right to graft 300 trees, but the results are not satisfactory and the rates of union are very low; the causes of this failure are linked to the grafting and to a lack of technical knowledge), the training of GDA members (for keeping the books and registers), the training of 31 beneficiaries in bee-keeping (of which 28 launched their own microprojet), the training of 2 beneficiaries in rabbit breeding (these beneficiaries did not create their own microprojet because the proposed buildings were not adequate), the rehabilitation of Hammams (the analysis of thermal springs was performed and difficulties to obtain authorizations were overcome, but the lack of time has not allow performing the rehabilitation work. However, and given the profitability of this activity, efforts will be pursued after the closing of the project to carry out this activity with GDA), and the creation of a community meadow exploited by the residents and the improvement of (community) dirt paths (the access has improved in and around the park).

Ecotourism promotion included the study of ecotourism development methods for the 3 parks, the acquisition of equipments for the playing area, signaling systems (although more is needed), 40 bicycles (still with the local government agency at the end of the project), and the conversion of a building in a geological museum and 3 other ones as a nature shop, restaurant and lodging facility. For awareness-

raising, extension and education purposes, a camera, a video camera, a television set, a video player, sculptures of life-size animals, have been purchased, and an exhibit in the ecomuseum organized.

Additional training to develop professional skills was provided to environmental protection guards in the areas of fauna management, reception and education of the public, and management of the mammary populations. Research activities and ecological monitoring achievements in Ichkeul Park are presented in component I. The project's achievements in Ichkeul Park contributed to significantly improving the Park condition. Some weaknesses have however been noted during implementation. They are about income generating activities for the local population, whose purpose was to induce the population to better preserve and manage the park.

Bouhedma National Park: The PAG and PDC as well as the ecotourism potentials study have been completed and are used to provide guidance regarding the conservation and development of the park and its peripheral area. The scientific research activities that were performed made it possible to better understand the natural ecosystem and adapt planning and implementation activities. In terms of zoning, the integral reunification of protected areas in order to create a larger area of 10000ha was carried out with the extension of the enclosed areas.

The construction of several checkpoints, watchtowers, and dirt roads has been performed, and this has allowed, with the improvement of transportation, to better monitor the park. CES works and plantations have improved the rate of vegetation cover with regard to the Acacia tortilis subsp. raddiana. The transfer of a first batch of Addax in the national parks of Jbil and Sanghar, as well as of Oryx in the national park of Dghoumes, has been performed.

The administrative and institutional aspects have been addressed by means of training sessions in GDF projects management (Senegal), national parks management, market management, ornithology, SIG; and the construction of a meeting room, the connection of park buildings to the electrical network, the electrification of the drilling area (area 2), the construction of a reservoir and a tank, the construction of a house, the construction of entrance doors, the rehabilitation of buildings, the installation of solar energy systems, the installation of an electric transformer, the construction of a shelter (for the engine), the rehabilitation of the park electrical network, the construction of the park residences, the acquisition of office equipment including data processing equipment (4PC, 4 printers, a scanner, a laptop, a photocopier) audio-visual material (video-projector, television set, video player, portable VHF) and a meeting room equipment.

Two all-terrain vehicles and a tractor with a trailer were bought. Monitoring has improved with the construction (22Km) and maintenance of dirt roads (24Km), the acquisition of 4 motorcycles, and the installation of a fence for the protected areas, on 35 km. Environmental conservation and rehabilitation concerns were addressed through a drilling (with its equipment), the construction of a drain tank and the vegetalisation of 130 ha.

PDC implementation has been performed through a contract signed with a development NGO (FTDC). This implementation made it possible to implement microprojects, including the purchase of pregnant goats (10 for 10 beneficiaries), camels (2 female per beneficiaries for 5 r beneficiaries), bee-keeping

equipment (6 full hives with accessories per beneficiaries for 5 beneficiaries); the plantation of fruit trees (1ha per beneficiary for 30 beneficiaries; the acquisition of 8 greenhouses (1 greenhouse per beneficiary for 8 beneficiaries), surface well equipment with electric pumps for 5 beneficiaries (these have not been used because 380V electric current is not available, although it is needed to reach ground water at more than 40 m depth; and the equipment needed for a carpenter was not provided for same reason ; the acquisition of weaving machines for 20 beneficiaries, and sculpture tools for 6 beneficiaries; and the training of 12 guides specialized in ecotouristim was provided.

Ecotourism promotion was performed through the conduct of several studies on: ecotourism development modalities in the 3 parks, parks reception areas, ecotouristim equipments; and the construction and rehabilitation of dirt roads inside the park, a watchtower at a strategic location for visitors to observe wildlife and admire typical landscapes, the construction and rehabilitation of the park main entrances, the construction and equipment of a meeting room, and the construction of a pond behind the ecomuseum filled with water from the Ain Charchara river.

Component 3 contributed to awareness-raising, extension, and education through the programmed actions (environmental clubs within schools). Additional training was provided to environmental protection guards in fauna management, reception and education of the public, and mammary populations management **(***populations mammaires***)**. The results of research and ecological monitoring activities in Ichkeul Park are presented in component I.

Most project objectives were implemented in Bouhedma Park which now seems better prepared to absorb the maximum of possible investments, because of its statute of ancient park, the opportunities that it offers, and the dynamism of the park keeper. Weaknesses in implementation concern the approach developed vis-à-vis local communities, and the scope of income-generating activities, which were supposed to provide incentives for the local population to better preserve and manage the park. In fact, a very small percentage could benefit from these endeavors, and the GDAs own efforts in this direction should be encouraged (the GDA of Belkhir2, for example, is looking for potential donors to pursue those efforts after the project).

***Jbil National Park*:** Jbil National park: the PAG and PDC for Jbil Park have been prepared. An integral protected area of 8500 ha was created and enclosed in order to allow biological recovery *(remontée biologique)*, and the reintroduction of species that had disappeared (White Gazelle, Addax and Red-Necked Ostrich). Basic infrastructure has improved (residences, offices, wells, service station at the northern entry to the park); an ecomuseum has been built and another one equipped. All-terrain vehicles have been bought to allow the monitoring of the park. In terms of biodiversity, the slender-horned gazelle, the addax and the red-necked ostrich have been reintroduced. In terms of community development, 2 GDA have been established.

The equipment needs have been addressed through the acquisition of 2 vans (4X4), a tractor, a drilling, the construction of a north and south logistic base, a comfort station; and the acquisition of computer equipment, office furniture, and an air-conditioner Administrative and institutional needs have been addressed through the provision of training sessions.

Monitoring and control have improved with the purchase of transmission material, the supply and installation of a 10 km fence, the construction of observation towers, the construction of 15 km of dirt roads; and the acquisition of all-terrain vehicles, computer material, monitoring material, and signal equipment.

Environmental conservation and rehabilitation activities included plantation works. Habitats rehabilitation included the construction of fences, the translocation of 28 Addaxes, the introduction of 7 white gazelles, and a study on the re-establishment of fauna in the park.

PDC implementation was performed through the regional administration of Kébili. In the particular case of Jbil Park, the activities intended for the local population have been reduced (given the size of the population bordering the park). Implemented activities included a drilling, the construction of 2 shadow shelters (*ombrières*) of 320m2, and of a drinking trough for the transhumant population.

The promotion of ecological tourism was made through the acquisition of camping material, motorcycles, traffic signs, tents, dromedaries and Quads.

Awareness-raising, extension, and education activities have benefited from the acquisition of a numerical camera, mattresses, and especially ecomuseum equipments.

Additional training was provided to environmental protection guards in the areas of fauna management, reception and education of the public, and mammary populations management **(***populations mammaires***)**. The results of the research and ecological monitoring activities in Jbil Park are presented in component I.

Impacts of component 2

Indicators, as presented within the log frame, are: (I) the setting up of dialogue and validation forums, (II) availability of sociocultural and ecological information, and (III) a satisfying rate of engagement/commitments and payments.

(i)The project contributed to PAGs and PDCs development, and GDAs creation. It also contributed to their operations, through the setting up of dialogue and validation forums. The type of relations that existed between them before the project did not allow dialogue, and most activities performed in the 3 parks “were imposed” by the government. The project contributed to establishing a spirit of partnership (although fragile and in need of consolidation), and to the fact that bordering populations have, for the first time, the sense of really being involved in the parks management; the formation of GDAs is likely to prolong this partnership if their sustainability is strengthened.

(ii)The component has contributed to obtaining sociocultural and ecological information useful for future interventions in the 3 parks. Diagnoses and solutions obtained through the PDCs represent references (lacking before the project) that have contributed to their implementation. The ecological information collected through the research actions or during component 2 implementation is much diversified; an optimized valorization of this information would be very useful.

3. Component 3 : **Public awareness**

Expectations: With an initial costs of 0.68 million $EU, this component aimed at strengthening public support for the conservation of biological diversity at the local and regional levels. The action plans were to be centered on priority groups like members of local governments, visitors, and schoolchildren to raise their awareness about the importance of biological diversity conservation in the three parks. Awareness tools include media for the general public, formal and informal education, and the development of interactions with local NGOs, schools, tourism agencies, and other organizations, to promote a better understanding by the general public of biological diversity resources and develop an interest in protected areas participative management.

For each park, key species/themes have been identified, and constitute the core of public awareness campaigns, and the main research, monitoring and conservation activities. These key species/themes are the Acacia tortilis subsp. raddiana and the slender-horned gazelle for the parks of Bouhedma and Jbil respectively, and the theme of water resources management in the case of Ichkeul Park. The mentioned activities will be developed at the local/community level around these species/themes in order to raise-awareness for the purpose of supporting biological diversity conservation in the long run.

Achievements: The execution of this component began at the end of year 2005 with the recruitment of a national consultant in charge of the implementation of the planned actions.

The achievements concerned 4 main themes: (I) communication with and awareness-raising of priority groups (communities and local and regional governments, parks visitors and students), (II) creation of 14 environmental clubs, (III) design and development of tools and audio-visual aids for information and awareness-raising, and (iv) support for organizing bordering populations (of the three parks).

Communication with and awareness-raising of priority groups: local workshops were organized between 2006 and 2008, in the localities of the 3 parks, and were attended mainly by members of local governments, NGOs and schools with environmental clubs.

(i) The themes that were dealt with are: “the Role of Jbil National park in Sustainable Development and Saharan Environmental Tourism” in Douz-Kébili, “Sustainability and Valorization of Terrestrial and Marine Protected Areas” in Ichkeul Park; and the organization of regional meetings, inter alia in Gafsa, Sidi Bouzid and Kébili, about: “The Role of GDAs and NGOs in PDC Implementation”, “Local Agenda 21: A Tool for Sustainable Development”. Other related activities included visits to exhibits organized by environmental clubs. Each one of these events was attended by approximately 60 participants, representing local authorities, various local administrative structures and GDAs, as well as NGOs, teachers, school principals and student from schools hosting the environmental clubs.

(ii) *Creation of 14 environmental clubs:* The project carried out a collaboration agreement between the MEDD and the Ministry of national education concerning the creation of environmental clubs. Fourteen (14) clubs were created, including 12 in elementary schools and 2 in high schools, with supply of didactic, data-processing and office automation material, as well as posters, documents and flyers. Nine (9) teachers were trained to implement animation programs. The clubs animators benefited in their respective areas from 2 information sessions on the role of the 3 parks in local development. However,

and in order to ensure the sustainability of this initiative, it is recommended to take measures to maintain these clubs so that they can fully play their part in the future.

(III) *Design and development of information and awareness-raising tools and audio-visual aids:* the tools developed include CD-ROM on the protected areas of Tunisia and a document, five (5) booklets on the protected areas concerning six (6) parks (in Arabic, French and English), five (5) sensitization brochures (in Arabic, French and English) on the possibilities of ecotourism promotion in 5 parks, including Bouhedma, Ichkeul and Jbil, and three television commercials about ecosystems, landscapes and potentialities of the 3 parks. An Atlas and an interactive CD Rom on the protected areas have also produced and disseminated. Excursions for schoolchildren, members of the environmental clubs have been organized. They concern 14 clubs: Ichkeul towards Bouhedma, Jbil towards Bouhedma, Bouhedma towards Ichkeul and Jbil towards Ichkeul. All these visits were supervised by the project expert and an executive from the DGEQV.

(IV) *Assistance for the organization of the three parks border populations:* Animation and facilitation meetings led to the organization of 6 formal groups: 1 GDA in Ichkeul, 3 GDAs in Bouhedma and 2 GDAs in Jbil, and the constitution of four monitoring regional committees, for the three parks, in order to assist with project planning and implementation. The people in charge of the component within DGEQV, supported by a national consultant, contributed to the preparation of Tunisia's request to the World Heritage Center to withdraw Ichkeul from the list of World Heritage in Danger, which was done during the last session (30th). Basic training in protected areas management and safeguarding was provided to GDAs members.

Although not envisaged in the evaluation document, it has been decided to formulate a National strategy for awareness-raising and communication around the national parks. At the end of the project, this strategy was not been finalized; a workshop was to be used to validate the strategy, but it didn't take place. This strategy was based on the analysis of other experiences, investigations, dialogues with the population and the stakeholders at the national and local levels, thus responding to the focus of the project aiming at integrating the local population as much as possible, which would benefit from improved ecosystems and the provision of services. It was thus proposed to integrate PDC orientations in the aforementioned strategy, based on the conception that awareness raising /communication and community development are two concepts that go hand in hand.

Component 3 implementation impacts

Implementation indicators for component 3 as presented in the logical framework are: (i) the creation of communications associates positions, and (ii) the percentage of students having obtained a grade of 15 on 20.

(i) If the position of communications associate for each park is officially created, a more precise definition of the job remains to be done. Efforts in communication recently developed at the local level were not dependent on such a position. It is difficult to give a high weighting coefficient to this indicator to evaluate the impact of the component achievements.

(ii) The same can be said for the indicator ‘percentage of students having obtained a note of 15/20’, which was replaced by a qualitative investigation to find out the degree of awareness of the student. This substitution is justified by the lack of data, before the creation of environmental clubs. The survey carried out in 2005 and 2007 shows that the degree of students’ awareness was low in 2005 (90% of the sample have a low degree of awareness). In 2007 the degree of students’ awareness was remarkable for practically all the students in the sample. In addition to environmental clubs, the implementation of all the project components has certainly contributed to the improvement of awareness.

In addition, the implementation of the project induced MEDD to launch an education and environmental communication program using the project outcomes. This was done with the support of German and Spanish development cooperation. With regard to ecotourism, DGEQV started a program to develop natural heritage. Detailed studies were carried out for initiatives such as the *Sahara and oases circuit*. A program is also under development to be submitted to GEF for financing, which will allow to built on the lessons learned from the present project

Results Framework/ Key Performance Indicators			
	End of project results	**Initial situation**	**End of project situation**
GENERAL IMPACT INDICATORS			
1) Biodiversity has improved in the three parks:			
Ichkeul: • Potamogeton stands re-established	2 stands are re-established at 80%	14%	60%
• Index of land-cover of sirpaies	increases by 50%	25%	80%
• Greylag Geese attendance	increases by 20%	500 units	2 800
Bou Hedma: • Population of gazella leptoceros, gazella dorcas, and Oryx	150, 40 and150 respectively	107, 25, 124	124, 26, 117
• Density in *Acacia tortilis* subsp. *raddiana*	increases by 15%	17 trees/ha	23 trees/ha (35%)
Jbil : • Population of gazella leptoceros and gazella dorcas	increases by 15%	Tracks (2x)	track (3x) and 7 gazelles observed
2) Improvement in the interest of peripheral populations			
• % of the population convinced of the importance of parks	20%	insignificant	20% of the population. Source: Opinions survey of GDAs, clubs and bordering population.
• % of the budget paid to communities (% of salaries for development works and dirt roads construction)	15% in year 5	0%	16% of the budget (40% of the budget for civil engineering works, dirt roads, etc.)
IMPACT INDICATORS BY COMPONENT			
<u>Component 1: Institutional strengthening</u>			
• Communities involved in Parks activities	50% of GDA's members	0	Almost all GDA's members
<u>Component 2: Development and management of three parks</u>			
• Park management has an influence on regional plans	For water and agriculture	insignificant	Ichkeul : water, agriculture and animal husbandry management. Bou Hedma : water, and agriculture management Bou Hedma : School map :high school construction
• Reduction of illegal activities Ichkeul	0	ND	In distinct decline
Bou Hedma	0	ND	In decline
Jbil	0	ND	Jbil: Reduction of 32 (2004) à 1 (2007)

• Tourism concessions in the parks	Satisfactory	None	Law (regarding forestry and tourism concessions in parks) amended. Implementing decree to be published soon.
• Ichkeul water Physicochemical parameters	Distinct improvement	Unsatisfactory	Distinct improvement (see ANPE reports)
• Score for Parks general management	Improved by 5% in year 3, and 10% in year 5	Not measured	-
Component 3: Communication and awareness-raising			
• Percentage of activities assigned to communities	Ichkeul, Bou Hedma : 15% Jbil : 10%	nil	At least 25%
• % of the populations are sensitive to key themes	25% in each park	Very weak	Bou Hedma 30% Ichkeul 37% Jbil 53%
IMPLEMENTATION INDICATO BY COMPONENT			
Component: Institutional strengthening			
• Yearly activity plans implemented	at 80% each year	0%	80%
• Equipments bought and works performed	in 80% of the cases	0%	90%
• Budgetary planning, monitoring and control	Adequate	Average	Adequate
• Parks executives use methodological tools for awareness-raising, planning and communication	Satisfactory	0%	Adequate
• Parks executives having received training	100% of the executives	0%	100%
Results of research activities are used in management plans (PAG)	Satisfactory	weak	Organization of 'scientific days' (Nov. 08). On going exploitation. Lack of research in social sciences or socio economics.
• SSSPNPN is used	For the three parks	nil	SSSPN finalized at the central level (Web site : http://193.95.122.123/sigpn2/ennahli.php)
• Rate of recruitment and payments	Satisfactory	NA	Satisfactory
Component: Development and management of the three parks			
• Forums for dialogue and validation are set up	Fully operational	little	Adequate
• Sociocultural and ecological information	Available and in use	average	Increasing availability and use
• Rate of recruitment and payments	Satisfactory		Satisfactory
Component: Communication and awareness-raising			

• Creation of communication associate positions	One position in each park	No position	An executive has been officially designated for the deputy position, but his mandate in terms of communication remains to be specified.
• % of pupils having received a grade of 15/20	70%	NA	See1/

1/ This indicator has been replaced by a qualitative survey to determine the degree of sensitization of pupils. This change is justified by the lack of data before the creation o environmental clubs.

Pupils considered with a very satisfactory sensibility are those who:

- have carried out at least 3/5 activities in the environmental clubs
- have a good or very good judgment for environmental communication and participation
- have participated to, at least, one excursion to the national park

Survey results:

		Year 2005	Year 2007
Size of the sample		100 pupils	100 pupils
Size of the sample		36%	36%
Degree of awareness	• Low • Average • Satisfactory • Very satisfactory	90% 10% 0% 0%	0% 9% 40% 51%

Annex 3. Economic and Financial Analysis
(including assumptions in the analysis)

No attempt has been made to carry out a financial and economic analysis due to the inherent difficulty in quantifying all the costs and benefits for environmental operations involving public goods.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Supervision/ICR			
Abderrahmane Ben Boubaker	Consultant	MNSSD	
Luis F. Constantino	Sector Manager	MNSSD	
Fabrice Cuzin	Consultant	MNSRE - HIS	
Abdelghani Inal	Consultant	MNAPR	
Moez Makhlouf	Consultant	MNAFM	
Abdelkrim Oka	Consultant	MNSSD	
Ayat Soliman	Sr Natural Resources Mgmt. Spe	MNSSD	
Catherine Cormont Toure	Consultant	MNSSD	
Lucie Tran	Operations Officer	MNSSD	
Jean Marc Bisson	Consultant	FAOCP	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY97		23.79
FY98		9.17
FY99		49.51
FY00		11.57
FY01		52.74
FY02		141.13
FY03		0.00
FY04		0.00
FY05		0.00
FY06		0.73
FY07		1.41
FY08		0.00
Total:		290.05
Supervision/ICR		
FY97		0.00
FY98		0.00
FY99		0.00
FY00		0.00

FY01		0.00
FY02		0.00
FY03	3	61.52
FY04		64.19
FY05		49.39
FY06		60.92
FY07		80.75
FY08		114.21
Total:	3	430.98

Annex 5. Beneficiary Survey Results
(if any)

Not required for a core ICR.

Annex 6. Stakeholder Workshop Report and Results
(if any)

Not required for a core ICR.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

Rappels des objectifs et des composantes du projet

1.1 Objectifs de développement

Le Projet de Gestion des Aires Protégées (PGAP) a pour objectif principal de développement l'amélioration de la gestion et de la protection des parcs nationaux de Bouhedma, Jbil et de l'Ichkeul en vue de conserver la diversité biologique d'importance mondiale et de contribuer à l'amélioration des conditions de vie des populations locales.

1.2 Composantes

Le PGAP comprend trois composantes sont :

(i) renforcement institutionnel,
(ii) aménagement et gestion des trois parcs,
(iii) et sensibilisation du public.

1.3 Coût

Le coût total du projet était estimé à son lancement en 2002 à 9.88 millions de $EU, dont 54% financé par le Fonds pour l'environnement mondial (soit 5.3 millions, plus tard réduit à 5,15 millions) et 43% (soit 4.24 millions) financé par le Gouvernement. Il était également prévu un financement de 0.15 million du Fonds Français pour l'Environnement Mondial (FFEM) et des contributions minimes par les communautés locales concernées et des institutions multilatérales de financement.

1.4 Agences d'exécution

Le projet est co-exécuté par la Direction Générale des Forêts (DGF) du Ministère de l'Agriculture et des Ressources Hydrauliques (MARH) pour les deux premières composantes et par la Direction Générale de l'Environnement et de la Qualité de la Vie (DGEQV) du Ministère de l'Environnement et du Développement Durable (MEDD) en ce qui concerne la troisième composante.

Principaux facteurs influençant l'exécution

2.1. Facteur lié au taux de change.

La dépréciation du Dollar des EU par rapport au DT (1 DT = 0.77$ EU en fin de 2006) a eu des répercussions sur la mise en œuvre du projet, mais cette dévaluation n'a pas compromis les objectifs fixés du projet étant donné que des économies ont été réalisées sur l'exécution de la composante 2 du projet par le recours aux petits contrats avec les consultants nationaux et les institutions scientifiques.

2.2. Facteur lié au retard de démarrage effectif du projet

Un retard a été enregistré au début du Projet vu les diverses actions prévues et qui dépendent de nombreux appels d'offre dont la préparation et le traitement ont exigé plusieurs étapes administratives et donc énormément de temps. Ce facteur n'a pas eu de conséquences majeures sur les réalisations finales du projet étant donné que ce retard a été rattrapé durant les trois dernières années.

2.3. Facteur lié à l'élaboration et la mise en œuvre des outils de planifiaction

Les Plans d'Aménagement et de Gestion (PAG) et des Plans de Dévelopement Communautaire (PDC) ont été élaboré relativement en retard et leur mise en œuvre n' pas été achevée en totalité à la fin du projet.

2.4. Facteur lié au nombre d'intervenants dans la mise en œuvre du projet.

En plus des procédures habituelles d'appels d'offres lancés par le PGAP, il faut signaler le nombre relativement important des intervenants dans le projet. Cette multitude d'inervenants n'est pas simple à gérer et rend difficile le suivi de l'exécution des actions prévues.

Réalisation du projet

3.1 Modalités d'exécution

Le projet a été supervisé par un comité interministériel de pilotage qui comprend, outre le MARH et MEDD, d'autres ministères tels que le Développement et Coopération Internationale, les Finances, l'Intérieur et Développement Local, et le Tourisme et Artisanat.

L'unité de gestion du projet (UGP) était localisée à la DGF, elle a coordonné et assuré le suivi technique, scientifique et financier du Projet. Une équipe de gestion du projet a été créée ; les membres de cette équipe appartiennent au MARH et MEDD en plus de comités régionaux et de

3.2 Réalisations de la Composante I : Renforcement institutionnel

L'objectif de cette composante était de renforcer la capacité institutionnelle de la DGF (MARH), des CRDA, du MEDD et de ses directions régionales et d'autres partenaires en matière de gestion durable des aires protégées.

Cette composante comprend

- Un soutien à l'Unité de Gestion du projet ;
- Une formation du personnel impliqué dans le projet avec trois types: de formation sur le tas*,* formation des formateurs *et* formation diplômante
- L'élaboration d'études techniques et scientifiques
- L'établisement d'un système de suivi scientifique des parcs nationaux.

3.2.1 Soutien à l'UGP ;

L'UGP a été renforcée par le recrutement en 2005 de personnel technique et de gestion, des adjoints aux conservateurs des parcs ont été nommés, deux véhicules tout terrain contre ont été acquis: un pour la DGF et l'autre pour la DGEQV. Des véhicules tout terrain ont été également acquis pour les 3 parcs: 2 véhicules pour le PN de Bou Hedma, une camionnette tout terrain au PN d'Ichkeul et de 2 camionnettes tout terrain pour le PN de Jbil. Au niveau central et régional des équipements bureautiques et informatiques étaient acquis ainsi que des fournitures, des constructions, entretiens et des meubles ont permis de renforcer les capacités des administrations régionales. Le recrutement de consultants pour l'évaluation du projet est effectué dans sa phase finale et des équipements et logiciels informatiques ont été acquis pour le SIG

Chaque agence d'exécution intervenant dans le projet a désigné officiellement un coordinateur responsable de la préparation des comptes des sous projets et des rapports de suivi financier des sous projets. Les agences d'exécution ont mis en place la logistique nécessaire pour l'exécution du projet en bénéficiant des expériences accumulées tout au long des plusieurs projets qu'elles ont exécutés auparavant.

3.2.2 Formations

Le projet a réalisé les trois types de formation prévus :

(iii) *La formation sur le tas :* qui a touché les techniciens de la conservation et les éco-gardes provenant des trois parcs du projet et d'autres parcs dans divers domaines :

a. gestion de la faune,
b. utilisation des techniques de l'approche participative et des techniques de communication sur l'environnement.
c. la gestion des projets FEM (6 personnes formés au Sénégal),
d. la gestion et la direction des parcs nationaux (deux voyages d'étude de 20 jours au Kenya pour 15 chefs d'arrondissement, 15 conservateurs et 20 des membres de l'UGP, des brigadiers de chasse et des techniciens forestiers),
e. la gestion de la faune aviaire (20 éco-gardes)
f. et l'accueil et l'éducation du public (20 éco-gardes).
g. Quatre ingénieurs ont également participé à la 26ème conférence internationale des utilisateurs des produits ESRI, tenue en Californie aux USA. Vingt (20) éco-gardes et dix (10) conservateurs ont été formés dans le domaine de la gestion de la faune aviaire et dix (10) éco-gardes dans le domaine de l'accueil du public.
h. formation en gestion de l'herpétofaune et des populations de mammifères pou dix (10) conservateurs et vingt (20) éco-gardes.
i. formation en ornithologie et en SIG pour les techniciens des 3 parcs.

D'autres personnes extérieures à l'administration (12 membres de Groupements de Développement Agricole- GDA) ont également reçu une formation en développement communautaire à Tabarka en Collaboration avec l'ONG APPEL et 20 membres des communautés locales ont également bénéficié d'une formation ayant pour thème : « Valoriser l'environnement: Développer les activités locales ». Cette formation a eu lieu au PN de Chaambi.

(iv) *Formation des formateurs* : cette formation a été programmée en conjonction avec le programme de recherche et a permis d'aider à la réalisation de 28 Mastères et 2 thèses de doctorat. Elle a touché le domaine de l'écologie et le fonctionnement des écosystèmes naturels des aires protégées. Une formation pour un cadre de la DGF, d'une durée de 2 mois, a eu lieu en France en 2006. Elle a porté sur l'écologie et le fonctionnement des écosystèmes naturels des aires protégées.

(v) *Formation diplômante* : le PGAP a permis la réalisation de plusieurs travaux scientifiques diplômants. Il s'agit de

a. 6 thèses de doctorat,
b. 24 mastère
c. et 4 Projets de fin d'études (PFE).

Cette formation conforte l'aspect pilote du PGAP et représente une première dans les projets de ce type en Tunisie. Des spécialistes matières en faune et flore ont ainsi été formés et pourront, à l'avenir, contribuer au développement des aires protégées.

3.2.3 Études techniques et scientifiques

L'UGP a signé 12 conventions avec des établissements de recherche, d'enseignement supérieur, et des établissements de gestion pour cette sous-composante. Ces conventions renferment 28 actions de recherche réparties entre les différentes

institutions de recherche : l'INRGREF, l'IRA Médenine, l'ANPE, la SSNT-FS Tunis, l'ASTMer-FS Tunis, l'ATPNE-FS Sfax, l'INAT et l'ENMV-Sidi Thabet.

4 actions de recherche sont communes aux trois parcs, les autres sont spécifiques pour chaque parc : 8 actions pour Ichkeul, 8 actions pour Bouhedma et 7 actions pour Jebil.

Les produits livrés par ces actions de recherche sont nombreux, diversifiés et pratiques. Des rapports d'activité, des rapports finaux, des rapports spécifiques, des guides et des fiches techniques ont été fournis et le PGAP a également permis l'organisation d'un séminaire où les résultats obtenus dans le cadre du PGAP ont été présentés (Novembre 2008).

Un suivi de la dynamique de la végétation des 3 parcs a été fait et des cartes phytoécologiques ont été établies, des espèces menacées de disparition ont fait l'objet d'une étude particulière, des inventaires précis et des suivis de la population des reptiles et des mammifères en plus d'un inventaire des invertébrés terrestres ont été faits dans les 3 parcs.

Pour le Parc National de l'Ichkeul, une étude de l'actualisation des modèles mathématiques a permis d'évaluer les apports d'eau des lâchers des barrages ont permis de'avoir des niveaux d'eau et de salinité compatibles avec les particularités du parc.

Une étude de la biodiversité de l'entomofaune a permis de recenser 145 espèces du PN de l'Ichkeul réparties sur 13 ordres, une étude de la pathologie parasitaire des buffles du parc a permis d'identifier les agents parasitaires présents chez ces animaux et de mieux connaître le niveau de l'infestation. Une analyse de la variabilité génétique de la population de buffles d'eau de l'Ichkeul a été faite.

Pour le Parc National de Bouhedma : l'écologie et la dynamique de l' *Acacia tortilis* subsp. *raddiana* (l'espèce phare du parc) ont été cernées, une variabilité morphologique de cette espèce a été mise en évidence, le cycle phénologique de l'espèce a été analysé et des paramètres importants pour la régénération ont été identifiés, le comportement germinatif de l' *Acacia tortilis* subsp. *raddiana,* vis-à-vis de stress osmotique et salin, a été évalué, l'étude caryologique chez *Acacia tortilis* subsp. *raddiana* a été faite où un taux de polymorphisme de 45% a été mis en évidence.

Des études sur a répartition et du recouvrement du peuplement d'*Acacia tortilis* subsp. *Raddiana,* la fructification, l'écologie des insectes parasites des gousses de cette espèce, les attaques des graines de l'*Acacia tortilis* subsp *raddiana,* la relation entre les besoins énergétiques de l'Oryx et de l'Addax et les potentialités pastorales du PN de Bouhedma, la diversité de l'avifaune, l'écologie de la gazelle mhorr et la détermination des espèces de tiques des ruminants du Parc du Bouhedma ont été réalisées.

Pour le Parc National de Jebil : L'évaluation des capacités pastorales du parc national de Jebil a été faite et a montré que la mise en défens s'est traduite par un effet très bénéfique sur le recouvrement global de la végétation.

L'analyse de l'aptitude germinative de certaines espèces végétales du parc de Jebil a révélé d'une façon générale une baisse de la capacité germinative liée à la baisse du potentiel hydrique des solutions d'imbibition. A potentiel hydrique égal, les espèces sont plus sensibles au stress salin qu'au stress hydrique.

L'étude de l'écologie et du comportement de l'Outarde Houbara () dans le parc national de Jebil a donné des résultats qui viennent confirmer le statut d'espèce rare et menacée de disparition de l'outarde houbara dans la région du Jebil. L'outarde houbara n'occupe

qu'une petite portion du parc.

L'écologie du fennec dans le parc de Jebil a été étudiée à travers des prospections effectuées dans le parc national de Jébil où le fennec a été observé en plein jour et ses traces ont été décelées (traces, présence de fèces…).

Un séminaire de clôture de la composante recherche a été organisé par l'INRGREF, du 11 au 13 Novembre 2008. Ce séminaire a permis de présenter les résultats de recherche obtenus dans le cadre du Projet GAP et d'échanger les informations et renforcer la coopération entre les institutions de recherche et d'enseignement supérieur impliquées dans le projet P-GAP.

Il faut signaler que le PGAP a permis de générer, à travers les conventions passées avec les organismes de recherche, une formation diplômante jamais égalée en Tunisie auparavant. Des thèses de doctorat, des mastères et des projets de fin d'études ont bénéficié de la dynamique scientifique créée par la PGAP et leur nombre traduit l'engouement créé.

Les détails sur les productions scientifiques (articles, brochures, fiches techniques) et les mémoires élaborés pour la formation diplômante figurent dans le rapport de synthèse des acquis scientifiques du projet.

3.2.4 Système de suivi scientifique des parcs nationaux

Le système a été mis en place par le PGAP et a a été rattaché au Système d'information pour la planification forestière (SIPF) de la DGF. Après un retard considérable, ce SIG a été conçu et développé avec une structuration des données numérisées et intégrée dans la base de données. Le matériel informatique, les cartes topographiques et les images satellitaires, couvrant les 3 parcs, ont été acquis et une formation a été dispensée au niveau central comme au niveau régional.

Les nœuds prévus pour être établis dans chaque parc ne sont pas établis faute de connexion Internet dans ces parcs.

3.3 Réalisations de la Composante II : Gestion des aires protégées

Les objectifs de cette composante sont les suivants :

(i) gérer et restaurer les écosystèmes dans les trois parcs nationaux afin de protéger la flore et la faune importantes au niveau mondial ;
(ii) aider au développement d'activités de tourisme écologique ; et
(iii) définir avec les populations locales des plans de développement communautaire ayant pour but la conservation durable de la diversité biologique.

3.4.1 Gérer et restaurer les écosystèmes dans les trois parcs

La préparation des Plans d'Aménagement et de Gestion (PAG) a été faite avec un retard pris ce qui n'a pas permis de mettre en œuvre toutes les actions prévues en temps opportun, mais les 3 parcs possèdent des plans d'aménagement et de gestion qui vont permettre d'orienter les interventions futures. Les PAG ont analysé les situations des parcs et des programmes ont été proposés pour la conservation, la réhabilitation et la mise en valeur de ces parcs.

3.4.2 *Plans de Développement Communautaire (PDC)*

Les 3 parcs disposent de plans de développement communautaire réalisé avec une entente et une concertation avec les populations locales et les différents services et

organisations régionales et locales. Ces plans sont entrés en application par l'intermédiaire d'ONG ou de l'administration régionale.

Ces PDC ont été élaborés avec la participation les groupements de développement agricoles (GDA) des communautés des périphéries des parcs (1 à l'Ichkeul, 3 à Bou Hedma et 2 à Jbil). Des micro-projets ont été initiés dans les domaines de l'élevage, l'apiculture et l'artisanat en plus du renforcement des capacités des GDA par des menus équipements et des formations dans différents domaines.

3.4.3 Développement d'activités touristiques à caractère écologique

Le développement d'activités de l'écotourisme autour des parcs est étudié dans tous les plans d'aménagement des parcs et dans les PDC. Ces études ont proposé des interventions dans les parcs et à leurs périphéries pour créer et soutenir des activités écotouristiques destinées à être montées par des petits entrepreneurs parmi les populations locales ou les GDA ou préparant des programmes qui pourraient être montés par des concessionnaires à condition d'employer des membres de ces populations ou à travers leurs groupements de développement.

Le PGAP a permis la création de zones de loisirs et leur infrastructure et équipement, d'aires de stationnement, portes d'entrée, jardin botanique et enclos pour animaux.

3.4 Réalisations de la Composante III : Sensibilisation publique

Les réalisations ont porté sur 4 axes :

(i) communication et sensibilisation des groupes prioritaires (communautés et administrations locales et régionales, visiteurs des parcs et écoliers),
(ii) création de 14 clubs environnementaux,
(iii) conception et élaboration des outils et supports audio-visuels d'information et sensibilisation
(iv) appui à l'organisation des populations riveraines des trois parcs.

3.4.1 Communication et sensibilisation des groupes prioritaires :
Des ateliers locaux ont été organisés dans les localités des 3 parcs entre 2006 et 2008 et ont touché principalement des membres des administrations locales, des ONG et des écoles ayant des clubs environnementaux.

Les thèmes traités sont « le Rôle du Parc National de Jebil dans le Développement Durable et le Tourisme Environnemental saharien », à Douz-Kébili, « Pour la durabilité et la valorisation des aires protégées terrestre et marine» au parc Ichkeul et l'organisation de réunions régionales (à Gafsa, Sidi Bouzid et Kébili) sur les thèmes: "Rôle des GDAs et des ONGs dans la mise en œuvre des PDC", "Agenda 21 local : un outil pour le développement durable" et des Visites des expositions organisées par les clubs de l'environnement.

3.4.2 Les clubs de l'environnement :
Le projet a réalisé une convention de collaboration entre le MEDD et le ministère de l'éducation nationale concernant la création de clubs environnementaux. 14 clubs ont été créés dont 12 dans des écoles primaires et 2 dans des lycées et collèges avec fourniture de matériel didactique, informatique et bureautique ainsi que des affiches, documents et dépliants. Neuf enseignants ont été formés pour assurer des programmes d'animation dans ce sens. Les animateurs des clubs ont bénéficié, dans leurs régions respectives, de 2 sessions d'informations sur le rôle des 3 parcs dans le développement local.

3.4.3 Conception et élaboration des outils et supports audio-visuels d'information et sensibilisation

Les outils produits sont composés de CD-Rom sur les aires protégées de Tunisie et un document, cinq (5) brochures sur les aires protégées concernant six (6) parcs (en Arabe, Français et Anglais), cinq (5) brochures de sensibilisation (en Arabe, Français et Anglais) sur les possibilités de promotion de l'écotourisme dans 5 parcs dont Bouhedma, Ichkeul et Jebil et de trois spots télévisés portant sur les écosystèmes, paysages et potentialités des 3 parcs. Un Atlas et un CD ROM interactif sur les aires protégées ont été également produits et diffusés

Des excursions ont été organisées au profit des écoliers membres des clubs de l'environnement aux niveaux des 14 clubs

3.4.4 *Appui à l'organisation des populations riveraines des trois parcs*

Un appui d'animation et de facilitation a été apporté à l'organisation de 6 GDA constitués et une formation de base, en gestion et préservation des aires protégées, a touché les membres des GDA.

Un consultant a été recruté a élaboré une proposition de stratégie de sensibilisation et de communication autour des parcs nationaux. Un atelier est programmé pour valider cette proposition. Cette stratégie a été basée sur l'analyse de toutes expériences précédentes en la matière, des enquêtes et des concertations avec la population et les parties prenantes au niveau national et local, l'expérience et les acquis de la mise en œuvre du plan d'action de communication et de sensibilisation et l'esprit du projet visant à intégrer au maximum la population locale et à la faire bénéficier des avantages pouvant découler des écosystèmes et des services fournis.

Impacts du projet

Le PGAP a généré :

- Une amélioration de la conservation de la biodiversité dans les trois parcs
- Une amélioration des conditions de vie des populations locales
- Un renforcement des capacités de gestion des parcs.
- Une intégration de la gestion des parcs dans le cadre du développement local.
- Une adhésion des partenaires et des populations locales dans la gestion des parcs
- Un renforcement des capacités pour le suivi des aires protégées en Tunisie

PERSPECTIVES D'AVENIR

Il est important de ne pas rompre la dynamique lancée par le GAP dans les 3 PN.

L'expérience du GAP mérite d'être étendue aux autres aires protégées et de poursuivre cette dynamique partenariale. Par contre, il faut intensifier les recherches scientifiques dans les autres aires protégées en bénéficiant des acquis du PGAP. Les aspects socio-économiques sont à renforcer dans ces recherches.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

None

Annex 9. List of Supporting Documents

1. Project Appraisal Document (June 2002).
2. Grant Agreement (May 2002).
3. Manuel d'exécution du projet (December 2002)
4. Aide-Mémoires of the supervision missions and ISRs
5. Periodic Progress reports and other project written outputs
6. Rapport de fin de projet (February 2009)
7. Synthèse des acquis socio-économiques du projet [February 2009]
8. Synthèse des acquis scientifiques du projet [February 2009]
9. Synthèse des acquis techniques et physiques [February 2009]
10. Aide-mémoire of the ICR mission [April 2009]

MAP

I N S E R T

M A P

H E R E

AFTER APPROVAL BY COUNTRY DIRECTOR

AN ORIGINAL MAP OBTAINED FROM GSD MAP DESIGN UNIT

SHOULD BE INSERTED

MANUALLY IN HARD COPY

BEFORE SENDING A FINAL ICR TO THE PRINT SHOP.

NOTE: To obtain a map, please contact

the GSD Map Design Unit (Ext. 31482)

A minimum of a one week turnaround is required