

15 IMPLEMENTATION OF PRIORITY PROJECTS

15.1 IMPLEMENTATION AND MANAGEMENT STRUCTURE

15.1.1 Implementation Schedule of Priority Projects

The implementation schedule of the priority projects and programs is proposed in the table below. The following were taken into account in formulation of the implementation schedule:

- A pre-implementation period to elaborate the components of project packages and to secure funding sources will be needed before starting the projects, and
- All six packages will be completed within five years and in full operation by the year 2006.

The general implementation schedule of the priority projects and programs is proposed as shown in Table 15.1.1 and a detailed implementing schedule of each project and program is presented in Table 15.1.2.

Table 15.1.1 Provisional Implementation Schedule of the Priority Projects

Stage	2001	2002	2003	2004	2005	2006	2007
Confirmation of the financing sources	[Bar]						
Commencement of the project		▼					
Procurement of consultants (bidding & contracting)		[Bar]					
Detailed design & preparation of bidding documents			[Bar]				
Procurement of contractors (bidding & contracting)				[Bar]			
Construction				[Bar]	[Bar]		
Program execution			[Bar]	[Bar]	[Bar]	[Bar]	
Operation & maintenance					[Bar]	[Bar]	[Bar]

- | | | |
|---|--|-------------------|
| 1 | Confirmation of the financing sources | beginning of 2001 |
| 2 | Commencement of the project | beginning of 2002 |
| 3 | Procurement of consultants | beginning of 2002 |
| 4 | Detailed design and preparation of bidding documents | end of 2002 |
| 5 | Procurement of contractors | beginning of 2004 |
| 6 | Construction | middle of 2004 |
| 7 | Program execution | beginning of 2003 |
| 8 | Operation and maintenance | end of 2004 |

Table 15.1.2 Implementation Schedule of Priority Projects (1/2)

PROJECTS	2002	2003	2004	2005	2006
Package A : Carthage Heritage Park					
1 Carthage Visitor Center in la Malga Cisterns				///	///
2 Water Circuit Museum in la Malga Cisterns	—			///	///
3 Beautification of Avenue Habib Bourguiba		—		///	
4 Multimedia Presentations at AM and AB		—		///	
5 Installation of Signage System	—			///	
6 Visitor Facilitation Upgrading	—			///	
7 Provision of Shuttle Bus	—			///	
8 Sound and Light Show at Roman Theater	—			///	
9 Training and Management Program		■	■	■	■
Package B : Islamic Urban Heritage					
Tunis					
1-1 Establishment of Visitor Center	—	■	///	///	
1-2 Establishment of Art and Craft Center	—	—	■	///	
1-3 Creation of Visiting Circuits	—	■	///	///	
1-4 Presentation Improvement of Historical Buildings	—			///	
1-5 Rehabilitation of Medina along Visiting Circuits	—			///	
1-6 Provision of Tourist Coach Parking		—		///	
Kairouan					
2-1 Establishment of Visitor Center	—	■	///	///	
2-2 Creation of Visiting Circuits	—	■	///	///	
2-3 Presentation Improvement of Historical Buildings		—		///	
2-4 Provision of Shuttle Bus		—		///	
2-5 Provision of Tourist Coach Parking		—		///	
Sousse					
3-1 Creation of Visiting Circuits		■	///	///	
Mahdia					
4-1 Creation of Visiting Circuits		■	///	///	
4-2 Rehabilitation of Medina along Visiting Circuits		—		///	
Common for all sites					
5-1 Improvement of Garbage Collection and Cleaning		■	///	///	
5-2 Tourism Investment Promotion in Medina		—		///	
5-3 Training and Management Program		■	■	■	■
Package C : Sahara and Oasis Life					
1 Establishment of Sahara-Oasis World	—			///	///
2 Sahara Camelback Trekking Center with Museum		—		///	///
3 Creation of Site Visiting Circuit		—		///	///
4 Desert Sports Promotion	—	■	///	///	
5 Tourist Information Signs	—			///	
6 Training and Management Program		■	■	■	■
Package D: Cultural Circuit Upgrading					
Tunis/Carthage					
1-1 Creation of Site Visiting Circuit	—	■	///	///	
1-2 Environmental Improvement of Sites	—	■	///	///	
1-3 Provision of Tourist Traffic Signs		—		///	
1-4 Improvement of Gateway Information Center	—	■	///	///	
1-5 Training and Management Program		■	■	■	■
Sousse/Hamammet					
2-1 Establishment of On-site Visitor center	—	■	///	///	
2-2 Creation of Site Visiting Circuit		■	///	///	
2-3 Environmental Improvement of Sites	—	■	///	///	
2-4 Provision of Tourist Traffic Signs		—		///	
2-5 Enhancement of Entertainment in El Jem		—		///	
2-6 Improvement of Gateway Information Center	—	■	///	///	
2-7 Training and Management Program		■	■	■	■
Jerba/Tataouin					
3-1 Establishment of On-Site Visitor Center	—	—	■	///	///
3-2 Creation of Site Visiting Circuit		—	■	///	///
3-3 Environmental Improvement of Sites		■	///	///	
3-4 Provision of Tourist Traffic Signs	—			///	
3-5 Road Improvement	—			///	
3-6 Improvement of Gateway Information Center	—	■	///	///	
3-7 Training and Management Program		■	■	■	■

Table 15.1.2 Implementation Schedule of Priority Projects (2/2)

PROJECTS	2002	2003	2004	2005	2006
Package E : Reform for Competitive Beach Resort					
1 New Public-Private Partnership Mechanism					
2 Foreign Investment Promotion and Seminars					
3 Seminar Series and Hotel Staff Training					
Package F : MICE Tourism Promotion					
1 Designation of Several ONTT European Offices					
2 Institutional Strengthening of TCB					
3 Advertising Policies					
4 Organization of Seminars by TCB					
5 Establishment of Database of MICE Records					
GRAND TOTAL					

Design

Implementation (including physical construction work, with or without program execution)

Implementation (program execution only)

Source: JICA Study Team

15.1.2 Implementation Structure

It is highly desirable that the priority projects be given a clear statement of support from a high-level government body, such as the Ministry of Tourism, Leisure and Handicraft, the Ministry of Equipment and Housing, Ministry of Culture, the Ministry of Environment and Land Planning, the Ministry of Finance and the Ministry of Professional Training and Employment. ONTT will be the core agency for the priority project implementation under the Ministry of Tourism, Leisure and Handicraft.

Six project packages are planned in different areas and are composed of variety of components. Several organizations are naturally involved in the implementation of each project according to the location, ownership of the existing facilities, and related projects and programs. For realizing six project packages, therefore, it is essential to establish a system that ensures sufficient coordination among related agencies.

The implementation structure should be simple for efficient project implementation since a structure with a variety of implementing agencies can delay project progress and eventually result in the loss of expected benefit generated by the projects.

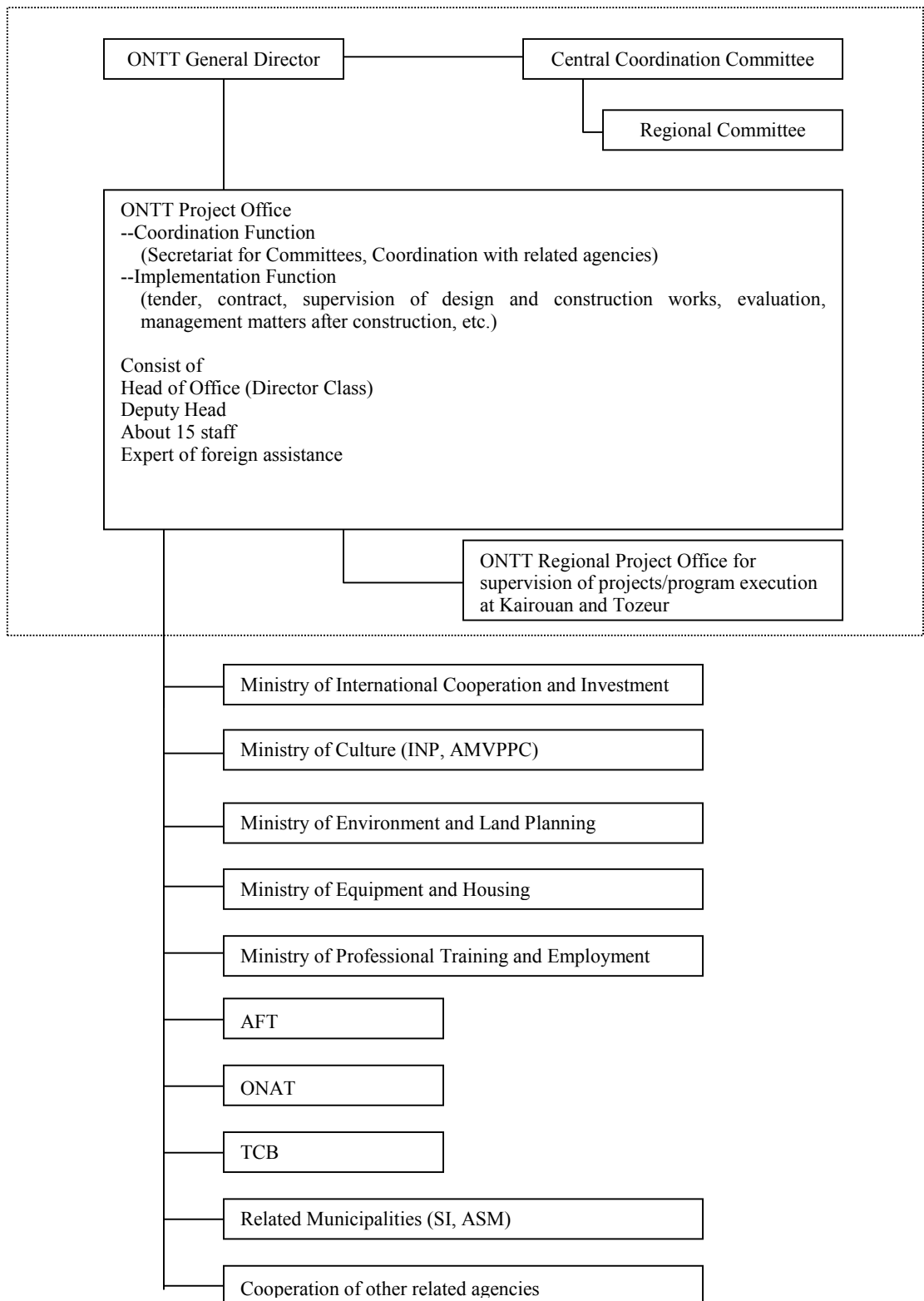
In addition, knowledge and expertise of outside experts and consultants will be required in the course of the project implementation, including planning, design, tender preparation, procurement and overall supervision of the projects. The process will contribute to strengthen the engineering skills and to introduce international standards to the implementing agencies.

Based on the above understandings, the following system is recommended to implement six project packages.

- Establishing a Central Coordination Committee and Regional Committees for major project sites to coordinate related agencies,
- Establishing a Central Project Office within ONTT for implementing and coordinating the projects, and
- Attaching foreign and Tunisian consultants to ONTT Project Office for technical support.

The project implementation structure is shown in Figure 6.1.1. Specific roles and functions of the different committees and the ONTT Project Office are as follows.

Figure 15.1.1 Project Implementation Structure



Source: JICA Study Team

(1) Central Coordination Committee

The Central Coordination Committee is an organization with members representing agencies involved in the projects. Its main function is to discuss coordination issues related to priority projects and recommend their option to ONTT.

The Central Coordination Committee will convene regularly and when required in order to make decisions regarding major changes in the project components, budget allocation, authorizing the matters supported by Regional Committees and so forth.

The Central Coordination Committee is to include the following members.

- ONTT Director General (Chairman)
- Representative of Ministry of Culture
- Representative of Ministry of Environment and Land Planning
- Representative of Ministry of Professional Training and Employment
- Representative of Ministry of Equipment and Housing
- Representative from AFT
- Representative from ONAT
- Representative from INP
- Representative from AMVPPC
- Representative from municipalities
- Representative from FTH, etc.

(2) Regional Committees

Three Regional Committees are recommended to be established in Tunis, Kairouan, Tozeur, Tatouine, etc. The main function of Regional Committee to discuss, coordinate and monitor project progress.

Each Regional Committee will occasionally meet for discussing matters requested by ONTT and the Central Coordination Committee with respect to substantial matters such as major changes in the project contents and other crucial matters in respective area. Regional Committees submit the results of meetings to the Central Coordination Committee for its approval although day-by-day regular decisions will be made by ONTT Project Office

Regional Committee is recommended to include the following members.

- Director of ONTT Project Office
- Representative from Ministry of Equipment and Housing
- Representative from Municipality
- Director of CRT at each respective area
- Representative from AFT
- Representative from INP
- Representative from AMVPPC
- Representative from FTH

(3) ONTT Project Office

The ONTT Project Office plays a key role for coordination and implementation of the project. It works as a secretariat of the Central Coordination Committee and all Regional Committees.

Specifically, its major roles in terms of project coordination are:

- Secretariat tasks for Steering Committee,
- Planning and negotiation of annual budget allocation, and
- Coordination with related agencies.

Its major roles in terms of project implementation are:

- Project management service to properly control the quality, progress, and budget of the project in its entity,
- Supervision of the design work,
- Overall review of the implementation program based on the results of detailed and cost estimate, and if necessary, modification and readjustment of the project packaging,
- Pre-appraisal and post-evaluation of the projects to measure the extent of impacts on socio-economic and environmental conditions,
- Establishment and management of procedural formalities for the disbursement of foreign and Tunisian funds,
- Tender preparation and processing including advertising, pre-qualification of bidders, tender call, pre-tender conference, site orientation, opening of bidding and other relevant activities,
- Preparation of bid evaluation reports to recommend the lowest responsible bidder,
- Contract negotiations with the successful bidder,
- Supervision of the construction work,
- Monitoring of project progress,
- Project accounting, and
- Necessary procedures for administrative arrangement concerning property management and maintenance including ownership transfer and management assignment.

The Project Office should be headed by a director-class personnel and his assistant. Enough staff (about 15 staff) should be manned at the office. Staff should include tourism experts with sufficient tourism management capability, negotiation ability and deep understanding of the Project. Operation by counterpart personnel of this study is suggested to satisfy above-mentioned conditions.

15.1.3 Implementation and Management of Project Components

Based upon the principles mentioned above, responsibilities of the related agencies on each project package are examined. The desirable management organization and needed operational work are also considered and assessed. Table 15.1.3 shows the recommended organizations for implementation, operation and management of each component's.

Table 15.1.3 Project Implementation and Management Responsibility

Priority Projects/Programs	Implementing Organization	O/M Organization
1 Package A: Carthage Heritage Park		
Carthage Visitor Center in La Malga Cisterns	AMVPPC/ONTT	AMVPPC/ONTT
Water Circuit Museum in La Malga Cisterns	AMVPPC/MEAT	AMVPPC
Beautification of Avenue Habib Bourguiba	Municipality/MEH	Municipality
Multimedia Presentations at Archeological Museum & Antonine Baths	AMVPPC	AMVPPC
Installation of Signage System	AMVPPC/ONTT	AMVPPC/ONTT
Visitor Facilitation Upgrading	AMVPPC/MEAT/ONTT	AMVPPC/ONTT
Provision of Shuttle Bus	Municipality	Municipality
Sound & Light Show at Roman Theater	AMVPPC/ONTT	Private
Training and Management Program	ONTT	ONTT
2 Package B: Islamic Urban Heritage		
Tunis		
Establishment of Visiting Center	ONTT	ONTT
Establishment of Art and Craft Center	ONAT	ONAT
Creation of Visiting Circuit	ONTT	ONTT
Presentation Improvement of Historical Buildings	ASM, ONTT	ASM, ONTT
Rehabilitation of Medina along Visiting Circuits	ASM, ONTT	ASM, ONTT
Provision of Tourist Coach Parking	ONTT	ONTT
Kairouan		
Establishment of Visiting Center	ASM/ONTT	ASM/ONTT
Creation of Visiting Circuit	ONTT	ONTT
Presentation Improvement of Historical Buildings	ASM, ONTT	ASM, ONTT
Provision of Shuttle Bus	Municipality	Municipality
Provision of Tourist Coach Parking	ONTT, ASM	ONTT, ASM
Sousse		
Creation of Visiting Circuit	ONTT	ONTT
Mahadia		
Creation of Visiting Circuit	ONTT	ONTT
Rehabilitation of Medina along Visiting Circuits	ASM, ONTT	ASM, ONTT
Common for all sites		
Improvement of Garbage Collection and Cleaning	Municipality	Municipality
Creation of Digitized Inventory of Medina	ASM/Municipality	ASM/Municipality
Training and Management Program	ONAT/MFPE/ONTT	ONAT/MFPE/ONTT
3 Package C: Sahara and Oasis Life		
Establishment of Sahara-Oasis World	AMVPPC/ONTT/INP	Private
Sahara Camelback Trekking Center with Museum	ONTT	Private
Creation of Site Visiting Circuit	ONTT/AMVPPC	ONTT/AMVPPC
Desert Sport Promotion	ONTT/FTAV	FTAV
Tourist Information Signs	ONTT	ONTT
Training and Management Program	ONTT	ONTT
4 Package D: Cultural: Circuit Upgrading		
Tunis/Carthage		
Creation of Site Visiting Circuit	AMVPPC	AMVPPC
Environmental Improvement of Sites	AMVPPC/Municipality	AMVPPC/Municipality
Provision of Tourist Traffic Signs	ONTT	ONTT
Improvement of Gateway Information Center Services	ONTT	ONTT
Training and Management Program	ONTT/ONAT	ONTT/ONAT
Sousse/Hamammet		
Establishment of On-site Visitor Center	AMVPPC/ONTT	AMVPPC/ONTT
Creation of Site Visiting Circuit	AMVPPC	AMVPPC
Environmental Improvement of Sites	AMVPPC/Municipality	AMVPPC/Municipality
Provision of Tourist Traffic Signs	ONTT	ONTT

Enhancement of Entertainment in El Jem	AMVPPC/ONTT	Private
Improvement of Gateway Information Center Services	ONTT	ONTT
Training and Management Program	ONTT/ONAT	ONTT/ONAT
Jerba/Tataouine		
Establishment of On-site Visitor Center	ONTT/SI	ONTT/SI
Creation of Site Visiting Circuit	SI	SI
Environmental Improvement of Sites	SI	SI
Provision of Tourist Traffic Signs	ONTT	ONTT
Road Improvement	MOEH/ONTT	MOEH/ONTT
Improvement of Gateway Information Center Services	ONTT	ONTT
Training and Management Program	ONTT/ONAT	ONTT/ONAT
5 Package E: Reform for Competitive Beach Resort		
New Public-Private Partnership Mechanism	AFT/ONTT	ONTT
Foreign Investment Promotion and Seminars	ONTT/AFT	ONTT
Seminar Series and Hotel Staff Training	ONTT/FTH	ONTT
6 Package F: MICE Tourism Promotion		
Designation of Several ONTT European Offices	ONTT	ONTT
Institutional Strengthening of TCB	TCB	TCB
Advertising Policies	TCB/ONTT	TCB/ONTT
Organisation of Seminars by TCB	TCB	TCB
Establishment of Database of MICE Records	TCB/ONTT	TCB/ONTT

Source: JICA Study Team

15.1.4 Staff Allocation for Major Project Components

Table 15.1.4 shows the assumed staff number and categories of major project components requiring constant staff allocation, such as information/visitor centers, museums and amusement parks.

Table 15.1.4 Staff Allocation Plan (1/2)

PROJECTS	Staff categories	Number of Staff	Note
Package A: Carthage Heritage Park			
1 Carthage Visitor Center	Tourist services staff 3D theater staff Exhibition staff Administration staff Maintenance staff Cleaning Staff	2-4 / 2shifts 2-4 / 2shifts 2-4 / 2shifts 2 / 1shift 2 / 1shift 2 / 1shift	Open 7days per week 9 am to 6 pm
2 Water Circuit Museum	Curator Tourist services staff Administration staff Maintenance staff Cleaning staff	2 / 1shift 2-4 / 2shifts 2 / 1shift 2 / 1shift 2 / 1shift	Open 7days per week 9 am to 6 pm
4 Multimedia Presentations at Carthage Archeological Museum	Tourist services staff Theater operator Maintenance staff Cleaning staff	1-2 / 2shifts 1-2 / 2shifts 1 / 1shift 1 / 1shift	Open 7days per week 9 am to 6 pm
7 Provision of Shuttle Bus	Bus driver	1-4 / 2shifts	7days per week 9 am to 6 pm
8 Sound and Light Show at Roman Theater	Administration staff	2 / 1shift	7days per week (on season) 3day per week (off season)
Package B: Islamic Urban Heritage			
Tunis			
1-1 Establishment of Visitor Center	Tourist services staff Administration staff Cleaning staff Maintenance staff	1-3 / 2shifts 1-2 / 1shifts 1 / 1shift 1 / 1shift	Open 7days per week 9 am to 6 pm 1 day per week
1-2 Establishment of Art and Craft Center	Tourist services staff Administration staff Cleaning staff	1-3 / 2shifts 1-2 / 1shifts 1 / 1shift	Open 7days per week 9 am to 6 pm
1-6 Provision of Tourist Coach Perking	Operating staff	1-2 / 2shifts	Open 7days per week 7 am to 8 pm
Kairouan			
2-1 Establishment of Visitor Center	Tourist services staff Administration staff Cleaning staff Maintenance staff	1-3 / 2shifts 1-2 / 1shifts 1 / 1shift 1 / 1shift	Open 7days per week 9 am to 6 pm 1 day per week
2-4 Provision of Shuttle Bus	Bus driver	1-3 / 2shifts	7days per week 9 am to 6 pm
2-5 Provision of Tourist Coach Perking	Operating staff	1-2 / 2shifts	Open 7days per week 7 am to 20 pm

Table 15.1.4 Staff Allocation Plan (2/2)

Package C: Sahara and Oasis Life				
1	Establishment of Sahara-Oasis World	Information staff Sports center staff Curator Administration staff General staff Maintenance staff Cleaning staff	2-4 / 2shifts 2-4 / 2shifts 2-3 / 2shifts 2-3 / 2shifts 10-15 / 2shifts 3 / 1shift 20 / 2shift	Open 7days per week 9 am to 10 pm
2	Sahara Camelback Trekking Center with Museum	Information staff Administration staff Cleaning staff Maintenance staff	1-3 / 2shifts 1-2 / 2shifts 1 / 1shifts 1 / 1shifts	Open 7days per week 6 am to 6pm
4	Desert Sports Promotion	-	-	See Sahara-Oasis World
Package D: Culture Circuits Upgrading				
Tunis/Carthage				
1-1	Creation of Site Visiting Circuit	Tourist service staff	1-2 / 2shift	Open 7days per week 9 am to 6pm
Sousse/Hammamet				
2-1	Establishment of On-site Visitor center	Tourist services staff Administration staff Cleaning staff Maintenance staff	1-3 / 2shifts 1-2 / 1shifts 1 / 1shift 1 / 1shift	Open 7days per week 9 am to 6 pm 1 day per week
2-2	Creation of Site Visiting Circuit	Tourist service staff	1-2 / 2shift	Open 7days per week 9 am to 6pm
2-5	Enhancement of Entertainment in El Jem	Administration staff	2 / 1shift	7days per week (on season) 3day per week (off season)
Jerba/Tataouin				
3-1	Establishment of On-Site Visitor Center	Tourist services staff Exhibition staff Administration staff Cleaning staff Maintenance staff	1-3 / 2shifts 1-2 / 2shifts 1-2 / 1shifts 2 / 1shift 1 / 1shift	Open 7days per week 9 am to 6 pm 1 day per week
3-2	Creation of Site Visiting Circuit	Tourist service staff	1-2 / 2shift	Open 7days per week 9 am to 6pm

Source: JICA Study Team

15.1.5 Funding Sources

Major source for the implementation of the priority projects and programs is assumed to be a soft loan from a donor in consideration of limited financial resources of the Government. Foreign currency earnings from foreign tourists visiting Tunisia will surely increase after the implementation of the priority projects and programs. Therefore, loan repayment ability is considered inherent.

15.2 COST PLANNING OF PRIORITY PROJECTS

15.2.1 Premises

It is important to plan the appropriate cost for the priority projects at the desirable quality level, including the necessary operational materials, equipment, furniture, and display contents and the provision of well trained staffs, which the past simple cost estimation often neglected.

The project cost planning was made under the following premises:

- Quality of work was assumed at international standards,
- Cost planning was made by multiplying inclusive unit prices with needed number of units which are appropriate to achieve objectives of each priority project,
- Costs were all planned at January 2001 prices,
- Costs for the design and supervision including preparation of tender documents are calculated on a percentage basis: 6 to 25 percent of the estimated construction, procurement and execution cost,
- Overhead profits are included in each cost,
- Contingency of 15 percent is added to the cost for both the design and supervision, and the construction, procurement and execution taking into account physical and price contingency in Package A, B, C, and D,
- Contingency of 10 percent is added to the construction, procurement and execution taking into account physical and price contingency in Package E, and F, and
- Land acquisition costs and taxes are not included.

15.2.2 Project Cost

The total cost of the priority projects amounts to TD 133.1 million including the costs for the consulting services for the overall project management of 6 priority projects, and 10 or 15 percent of contingency. The cost for the overall project management is provisionally calculated on a percent basis of 6 percent. This will depend on the necessary consulting services and input of expert in accordance with the implementation structure.

The following Table 15.2.1 shows a summary of the project costs for the package of 6 priority projects. Table 15.2.2 shows its breakdown. These costs include all those for the 6 priority projects implementation expert for land acquisition and taxes.

Table 15.2.1 Summary of Project Cost Planning (1/2)

PROJECTS	Design, S/V (000 TD)	Execution (000 TD)	Sub-Total 1 (000 TD)	Contingency (000 TD)	Total (000 TD)
Package A : Carthage Heritage Park	2,433	21,353	23,786	3,568	27,354
1 Carthage Visitor Center in La Malga Cisterns	644	4,068	4,712	707	5,418
2 Water Circuit Museum in La Malga Cisterns	187	1,560	1,747	262	8,211
3 Beautification of Avenue Habib Bourguiba	154	1,920	2,074	311	2,385
4 Multimedia Presentations at AM and AB	165	1,150	1,315	197	1,512
5 Installation of Signage System	23	180	203	30	233
6 Visitor Facilitation Upgrading	197	1,905	2,102	315	2,417
7 Provision of Shuttle Bus	315	2,100	2,415	362	2,777
8 Sound and Light Show at Roman Theater	380	3,150	3,530	529	4,059
9 Training and Management Program	17	280	297	45	341
Package B : Islamic Urban Heritage	2,540	19,317	21,857	3,279	25,135
Tunis	916	7,792	8,708	1,306	10,014
1-1 Establishment of Visitor Center	149	948	1,097	165	1,261
1-2 Establishment of Art and Craft Center	157	1,420	1,577	237	1,814
1-3 Creation of Visiting Circuits	67	370	437	65	502
1-4 Presentation Improvement of Historical Buildings	207	2,075	2,282	342	2,624
1-5 Rehabilitation of Medina along Visiting Circuits	316	2,642	2,958	444	3,402
1-6 Provision of Tourist Coach Parking	20	337	357	54	411
Kairouan	611	4,585	5,196	779	5,975
2-1 Establishment of Visitor Center	148	1,244	1,392	209	1,601
2-2 Creation of Visiting Circuits	37	230	267	40	307
2-3 Presentation Improvement of Historical Buildings	164	1,775	1,939	291	2,229
2-4 Provision of Shuttle Bus	260	1,300	1,560	234	1,794
2-5 Provision of Tourist Coach Parking	2	36	38	6	44
Sousse	18	123	140	21	161
3-1 Creation of Visiting Circuits	18	123	140	21	161
Mahdia	33	273	305	46	351
4-1 Creation of Visiting Circuits	18	123	140	21	161
4-2 Rehabilitation of Medina along Visiting Circuits	15	150	165	25	190
General	962	6,545	7,507	1,126	8,633
5-1 Improvement of Garbage Collection and Cleaning	39	155	194	29	223
5-2 Tourism Investment Promotion in Medina	900	6,000	6,900	1,035	7,935
5-3 Training and Management Program	23	390	413	62	475
Package C : Sahara and Oasis Life	2,806	27,791	30,597	4,590	35,186
1 Establishment of Sahara-Oasis World	2,277	24,020	26,297	3,945	30,242
2 Sahara Camelback Trekking Center with Museum	57	630	687	103	790
3 Creation of Site Visiting Circuit	216	1,601	1,817	273	2,090
4 Desert Sports Promotion	221	1,110	1,331	200	1,530
5 Tourist Information Signs	18	140	158	24	181
6 Training and Management Program	17	290	307	46	354
Package D: Cultural Circuit Upgrading	2,826	23,642	26,468	3,970	30,438
Tunis/Carthage	412	3,138	3,550	532	4,082
1-1 Creation of Site Visiting Circuit	255	2,123	2,378	357	2,734
1-2 Environmental Improvement of Sites	16	210	226	34	260
1-3 Provision of Tourist Traffic Signs	6	75	81	12	93
1-4 Improvement of Gateway Information Center	130	650	780	117	897
1-5 Training and Management Program	5	80	85	13	98

Table 15.2.1 Summary of Project Cost Planning (2/2)

PROJECTS	Design, S/V (000 TD)	Execution (000 TD)	Sub-Tota l (000 TD)	Contingency (000 TD)	Total (000 TD)
Sousse/Hammamet	806	4,695	5,501	825	6,326
2-1 Establishment of On-site Visitor center	304	1,860	2,164	325	2,488
2-2 Creation of Site Visiting Circuit	56	545	601	90	691
2-3 Environmental Improvement of Sites	9	110	119	18	136
2-4 Provision of Tourist Traffic Signs	5	50	55	8	63
2-5 Enhancement of Entertainment in El Jem	125	500	625	94	719
2-6 Improvement of Gateway Information Center	300	1,500	1,800	270	2,070
2-7 Training and Management Program	8	130	138	21	158
Jerba/Tataouin	1,608	15,809	17,417	2,613	20,029
3-1 Establishment of On-Site Visitor Center	192	1,534	1,726	259	1,984
3-2 Creation of Site Visiting Circuit	606	5,160	5,766	865	6,630
3-3 Environmental Improvement of Sites	21	185	206	31	237
3-4 Provision of Tourist Traffic Signs	12	150	162	24	186
3-5 Road Improvement	640	8,000	8,640	1,296	9,936
3-6 Improvement of Gateway Information Center	130	650	780	117	897
3-7 Training and Management Program	8	130	138	21	158
Package E : Reform for Competitive Beach Resort		6,450	6,450	645	7,095
1 New Public-Private Partnership Mechanism		3,465	3,465	347	3,812
2 Foreign Investment Promotion and Seminars		225	225	23	248
3 Seminar Series and Hotel Staff Training		2,760	2,760	276	3,036
Package F : MICE Tourism Promotion		917	917	92	1,009
1 Designation of Several ONTT European Offices		252	252	25	277
2 Institutional Strengthening of TCB		340	340	34	374
3 Advertising Policies		200	200	20	220
4 Organization of Seminars by TCB		25	25	3	28
5 Establishment of Database of MICE Records		100	100	10	110
Sub-Total	10,604	99,470	110,074	16,143	126,217
Overall Project Management			5,968	895	6,863
GRAND TOTAL			116,042	17,038	133,080

Source: JICA Study Team

Figure 15.2.2 Cost Planning of Priority Projects (4/4)

PROJECTS	Detailed Design (D/D), Supervision (S/V)					Construction, Procurement and Execution					Sub-Total			Contingency			Grand Total			Outline
	(000 TD)	FCP (000 TD)	(%)	LCP (000 TD)	(%)	(000 TD)	FCP (000 TD)	(%)	LCP (000 TD)	(%)	(000 TD)	FCP (000 TD)	LCP (000 TD)	15% (000 TD)	FCP (000 TD)	LCP (000 TD)	(000 TD)	FCP (000 TD)	LCP (000 TD)	
Jerba/Tataouin	1,608	863	53.7	745	46.3	15,809	8,716	55.1	7,094	44.9	17,417	9,578	7,839	2,613	1,437	1,176	20,029	11,015	9,015	
3-1 Establishment of On-Site Visitor Center	192	122	63.7	70	36.3	1,534	846	55.1	689	44.9	1,726	968	758	259	145	114	1,984	1,113	872	
31-1 construction	84	42	50.0	42	50.0	840	420	50.0	420	50.0	924	462	462	139	69	69	1,063	531	531	1400 sq.m x TD600 /sq.m
31-2 advanced presentation equipment	75	56	75.0	19	25.0	500	375	75.0	125	25.0	575	431	144	86	65	22	661	496	165	presentation equipment LS
31-3 parking	2	1	50.0	1	50.0	36	9	25.0	27	75.0	38	10	28	6	2	4	44	12	32	600 sq.m x TD60 /sq.m
31-4 landscaping	0	0	50.0	0	50.0	8	4	50.0	4	50.0	8	4	4	1	1	1	10	5	5	200 sq.m x TD40 /sq.m
31-5 handout production	30	23	75.0	8	25.0	150	38	25.0	113	75.0	180	60	120	27	9	18	207	69	138	150000copies x TD1/copy
3-2 Creation of Site Visiting Circuit	606	303	50.0	303	50.0	5,160	3,350	64.9	1,810	35.1	5,766	3,653	2,113	865	548	317	6,630	4,201	2,430	
32-1 maps and panels	36	18	50.0	18	50.0	240	120	50.0	120	50.0	276	138	138	41	21	21	317	159	159	80 maps x TD3000 /map
32-2 direction signs	10	5	50.0	5	50.0	120	30	25.0	90	75.0	130	35	95	19	5	14	149	40	109	240 signs x TD500 /sign
32-3 site improvement	400	200	50.0	200	50.0	4,000	3,000	75.0	1,000	25.0	4,400	3,200	1,200	660	480	180	5,060	3,680	1,380	Physical improvement LS for 8 sites
32-4 handout production	160	80	50.0	80	50.0	800	200	25.0	600	75.0	960	280	680	144	42	102	1,104	322	782	800000 copies x TD1/copy
3-3 Environmental Improvement of Sites	21	10	50.0	10	50.0	185	93	50.0	93	50.0	206	103	103	31	15	15	237	118	118	
33-1 re-training of guides	1	0	50.0	0	50.0	10	5	50.0	5	50.0	11	5	5	2	1	1	12	6	6	1 LT x 1M x TD10,000/MM
33-2 provision of materials	14	7	50.0	7	50.0	70	35	50.0	35	50.0	84	42	42	13	6	6	97	48	48	litter boxes, posters, etc. LS for 8 sites
33-3 local environmental guideline	6	3	50.0	3	50.0	105	53	50.0	53	50.0	111	56	56	17	8	8	128	64	64	guideline for 8 sites
3-4 Provision of Tourist Traffic Signs	12	6	50.0	6	50.0	150	75	50.0	75	50.0	162	81	81	24	12	12	186	93	93	
34-1 tourist road signs	12	6	50.0	6	50.0	150	75	50.0	75	50.0	162	81	81	24	12	12	186	93	93	300 signs x TD500 /sign
3-5 Road Improvement	640	320	50.0	320	50.0	8,000	4,000	50.0	4,000	50.0	8,640	4,320	4,320	1,296	648	648	9,936	4,968	4,968	
35-1 road improvement	640	320	50.0	320	50.0	8,000	4,000	50.0	4,000	50.0	8,640	4,320	4,320	1,296	648	648	9,936	4,968	4,968	40km x TD200,000/km (bituminous 7m width)
3-6 Improvement of Gateway Information Center	130	98	75.0	33	25.0	650	288	44.2	363	55.8	780	385	395	117	58	59	897	443	454	
36-1 information tools	100	75	75.0	25	25.0	500	250	50.0	250	50.0	600	325	275	90	49	41	690	374	316	information tool LS
36-2 handout production	30	23	75.0	8	25.0	150	38	25.0	113	75.0	180	60	120	27	9	18	207	69	138	150000copies x TD1/copy
3-7 Training and Management Program	8	4	50.0	4	50.0	130	65	50.0	65	50.0	138	69	69	21	10	10	158	79	79	
37-1 tour guide	4	2	50.0	2	50.0	70	35	50.0	35	50.0	74	37	37	11	6	6	85	43	43	1LT x 1M x TD10,000/MM + 1FT x 1M x TD25,000/MM
37-2 ONTT staff	3	2	50.0	2	50.0	50	25	50.0	25	50.0	53	27	27	8	4	4	61	30	30	1 LT x 5M x TD10,000/MM
37-3 local people	1	0	50.0	0	50.0	10	5	50.0	5	50.0	11	5	5	2	1	1	12	6	6	1 LT x 1M x TD10,000/MM
Package E : Reform for Competitive Beach Resort						6,450	4,700	72.9	1,750	27.1	6,450	4,700	1,750	645	470	175	7,095	5,170	1,925	
1 New Public-Private Partnership Mechanism						3,465	2,310	66.7	1,155	33.3	3,465	2,310	1,155	347	231	116	3,812	2,541	1,271	LS
2 Foreign Investment Promotion and Seminars						225	150	66.7	75	33.3	225	150	75	23	15	8	248	165	83	LS
3 Seminar Series and Hotel Staff Training						2,760	2,240	81.2	520	18.8	2,760	2,240	520	276	224	52	3,036	2,464	572	
3-1 technical assistance						360	240	66.7	120	33.3	360	240	120	36	24	12	396	264	132	LS
3-2 lectures & instructors						2,400	2,000	83.3	400	16.7	2,400	2,000	400	240	200	40	2,640	2,200	440	LS
Package F : MICE Tourism Promotion						917	483	52.7	434	47.3	917	483	434	92	48	43	1,009	532	477	
1 Designation of Several ONTT European Offices						252	227	90.0	25	10.0	252	227	25	25	23	3	277	249	28	LS
2 Institutional Strengthening of TCB						340	34	10.0	306	90.0	340	34	306	34	3	31	374	37	337	LS
3 Advertising Policies						200	150	75.0	50	25.0	200	150	50	20	15	5	220	165	55	LS
4 Organization of Seminars by TCB						25	23	90.0	3	10.0	25	23	3	3	2	0	28	25	3	1foreign teacher x 1month x TD25,000/MM
5 Establishment of Database of MICE Records						100	50	50.0	50	50.0	100	50	50	10	5	5	110	55	55	LS
Sub-Total	10,604	6,565	61.9	4,039	38.1	99,470	60,529	60.9	38,941	39.1	110,074	67,093	42,981	16,143	9,805	6,338	126,217	76,898	49,319	
Overall Project Management											5,968	3,632	2,336	895	545	350	6,863	4,176	2,687	
GRAND TOTAL	10,604	6,565	61.9	4,039	38.1	99,470	60,529	60.9	38,941	39.1	116,042	70,725	45,317	17,038	10,350	6,688	133,080	81,075	52,006	

Source: JICA Study Team

15.2.3 Operation and Maintenance Cost

















































Operation and maintenance costs of each component of the 6 priority projects were estimated considering the nature of the project component in question and likely management structure, and they were summed up for each of the 6 priority projects. Annual outlays were estimated considering individual construction schedules and opening time. For part of the projects, the operation and maintenance will start in 2004, and the yearlong operation and maintenance will occur for all the projects in 2007. The results are shown in Table 15.2.3. The O/M cost in the table is that in 2007. Figures represent desirable levels.




Table 15.2.3 Cost Planning of Priority Projects from 2002 to 2006 (1/2)

PROJECTS	Project Implementation					Project Cost						O/M Cost
	2002	2003	2004	2005	2006	Total	2002	2003	2004	2005	2006	2007
						Unit: thousand TD						
Package A : Carthage Heritage Park						27,354	541	620	12,144	13,965	83	2,641
1 Carthage Visitor Center						5,418	99	197	1,707	3,415	0	610
2 Water Circuit Museum						8,211	124	124	2,654	5,308	0	990
3 Beautification of Avenue HB						2,385	0	71	1,157	1,157	0	192
4 Multimedia Presentations at AM and AB						1,512	0	76	958	479	0	115
5 Installation of Signage System						233	10	0	148	74	0	18
6 Visitor Facilitation Upgrading						2,417	90	0	1,551	775	0	191
7 Provision of Shuttle Bus						2,777	97	48	2,632	0	0	210
8 Sound and Light Show at Roman Theater						4,059	116	58	1,295	2,590	0	315
9 Training and Management Program						341	4	46	42	167	83	0
Package B : Islamic Urban Heritage						25,135	402	1,797	16,752	6,161	24	1,420
Tunis						10,014	331	514	4,741	4,428	0	872
1-1 Establishment of Visitor Center						1,261	59	247	596	358	0	124
1-2 Establishment of Art and Craft Center						1,814	0	138	710	965	0	198
1-3 Creation of Visiting Circuits						502	31	119	275	78	0	37
1-4 Presentation Improvement						2,624	95	0	1,265	1,265	0	215
1-5 Rehabilitation of Medina						3,402	146	0	1,628	1,628	0	264
1-6 Provision of Tourist Coach Parking						411	0	9	268	134	0	34
Kairouan						5,975	64	449	3,932	1,530	0	509
2-1 Establishment of Visitor Center						1,601	53	170	970	408	0	174
2-2 Creation of Visiting Circuits						307	11	83	168	45	0	23
2-3 Presentation Improvement						2,229	0	75	1,077	1,077	0	178
2-4 Provision of Shuttle Bus						1,794	0	120	1,674	0	0	130
2-5 Provision of Tourist Coach Parking						44	0	1	43	0	0	4
Sousse						161	4	30	127	0	0	12
3-1 Creation of Visiting Circuits						161	4	30	127	0	0	12
Mahdia						351	4	37	310	0	0	27
4-1 Creation of Visiting Circuits						161	4	30	127	0	0	12
4-2 Rehabilitation of Medina						190	0	7	183	0	0	15
General						8,633	0	767	7,640	203	24	615
5-1 Improvement of Garbage Collection						223	0	223	0	0	0	15
5-2 Tourism Investment Promotion						7,935	0	414	7,521	0	0	600
5-3 Training and Management Program						475	8	122	119	203	24	0
Package C : Sahara and Oasis Life						35,186	439	2,391	10,071	15,010	7,275	3,915
1 Establishment of Sahara-Oasis World						30,242	393	1,118	7,530	14,133	7,067	3,567
2 Sahara Camelback Trekking Center						790	0	26	382	382	0	63
3 Creation of Site Visiting Circuit						2,090	46	375	1,220	449	0	160
4 Desert Sports Promotion						1,530	102	708	720	0	0	111
5 Tourist Information Signs						181	8	0	173	0	0	14
6 Training and Management Program						354	4	50	46	46	208	0
Package D: Cultural Circuit Upgrading						30,438	538	3,775	17,378	8,645	101	2,441
Tunis/Carthage						4,082	124	384	2,780	771	24	805
1-1 Creation of Site Visiting Circuit						2,734	117	193	1,680	744	0	212
1-2 Environmental Improvement of Sites						260	4	6	244	3	3	20
1-3 Provision of Tourist Traffic Signs						93	0	3	90	0	0	8
1-4 Gateway Information Center						897	60	97	741	0	0	65
1-5 Training and Management Program						98	2	25	25	25	21	0

Figure 15.2.3 Cost Planning of Priority Projects from 2002 to 2006 (2/2)

Unit: thousand TD

PROJECTS	2002	2003	2004	2005	2006	Project Cost					O/M Cost	
						Total	2002	2003	2004	2005	2006	2007
Sousse/Hamammet						6,326	210	1,476	4,306	294	39	499
2-1 On-site Visitor center						2,488	116	668	1,705	0	0	229
2-2 Creation of Site Visiting Circuit						691	0	26	443	222	0	55
2-3 Environmental Improvement of Sites						136	0	7	123	3	3	10
2-4 Provision of Tourist Traffic Signs						63	0	2	61	0	0	5
2-5 Enhancement of Entertainment						719	0	58	661	0	0	50
2-6 Gateway Information Center						2,070	92	690	1,288	0	0	150
2-7 Training and Management Program						158	2	26	25	69	36	0
Jerba/Tataouin						20,029	204	1,916	10,292	7,579	39	1,636
3-1 On-Site Visitor Center						1,984	14	171	948	852	0	223
3-2 Creation of Site Visiting Circuit						6,630	0	794	4,063	1,774	0	516
3-3 Environmental Improvement of Sites						237	0	12	218	3	3	18
3-4 Provision of Tourist Traffic Signs						186	6	0	121	60	0	15
3-5 Road Improvement						9,936	196	98	4,821	4,821	0	800
3-6 Gateway Information Center						897	14	787	97	0	0	65
3-7 Training and Management Program						158	2	26	25	69	36	0
Package E : Competitive Beach Resort						7,095	0	1,818	2,365	2,365	547	0
1 New Public-Private Partnership						3,812	0	1,271	1,271	1,271	0	0
2 Foreign Investment Promotion						248	0	41	83	83	41	0
3 Seminar and Hotel Staff Training						3,036	0	506	1,012	1,012	506	0
Package F : MICE Tourism Promotion						1,009	0	252	252	252	252	0
1 ONTT European Offices						277	0	69	69	69	69	0
2 Institutional Strengthening of TCB						374	0	94	94	94	94	0
3 Advertising Policies						220	0	55	55	55	55	0
4 Organization of Seminars by TCB						28	0	7	7	7	7	0
5 Database of MICE Records						110	0	28	28	28	28	0
GRAND TOTAL						126,217	1,920	10,654	58,962	46,398	8,283	10,418

-  Design
 Implementation (including physical construction work, with or without program execution)
 Implementation (program execution only)

Source: JICA Study Team

15.3 FEASIBILITY OF PRIORITY PROJECTS

Economic evaluation of the priority projects was undertaken in order to examine their impact on the national economy. As shown below, the results point to the clear economic viability of the projects. These projects are expected to benefit the national economy, generating economic benefits substantially higher than the cost required.

In addition, financial analysis was conducted (at the end of this section) in order to assess the projects' capacity to generate cash income and tax proceeds sufficient for covering O/M costs and for recouping the initial costs.

15.3.1 Overview of Economic Evaluation

The proposed priority projects will enhance the attractiveness, particularly of the country's cultural and Saharan tourism. Coupled with more aggressive promotion efforts in these areas, these projects are expected to attract a greater number of foreign tourists to Tunisia. The projects are also expected to improve the quality of beach products as well as increase the visitors for MICE tourism.

The increase in foreign tourists resulting from these projects will generate multiple effects on the national economy. The main economic benefits include the following:¹

- Increased foreign exchange earnings
- Creation of job opportunities and increase in income
- Multiplier economic effects on related services and industries
- Regional economic growth

These benefits will contribute to increasing the revenues of the tourism industries as well as other related industries, upgrading of the living standard in Tunisia, and generating additional tax revenues to the Government.

In this economic evaluation, the economic value of the priority projects was assessed by means of cost-benefit analysis (as widely used), by which project benefits to the national economy are quantitatively compared with the project cost. The evaluation was undertaken for Project Packages A through D that involve physical investment, which *directly* (rather than *indirectly*) leads to enhanced attractiveness of Tunisian tourism.

¹ The following effects, though these are intangible rather than tangible, are extremely important benefits of the priority projects: capacity building of the tourism administration, upgrading of capability of those engaged in tourism-related industries, and the enhancement of the country's image as a whole as well as its tourism.

15.3.2 Economic Benefits of Priority Projects

(1) Methodology

The economic benefits resulting from the priority projects were estimated with the following methodologies:

- a. Use of incremental tourism earnings as economic benefits,
- b. Quantification of economic benefits (incremental tourism earnings) generated by the increase in cultural circuit tourists and tourists for natural wonder, and
- c. Estimating incremental foreign tourists and tourism earnings in total, then allocating them to each package.

Each is detailed below.

a) Use of incremental tourism earnings as economic benefits

The economic benefits to be generated by the priority projects (A through D) were measured as a difference in value added brought by foreign tourists between the cases of “with” and “without” the priority projects.

The incremental value added (or national income) is assumed to equal the increment in foreign exchange earnings (tourism earnings²) between the “with” and “without” cases. This assumption is considered reasonable, in consideration of the following:

- Tourism earnings contribute directly to value added of tourism-related industries and indirectly to that of other industries supplying input for the tourism sector. In addition, the value added generated is directed to consumption that again generates value added across the economy due to the increased production of a variety of goods and services.
- The Study Team estimated this spread effect of Tunisian tourism as shown in Appendixes. This analysis is based on the amount of production (as widely undertaken), not on value added. The estimated result (somewhat higher than 2.0) is consistent with the size of multiplier generally recognized for tourism, tending to be between 1.5 and 3.0.³ On the other hand, the rate of value added in the amount of production is somewhat higher than 50% for the Tunisian tourism industry and about 50% for the entire economy.

b) Quantification of economic benefits (incremental tourism earnings) generated by the increase in cultural circuit tourists and tourists for natural wonder

The incremental tourism earnings were calculated based on the estimate of

² In Tunisia, tourism earnings (receipts) include foreign exchange earnings attributed to travel agencies and the hotel industry (not including the airline industry of the country) plus the foreign currencies exchanged by individual foreign visitors in the country (not including those exchanged by corporations).

³ In general, such multiplier effect is relatively high in tourism mainly because much of the intermediate consumption of the tourism related-industries is produced domestically (e.g., agricultural products, process foods) as well as these industries are services industries intensively using domestic labor force that contributes to local spending.

additional cultural circuit tourists and tourists for natural wonder, considering that the sites *directly* targeted by the priority projects (Packages A through D) are cultural sites and the Saharan area.

Other benefits not quantified in this analysis include those attributed to the following:

- Possible increase in spending by beach holiday vacationers (who will come to Tunisia even without the projects), due to the increased attractiveness in cultural and Saharan tourism (e.g., incremental spending due to taking one- or two-day circuit tours rather than staying at beaches)
- Possible increase in beach holiday vacationers who would come to Tunisia due to the increased attractiveness in cultural and Saharan tourism among those who will otherwise not choose Tunisia for beach holidays.

While these could be potentially significant expected benefits, their quantification tends to involve a great deal of uncertainty.⁴ For this reason, these benefits were not included in the benefit calculation in order to avoid optimistic analysis, thereby making the estimate analytically conservative.

- c) Estimating incremental foreign tourists and tourism earnings in total, then allocating them to each package

Non-beach holidaymakers coming to Tunisia are largely circuit tourists, touring both major cultural sites across the country and the South. It is likely that much of the increment in the circuit tourists resulting from the priority projects is attributed to the combined effect of the enhanced attractiveness of both cultural tourism and Saharan tourism. Therefore, total increments in cultural circuit tourists and tourists for natural wonder and in tourism earnings were first estimated; then the total benefit was allocated to each project package. The estimation process is described below.

- (2) Estimate of incremental tourists for cultural circuit and for natural wonder

- a) Estimate of the number of tourists for cultural circuit and for natural wonder

Total number of these tourists is estimated to be in the order of 500,000-580,000 per year, depending on the estimation methods as shown in Figure 15.3.1.⁵ The average of the two estimates (a total of 536,015 arrivals in 1999) was used as a basis for estimating economic benefits.

⁴ For the second potential benefit, for example, culture and Sahara are the secondary interest of these tourists (next to their primary purpose of beach holiday), and it is not easy to estimate the effect of their increased attractiveness on the extent of potential increase in beach holiday vacationers, due primarily to lack of relevant data.

⁵ One is based partly on the tourist interview survey carried out in July-August 2000, which provides the information on holiday types of the interviewed tourists, and the other based on the analysis made in the Interim Report.

Figure 15.3.1 Estimate of Number of Tourists for Cultural Circuit and Natural Wonder

Method 1: Use of composition of foreign tourists by holiday purpose

(Based on the tourist interview survey conducted in July-August 2000)

Holidaymakers by purpose (%)		Estimate of cultural circuit tourists and tourists for natural wonder Consider Europeans & others (except Maghrebs)			
“B”: Beach holiday					
“C”: Culture					
“S” (of Sahara): Natural wonder					
Purpose	Composition	Europeans	Others	Total	
(1) “B”	82.0%	1999 total arrivals	3,460,857	108,113	3,568,970
(2) “C” only	5.2%	Holiday*	85%	90%	-
(3) “S” only	9.1%	“C” or “S”	18.0%**	50%***	-
(4) (“C” & “S”) only	3.6%	Number of “C”, “S”	529,511	48,651	578,162
(2)+(3)+(4)	18.0%				
Total: (1), (2), (3) & (4)	100.0%				

Note *: assumptions considered reasonable
 **: from the left table
 ***: conservatively assumed due to no relevant data

Note: (1) above includes “B” + (“C” and/or “S”).
 Source: Tourist interview survey

Method 2: Use of the mobility coefficient by nationality

(Note: This analysis was conducted in the Interim Report.)

Based on the mobility coefficient⁶ calculated for each source country along with several assumptions that are considered reasonable, the following result was obtained (c.f. section A4.3 of Volume III):

Number of circuit tourists and tourists of Sahara-stay type in 1999

Circuit tourists	Sahara-stay type	Total
394,714	99,154	493,868

Source: JICA Study Team

It should be noted that this result does not necessarily contradict the composition of visitors by holiday type obtained from the tourist interview survey above (Method 1). Tourists of Sahara-stay type are those staying primarily in the Sahara area. On the other hand, it is considered that many of the circuit tourists in this table are those visiting Tunisia primarily for Sahara/natural wonder, who should be reflected in the category of “S” only in Method 1 above.

The number of cultural circuit tourists and tourists for natural wonder is thus estimated at 536,015 in 1999, taking the average of the two estimates above.

b) Increment in cultural circuit tourists and tourists for natural wonder

The increment in these tourists (in percent) was estimated, assuming that it will result from the increase in perceived value (or attractiveness) of major cultural sites (such as those targeted by the priority projects) and that for the Sahara area. (This approach is not uncommon for the assessment of the effect of tourism development.)

⁶ The “Mobility Coefficient (MC)” of visitors is defined as follows:

$$MC = (\text{total number of visitors registered in hotels}) / (\text{number of visitor arrivals})$$

The MC of circuit tourists tends to be higher as they move from one place to another, and register at more hotels accordingly.

This is considered reasonable since these tourists tend to be motivated to visit Tunisia according to their perception about the value or attractiveness of these sites and areas. Such perception is usually created through the exposure to various kinds of media (e.g., tour brochures, tour magazines, guidebooks, word-of-mouth, TV programs on Tunisia, and the like). Higher perceived value is likely to be reflected in these media, thereby motivating more tourists to visit Tunisia. (Let alone, promotion by the Government is undoubtedly extremely important to create and enhance the image of cultural and Saharan tourism of Tunisia.)

The measurement of such perceived value inherently involves subjectivity, and it is desirable to examine the collective perception of the market. One surrogate of the market perception is that of the tourists who visited Tunisia. According to the tourist interview survey, 75.9% of those who visited one or more of the four major cultural sites (Carthage, Medinas, El Jem, and Kariouan cultural sites, all of which are targeted by the priority projects) rated the *value* of cultural sites in Tunisia as “good.” It is assumed that this percentage corresponds to the value perceived by the market, and that the increase in this percentage will lead to the increase in foreign visitors.

For estimating this, the following model was constructed:

$$(\text{perceived value}) = (\text{intrinsic value}) + \sum(\text{various attributes of the sites})$$

As modeled, it is conceivable that the perceived value will be enhanced by adding value to the sites, e.g., improved interpretation and presentation at the sites, better facilities with more attractive contents, better navigational arrangements in and around the sites. These improvements correspond to the improvement in “various attributes of the sites” in the model.

The tourist interview survey provides data on the impression of tourists on major attributes of cultural sites in Tunisia: interpretation and presentation, and facilities and signage. It is possible to quantify the effect of these attributes on the perceived value by estimating the following model, a more specific version of the model constructed above:

$$\begin{aligned} (\text{perceived value}) = & (\text{intrinsic value}) \\ & + a * (\text{interpretation}) + b * (\text{facilities/signage}) \\ & + (\text{effects of other attributes not quantified}) \end{aligned}$$

where a and b are coefficients.

Based on the tourist interview survey, the coefficients, a and b , were estimated by running the following regression model, with the results described below:

(Regression model)

$$Y = c + a * X1 + b * X2$$

where Y = perceived value

X1 = interpretation

X2 = facilities / signage

c = intercept (= intrinsic value + effects of other attributes not quantified)

a, b = coefficients

(Estimation result)

$$(\text{perceived value}) = 0.590 + 0.210 * (\text{interpretation}) + 0.164 * (\text{facilities/signage})$$

- Note:
- i) The analysis is based on the sample of visitors to one or more of the four major cultural sites targeted by the priority projects (Carthage, El Jem, Medinas, and Kairouan cultural sites), totaling 2,423.
 - ii) Dummy variables were used for perceived value, interpretation, and facilities/signage (“good”=1, “fair or poor”=0, for each variable).
 - iii) The estimates of the coefficients are statistically very significant, with t-statistics being 11.0 for the coefficient of interpretation and 8.59 for facilities/signage.

The percentage of those in the sample who rated interpretation as “good” is 45.8% and that for facilities/signage is 44.0%. These aspects will be significantly improved by the priority projects with the use of modern interpretation and presentation techniques, advanced audio-visual technologies, attractive and tourist-friendly facilities, and better landscaping and the enhancement of visual attractiveness of the sites. It is reasonably expected that most visitors to these major sites will rate these aspects highly, once all the priority projects are completed. In this analysis, the percentage of those who rate these aspects as “good” is assumed to increase to 75%, or 3 visitors out of 4,⁷ which is judged a reasonable assumption considering the extent of the planned improvement.

Using this assumption (75% for interpretation and facilities/signage), the regression model estimated above provides the result of an increase of the perceived value to 87.1% from the current level of 75.9%. This is an increase by 14.8% (= (87.1-75.9) / 75.9). While this estimate is for cultural sites, the perceived value (or attractiveness) of the Sahara area is also assumed to increase by the same degree.

Therefore, the estimated increment in cultural circuit tourists and tourists for natural wonder that will result from the priority projects is 14.8% of these visitors in the case of “without” the projects.⁸

⁷ This percentage is nearly equal to the current level of the perceived value described above (75.9%). It is considered reasonable to assume that tourists’ impression on these major attributes will improve to a level at least comparable to the current level of the perceived value considering the extent of the planned improvement.

⁸ In view of the current number of visitors for cultural circuit tourists and tourists for natural wonder, the increase of this extent due to the priority projects is considered within a reasonable range. It would, however, take a while before the effect will be fully materialized, and thus it is assumed (as described later) that it will take four years before full materialization of the benefits. In addition, due to the uncertainty inevitably involved in this kind of estimate, sensitivity analysis was conducted as described later.

(3) Estimate of total project benefits

Project benefits were estimated as a difference in earnings from the projected number of cultural circuit tourists and tourists for natural wonder between the cases of “with” and “without” the priority projects.

a) Assumptions:

- For the “without the projects” case, the number of these tourists is assumed to increase at an annual increase rate as follows:

Nationality	1999-2006	2006-2016
Europeans:	3.5%	3.2%
Others (excluding Maghrebs):	4.1%	5.3%

These rates are those obtained from the projection of foreign visitor arrivals based on the lower case scenario (Scenario B), except for the rate for Europeans in 1999-2006 (3.5% per year⁹). This rate for Europeans was set assuming that the recent trend of visitors to major cultural sites and the Sahara area will continue.¹⁰ Maghrebs would continue to be negligible for cultural and Saharan tourism, and were excluded.

- The increment in tourists resulting from the priority projects (a 14.8% increment of the “without the projects” case) is assumed to arise from the second half of 2006 on.
- Tourism earnings per tourist are assumed to be equal to those in 1999 for both Europeans (TD 497) and others (TD 597) as shown below.

Table 15.3.1 Tourism Earnings per Foreign Visitor Arrival, 1996-1999

Nationality	1996	1997	1998	1999
Europeans	471	467	483	497
Maghrebs	140	139	126	135
North Americans	416	405	525	573
Others	400	433	438	604
North Americans + Others	403	428	455	597
Total	364	367	363	404

Unit: TD

Source: Central Bank of Tunisia, Balance des Paiements de la Tunisie, 1998 and 1999.

- Project benefits are assumed to fully materialize in the fourth year from the time the benefits will be generated: 25% of total benefits in 2006, 50% in 2007, 75% in 2008, and 100% in 2009.
- A 20-year period was used for the project evaluation period, starting in 2002 (commencement of the priority projects) and ending in 2021.

⁹ The projected average rate of growth of total European visitor arrivals in 1999-2006 is 4.8% per year for the lower case scenario (Scenario B). See the Interim Report for details.

¹⁰ Total number of visitors to three major cultural sites, Carthage, El Jem, and Kariouan cultural sites increased at a rate of 2.5% per year in 1994-1999; that for Carthage alone at a rate of 4.0% per year; and total number of hotel registration for foreign visitors at the Gafsa-Tozeur region at a rate of 3.5% per year in the same period.

Table 15.3.2 shows the computation of the economic benefits generated by the incremental tourists (the left end column of the table).

Table 15.3.2 Total Economic Benefits of the Priority Projects

Year	Cultural circuit tourists and tourists for natural wonder			Tourism earnings from these tourists (TD 1000)			Increment in tourism earnings (TD 1000)	Project benefits (TD 1000)
	"With" the projects		Total	"Without" the projects		Total		
	Europeans	Others		Europeans	Others			
1999	490,911	45,104	536,015	243,983	26,927	270,910	270,910	0
2000	508,093	46,954	555,046	252,522	28,031	280,553	280,553	0
2001	525,876	48,879	574,754	261,360	29,181	290,541	290,541	0
2002	544,281	50,883	595,164	270,508	30,377	300,885	300,885	0
2003	563,331	52,969	616,300	279,976	31,622	311,598	311,598	0
2004	583,048	55,141	638,189	289,775	32,919	322,694	322,694	0
2005	603,455	57,401	660,856	299,917	34,269	334,186	334,186	0
2006	716,903	68,588	785,491	356,301	40,947	397,248	346,088	51,160
2007	739,844	72,223	812,067	367,703	43,117	410,820	357,912	52,908
2008	763,519	76,051	839,570	379,469	45,402	424,872	370,154	54,718
2009	787,952	80,082	868,034	391,612	47,809	439,421	382,829	56,592
2010	813,166	84,326	897,492	404,144	50,343	454,486	395,954	58,532
2011	839,188	88,795	927,983	417,076	53,011	470,087	409,546	60,541
2012	866,042	93,502	959,543	430,423	55,820	486,243	423,621	62,622
2013	893,755	98,457	992,212	444,196	58,779	502,975	438,198	64,777
2014	922,355	103,675	1,026,030	458,410	61,894	520,305	453,296	67,008
2015	951,870	109,170	1,061,041	473,080	65,175	538,254	468,934	69,320
2016	982,330	114,956	1,097,286	488,218	68,629	556,847	485,132	71,715
2017	1,013,765	121,049	1,134,814	503,841	72,266	576,107	501,912	74,195
2018	1,046,205	127,464	1,173,670	519,964	76,096	596,060	519,296	76,765
2019	1,079,684	134,220	1,213,904	536,603	80,129	616,732	537,305	79,427
2020	1,114,234	141,334	1,255,568	553,774	84,376	638,150	555,965	82,185
2021	1,149,889	148,824	1,298,714	571,495	88,848	660,343	575,300	85,044

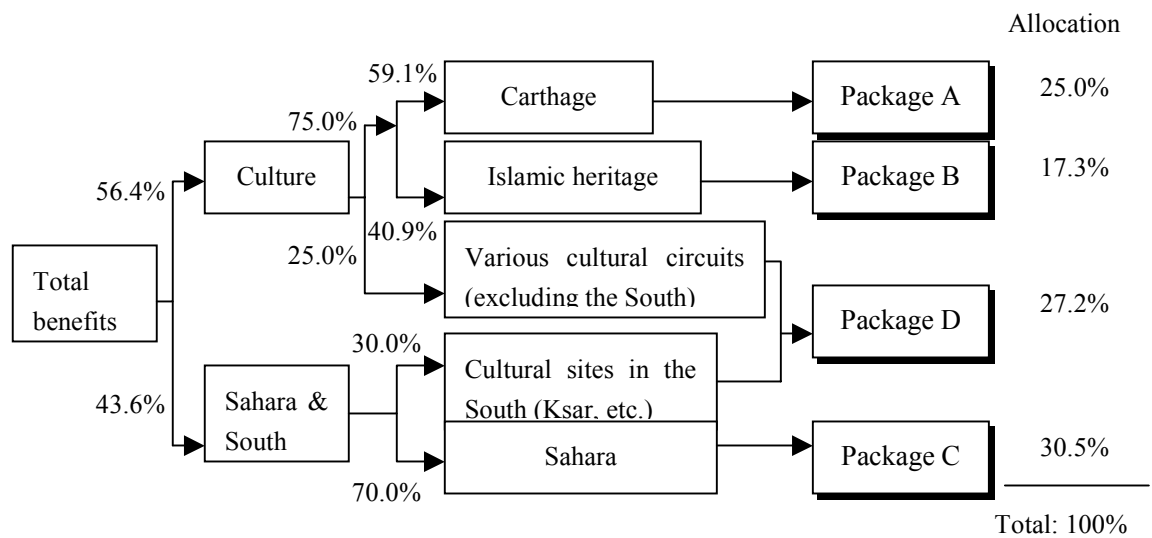
Source: JICA Study Team

(4) Benefit Allocation to Each Project Package

Total project benefits were allocated to each package as shown in Figure 15.3.2 based on the following assumptions:

- Each major site targeted by the projects is assumed to contribute to the project benefits according to its current attractiveness.
- The attractiveness of each site is assumed to be proportional to the number of visitors to the site.

Figure 15.3.2 Allocation of Total Economic Benefits to Each Project Package



Note: See the following page for the assumptions used for benefit allocation.

Source: JICA Study Team

Assumptions Used for Benefit Allocation

Type of sites	Assumptions
1. Culture vs. Sahara/South	<p>Culture: number of visitors to major 4 sites, Carthage, Medinas, Kairouan cultural sites, and El Jem. This was estimated by:</p> <p>(i) number of visitors to Carthage: 645,167 in 1999</p> <p>(ii) ratio of those who visited one or more of these sites to those who visited to Carthage based on the tourist interview survey, which is 1.51.</p> <p>(i) * (ii) = 974,202</p> <p>Sahara: number of foreign visitors registered at hotels in the Gafsa-Tozeur region in 1999 = 752,135</p> <p>Allocation: 974,202 vs. 752,135 = 56.4% vs. 43.6%</p>
2. Carthage + Islamic heritage vs. various cultural circuits	<p>Most of the components of Package D (those targeting the areas other than the South: those targeting the South are considered in 4 below) will improve visitor facilitation of the targeted cultural sites, thereby enhancing their attractiveness in concert with the upgrading of the sites targeted by Packages A and B. In this sense, they are complementary to Packages A and B, and it is inherently difficult to disentangle the D's effect from that of A and B. There are also no relevant data available to make this possible. Therefore, in this analysis it is necessary to assume the extent of contribution of D that is considered reasonable.</p> <p>While the components of Package D are essential for enhancing the level of visitors' satisfaction by improving visitor facilitation, Package A will increase the number of attractions in Carthage (in addition to improving visitor facilitation) and B will primarily upgrade Medinas as a showcase of Islamic culture and history. In view of this, A and B are reasonably considered to have a significantly larger "direct" impact on the increase in visitor arrivals than D, although D will tend to have an indirect effect through increasing the level of visitors' satisfaction. Therefore, the contribution of A and B is likely to be significantly larger than that of D, but the effect of D would not be very small.</p> <p>From these considerations, the contribution of Package D is assumed to be one-fourth of the total benefit attributed to culture.</p>
3. Carthage vs. Islamic heritage	<p>Carthage: number of visitors to Carthage, 645,167 in 1999.</p> <p>Islamic heritage: number of visitors to Kairouan cultural sites plus visitors to Medina of Tunis not visiting Carthage</p> <p>(i) number of visitors to Kairouan cultural sites: 318,318</p> <p>(ii) number of visitors to Medina of Tunis not visiting Carthage: [645,167 for Carthage in 1999]*(1.20-1)=129,033</p> <p>(Note: A factor of 1.20 for the visitors to Medina is obtained from the tourist interview survey. Subtracting the visitors to Carthage is a simple analytical assumption for excluding the attractiveness of Carthage that should be reflected in the number of visitors to Tunis Medina due to geographical closeness of these two sites targeted by different packages.)</p> <p>(i) + (ii) = 447,351</p> <p>Allocation: 645,167 vs. 447,351 = 59.1% vs. 40.9%</p>
4. Sahara vs. Cultural sites in the South	<p>Matmata-Tataouine (M-T) targeted by Package D has a big potential for its berber culture as well as the area's magnificent mountainous scenery that is entirely different from Sahara. This area is still significantly under-exploited for tourism purposes, and appropriate statistics representing its attractiveness is unavailable, thus requiring setting a reasonable level of assumption.</p> <p>Obviously, the attractiveness of Sahara is significantly higher than that of M-T in view of the scale and variety of the tourism resources existing in both areas. However, M-T has resources unique to Tunisia (though their variety is less), and their development will lead to the creation of a major and unique attraction of Tunisian tourism. It would not be unreasonable to assume that the attractiveness of M-T is close to half of that of Sahara. From these considerations, the contribution of the tourism development in this area is assumed to be 30% of the total benefit attributed to Sahara and the South.</p>

Source: JICA Study Team

15.3.3 Economic Costs of Priority Projects

Based on the estimated costs shown earlier, the initial cost and the operating and maintenance cost for each project package (A through D) was used for the economic evaluation, under the following assumptions:

- Initial cost to be incurred each year is based on the schedule of annual fund requirements as estimated earlier.
- Operating and maintenance cost (O/M cost) will be partially incurred by 2006 because of the O/M need for the facilities to be completed by the end of the project implementation period.
- O/M cost to be incurred after 2007 is assumed to increase in proportion to the number of cultural circuit tourists and tourists for natural wonder.
- All the costs are in constant values (at 2000 prices), and price escalation is not considered.
- Project evaluation period is set at 20 years (from the commencement of the project in 2002 to 2021).
- In order to convert the financial cost to the economic cost, a factor of 0.9 was adopted primarily considering taxes.

15.3.4 Economic Evaluation of Priority Projects

With the benefit distributed and the project cost described earlier, each project package was evaluated using three measures for economic evaluation – the economic internal rate of return (EIRR), the net present value (NPV), and the benefit-cost ratio (B/C).

The results are summarized in Table 15.3.3, and detailed economic cost and benefit streams are presented in Table 15.3.4. The results of the economic analysis are set out below.

- The EIRR, which is the rate of discount at which cost and benefit streams over the evaluation period are equalized, was estimated to be 24.0% for the priority projects as a whole (Project Packages A through D), which substantially exceeds the opportunity cost of capital that is often assumed at around 12%.¹¹ In addition, each of these project packages is highly feasible in economic terms.
- The NPV, which is the value of the benefits net of costs both discounted at the opportunity cost of capital, has been estimated at TD 101.9 million for the entire projects (net gain to the national economy), assuming an opportunity cost of capital of 12%.
- The B/C ratio, a variant of the net present value measure in which both benefits and costs are defined in terms of their present values, is estimated to be 1.8 for the entire projects, assuming an opportunity cost of capital of 12%.

¹¹ For example, the opportunity cost of capital assumed for the recent projects in Tunisia appraised by the World Bank is generally 10%, while the Bank also uses 15% for some projects. In view of this, 12% is considered a reasonable assumption.

Note that the mathematical definitions of EIRR, NPV, and B/C ratio are described in the box below.

Table 15.3.3 Summary of Economic Evaluation

Indicator	Package A: Carthage Heritage Park	Package B: Islamic Urban Heritage	Package C: Sahara & Oasis Life	Package D: Cultural Circuit Upgrading	Total
EIRR (%)	25.7%	20.6%	25.0%	24.4%	24.0%
NPV (million TD)	27.0	15.3	30.0	29.6	101.9
B/C ratio	1.9	1.6	1.8	1.9	1.8

Source: JICA Study Team

All of the indicators above point to the clear economic viability of the projects. The EIRR substantially exceeds the opportunity cost of capital. In addition, the NPV is substantially positive and the benefit-cost ratio is significantly greater than one. This indicates that the projects are expected to benefit the national economy, generating tourism earnings substantially higher than the cost required.

Box: Mathematical definition of the indicators used for the economic evaluation

$$NPV = \frac{(B_0 - C_0)}{(1+r)^0} + \frac{(B_1 - C_1)}{(1+r)^1} + \dots + \frac{(B_n - C_n)}{(1+r)^n} = \sum_{t=0}^n \frac{(B_t - C_t)}{(1+r)^t}$$

$$B/C = \frac{\sum_{t=0}^n \frac{B_t}{(1+r)^t}}{\sum_{t=0}^n \frac{C_t}{(1+r)^t}}$$

where B = benefit
 C = cost
 $B - C$ = net benefit
 r = discount rate (a given value)
 t = t -th year
 n = evaluation period

EIRR: the discount rate obtained by the solution of the following equation:

$$\sum_{t=0}^n \frac{(B_t - C_t)}{(1+k)^t} = 0$$

where k = EIRR
 other variables: same as above

Table 15.3.4 Economic Evaluation of Priority Projects (1/3)

Total (Project Packages A-D)				(Unit: TD)
Year	Benefit	Initial cost	O/M cost	Net benefit
2001	0	0	0	0
2002	0	2,963,633	0	-2,963,633
2003	0	8,960,712	0	-8,960,712
2004	0	51,945,873	665,775	-52,611,648
2005	0	40,637,876	3,593,118	-44,230,993
2006	6,395,044	7,970,852	5,911,081	-7,486,889
2007	26,454,115	0	9,376,173	17,077,942
2008	41,038,428	0	9,693,722	31,344,706
2009	56,591,670	0	10,022,361	46,569,308
2010	58,531,903	0	10,362,494	48,169,409
2011	60,541,077	0	10,714,540	49,826,537
2012	62,621,761	0	11,078,935	51,542,826
2013	64,776,625	0	11,456,132	53,320,493
2014	67,008,446	0	11,846,601	55,161,845
2015	69,320,111	0	12,250,830	57,069,281
2016	71,714,621	0	12,669,327	59,045,294
2017	74,195,097	0	13,102,619	61,092,478
2018	76,764,786	0	13,551,253	63,213,533
2019	79,427,063	0	14,015,799	65,411,265
2020	82,185,441	0	14,496,848	67,688,593
2021	85,043,573	0	14,995,016	70,048,557

EIRR: 24.0%

NPV: TD 101.9 million

B/C: 1.8

Package A: Carthage Heritage Park				(Unit: TD)
Year	Benefit	Initial cost	O/M cost	Net benefit
2001	0	0	0	0
2002	0	772,666	0	-772,666
2003	0	844,293	0	-844,293
2004	0	11,216,084	0	-11,216,084
2005	0	12,854,720	493,763	-13,348,482
2006	1,598,349	361,167	1,882,868	-645,686
2007	6,611,825	0	2,376,630	4,235,195
2008	10,256,964	0	2,457,121	7,799,843
2009	14,144,273	0	2,540,423	11,603,850
2010	14,629,206	0	2,626,638	12,002,568
2011	15,131,370	0	2,715,873	12,415,497
2012	15,651,407	0	2,808,239	12,843,169
2013	16,189,985	0	2,903,849	13,286,136
2014	16,747,796	0	3,002,823	13,744,973
2015	17,325,564	0	3,105,285	14,220,278
2016	17,924,037	0	3,211,364	14,712,673
2017	18,543,996	0	3,321,193	15,222,803
2018	19,186,253	0	3,434,910	15,751,342
2019	19,851,651	0	3,552,661	16,298,989
2020	20,541,068	0	3,674,596	16,866,472
2021	21,255,416	0	3,800,869	17,454,547

EIRR: 25.7%

NPV: TD 27.0 million

B/C: 1.9

Source: JICA Study Team

Table 15.3.4 Economic Evaluation of Priority Projects (2/3)

Package B: Islamic Urban Heritage				(Unit: TD)
Year	Benefit	Initial cost	O/M cost	Net benefit
2001	0	0	0	0
2002	0	624,738	0	-624,738
2003	0	1,880,086	0	-1,880,086
2004	0	15,339,295	123,075	-15,462,370
2005	0	5,807,846	1,294,236	-7,102,082
2006	1,108,277	284,350	1,150,227	-326,300
2007	4,584,564	0	1,278,288	3,306,276
2008	7,112,061	0	1,321,581	5,790,481
2009	9,807,477	0	1,366,385	8,441,091
2010	10,143,724	0	1,412,757	8,730,967
2011	10,491,919	0	1,460,752	9,031,166
2012	10,852,506	0	1,510,432	9,342,075
2013	11,225,950	0	1,561,856	9,664,093
2014	11,612,730	0	1,615,091	9,997,639
2015	12,013,347	0	1,670,201	10,343,147
2016	12,428,322	0	1,727,256	10,701,066
2017	12,858,194	0	1,786,328	11,071,866
2018	13,303,528	0	1,847,492	11,456,036
2019	13,764,907	0	1,910,825	11,854,082
2020	14,242,941	0	1,976,408	12,266,532
2021	14,738,262	0	2,044,325	12,693,937

EIRR: 20.6%

NPV: TD 15.3 million

B/C: 1.6

Package C: Sahara and Oasis Life				(Unit: TD)
Year	Benefit	Initial cost	O/M cost	Net benefit
2001	0	0	0	0
2002	0	763,405	0	-763,405
2003	0	2,520,075	0	-2,520,075
2004	0	9,431,951	118,800	-9,550,751
2005	0	13,876,811	234,968	-14,111,779
2006	1,950,347	6,915,704	1,744,673	-6,710,029
2007	8,067,918	0	3,523,590	4,544,328
2008	12,515,809	0	3,642,926	8,872,883
2009	17,259,203	0	3,766,429	13,492,773
2010	17,850,931	0	3,894,252	13,956,679
2011	18,463,684	0	4,026,552	14,437,132
2012	19,098,246	0	4,163,493	14,934,754
2013	19,755,432	0	4,305,244	15,450,188
2014	20,436,088	0	4,451,983	15,984,105
2015	21,141,094	0	4,603,894	16,537,201
2016	21,871,367	0	4,761,166	17,110,201
2017	22,627,857	0	4,923,998	17,703,859
2018	23,411,555	0	5,092,596	18,318,959
2019	24,223,490	0	5,267,173	18,956,317
2020	25,064,735	0	5,447,953	19,616,782
2021	25,936,401	0	5,635,166	20,301,235

EIRR: 25.0%

NPV: TD 30.0 million

B/C: 1.8

Source: JICA Study Team

Table 15.3.4 Economic Evaluation of Priority Projects (3/3)

Package D: Cultural Circuit Upgrading				(Unit: TD)
Year	Benefit	Initial cost	O/M cost	Net benefit
2001	0	0	0	0
2002	0	802,824	0	-802,824
2003	0	3,716,259	0	-3,716,259
2004	0	15,958,543	423,900	-16,382,443
2005	0	8,098,499	1,570,152	-9,668,651
2006	1,738,072	409,631	1,133,314	195,126
2007	7,189,809	0	2,197,665	4,992,144
2008	11,153,593	0	2,272,095	8,881,499
2009	15,380,718	0	2,349,124	13,031,594
2010	15,908,042	0	2,428,847	13,479,195
2011	16,454,104	0	2,511,363	13,942,741
2012	17,019,601	0	2,596,773	14,422,828
2013	17,605,259	0	2,685,183	14,920,075
2014	18,211,832	0	2,776,704	15,435,128
2015	18,840,106	0	2,871,451	15,968,655
2016	19,490,896	0	2,969,542	16,521,354
2017	20,165,050	0	3,071,100	17,093,950
2018	20,863,450	0	3,176,255	17,687,196
2019	21,587,015	0	3,285,139	18,301,876
2020	22,336,699	0	3,397,891	18,938,807
2021	23,113,493	0	3,514,656	19,598,837

EIRR: 24.4%
NPV: TD 29.6 million
B/C: 1.9

Source: JICA Study Team

15.3.5 Sensitivity Analysis

In view of the inevitable uncertainty concerning the precise values of key variables in the economic evaluation, sensitivity analysis was undertaken.

The results, shown in Table 15.3.5, indicate that the entire project as well as each project package has an EIRR substantially greater than the assumed opportunity cost of capital of 12%, even if the initial cost is increased by 20%, and benefits are decreased by 20%.

Table 15.3.5 Sensitivity of Economic Internal Rate of Return (EIRR)

Item	Package A: Carthage Heritage Park	Package B: Islamic Urban Heritage	Package C: Sahara & Oasis Life	Package D: Cultural Circuit Upgrading	Total
Base Case	25.7%	20.6%	25.0%	24.4%	24.0%
(1) Initial cost: 20% up	22.6%	18.0%	21.9%	21.6%	21.1%
(2) Benefits: 20% down	20.7%	16.5%	19.7%	19.9%	19.3%
(3) Combination of (1) & (2)	18.0%	14.2%	17.0%	17.4%	16.8%

Source: JICA Study Team

15.3.6 Financial Evaluation of Priority Projects

All of the components of the priority projects are to be undertaken by the public sector, thus with the government budget (though some are planned to be operated by private entities). While the economic evaluation made previously indicated their clear economic viability, one major concern is whether these projects can be implemented without burdening the public finance, and whether they can be operated without relying heavily on the general budget.

The financial evaluation conducted below examines these points, specifically the following:

- Whether the revenues generated from running the facilities to be built sufficiently cover the operating and maintenance costs associated with the projects; and
- Whether the initial cost of the priority projects can be fully financed by the revenues (including tax revenues) to be additionally generated by undertaking the projects.

(1) Sufficiency of revenues from operation for covering O/M cost

Some of the facilities to be built under the priority projects can generate cash income in the form of:

- admission fee collected from the visitors; and
- rent for certain spaces inside the facilities.

Table 15.3.6 lists the facilities (or sites) where the admission fee can be collected from visitors, along with the proposed fees.¹² Table 15.3.7 shows the assumed rent for part of the facilities that are planned to include the space to be rented for commercial use. These rents are considered to be conservative assumptions.¹³

Note that these admission fees and rent are preliminary in nature, and they should be re-examined before their construction is completed, considering such factors as actual construction cost and more accurate operating and maintenance costs.

¹² Exceptionally, parking fee is proposed for the tourist coach parking at the Medina of Tunis.

¹³ In Tunisia, property owners usually require deposit (called "Trade Fund") from tenants with its amount varying greatly (e.g., TD 30,000 to TD 150,000). The monthly rent will also depend on the amount of the trade fund. In this analysis, this trade fund is not considered.

Table 15.3.6 Proposed Admission Fees for Facilities to be Built

Project package	Facilities	Proposed plan	Proposed fee
Package A: Carthage Heritage Park	Carthage Visitor Center and Water Circuit Museum in La Malga Cisterns, and others	•The price for the common ticket for the Carthage Park, currently set at TD5.2, (the photograph fee is additional TD 1.0) is to be raised in response to the upgrading of the park in various aspects.	Increase by TD 1.5 per person
	3D theater at the visitor center	•Separate admission fee is to be collected for this theater that uses advanced technologies.	TD 5 per person
	Multimedia Presentations at the Archeological Museum	•Separate admission fee is to be collected for the presentations to be housed in the room directly accessible from outside.	TD 2 per person
Package B: Islamic Urban Heritage	Tourist coach parking at Tunis Medina	•Charging parking fee will facilitate restricting non-tourist vehicles at the parking. •This would not be needed for Kairouan due to significantly less non-tourist vehicles than in Tunis.	TD 20 per coach
Package C: Sahara & Oasis Life	Sahara-Oasis World in Tozeur	•The desert world is to be operated and maintained by a private entity that will be granted concession, requiring admission fee to finance its operation and maintenance.	TD 10 per person
	Sahara Field Museum to be part of the Sahara Camelback Trekking Center in Douz	•This museum is to be operated and maintained by private entities that will operate the trekking center. •It is recommended that admission fee be collected to finance the operation of the entire center.	TD 2.5 per person
Package D: Cultural Circuits Upgrading	Upgrading of facilities at El Jem	•The admission fee is to be raised in response to the upgrading of El Jem from the current TD 4.2 per person (the photograph fee is additional TD 1.0).	Increase by TD 1 per person
	On-site visitor center in Tataouine	•This visitor center functions not only as an information center for the Berber sites but also as a museum displaying various aspects of Berber history, culture and life and as an entertainment facility introducing activities related to the region (e.g., film making such as “Star Wars”). •These museum and entertainment functions will be separated, and admission fee is to be collected.	TD 2.5 per person

Source: JICA Study Team

Table 15.3.7 Assumption of Rent for Facilities to be Built

Project package	Facilities	Area / purpose	Assumed rent
Package A: Carthage Heritage Park	Carthage Visitor Center in La Malga Cisterns	200 sq.m. for souvenir shops and cafes	TD 50 per sq.m.
Package B: Islamic Urban Heritage	Visitor Center in Tunis Medina	30 sq.m. for souvenir shops	TD 100 per sq.m.
	Art and Craft Center in Tunis Medina	550 sq.m. for handicraft and souvenir production and selling	TD 100 per sq.m.
	Visitor Center at Kairouan	120 sq.m. for souvenir shops and cafes	TD 50 per sq.m.
Package C: Sahara & Oasis Life	Sahara-Oasis World in Tozeur	450 sq.m. for souvenir shops, cafes and restaurants	TD 50 per sq.m.
	Sahara Camelback Trekking Center in Douz	100 sq.m. for souvenir shops and cafes	TD 50 per sq.m.
Package D: Cultural Circuits Upgrading	On-site visitor center in Tataouine	150 sq.m. for souvenir shops and cafes	TD 50 per sq.m.

Source: JICA Study Team

There are other facilities that might generate income for the government, including the Roman Theater at the Carthage Park and El Jem, both planned to offer sound and light/music shows. Currently, musical festivals are held at these venues in summer (July to August), both with the initiative and financial support of the government (including the Ministry of Culture, and local governments). An association is formed for each as a body responsible for organizing the festival, with its head appointed by the Ministry of Culture. Although the government expects that these festivals will become self-sustaining, they still heavily rely on the government financially. It is therefore recommended that the cost should be minimized on the part of the entities holding these shows (without charging them), thereby encouraging the private sector to actively participate in these activities.

In order to estimate the revenues to be generated from these facilities, the number of visitors to each of these facilities and sites was projected. Table 15.3.8 presents the assumptions used for the projection. For analytical simplicity, it is assumed that the number of visitors to each facility/site will increase at a rate equal to that for cultural circuit tourists and tourists for natural wonder assumed in the economic evaluation (that for the “with the projects” case).

Table 15.3.9 shows the estimated number of visitors to each facility/site from 2007 (the first year in which all the facilities are to be operated all the year round) to 2026 (the year in which the loan period assumed later will end). Note that the growth factor presented in the table and used for the projection was obtained from the total number of cultural circuit tourists and tourists for natural wonder projected for the economic evaluation (“with the projects” case).

Table 15.3.8 Assumptions for Estimating the Numbers of Visitors

Project package	Facilities / sites	Basis / assumptions
All packages	All facilities / sites	<ul style="list-style-type: none"> The number of visitors is assumed to increase at a rate equal to that for cultural circuit tourists and tourists for natural wonder assumed in the economic evaluation ("with the projects" case)
Package A: Carthage Heritage Park	Carthage Heritage Park	<ul style="list-style-type: none"> 645,167 visitors in 1999:
	3D theater at the visitor center	<ul style="list-style-type: none"> Assumed to be 50% of total visitors to Carthage Park
	Multimedia Presentations at the Archeological Museum	<ul style="list-style-type: none"> Assumed to be 25% of total visitors to Carthage Park.
Package B: Islamic Urban Heritage	Tourist coach parking at Tunis Medina	<ul style="list-style-type: none"> Visitors coming by tourist coach are assumed to be 25% of total visitors. Total visitors are assumed to be 120% of visitors to Carthage Park. 30 visitors per coach
Package C: Sahara & Oasis Life	Sahara-Oasis World in Tozeur	<ul style="list-style-type: none"> Assumed to be 75% of visitors to Tozeur Tozeur visitors are assumed to be 45% of those registering at hotels in the G-Tozeur region. Those registering at hotels in the G-Tozeur region: 842,579
	Sahara Field Museum to be part of the Sahara Camelback Trekking Center in Douz	<ul style="list-style-type: none"> Assumed to be 75% of visitors to Douz Douz visitors are assumed to be 37% of those registering at hotels in the G-Tozeur region.
Package D: Cultural Upgrading	El Jem	<ul style="list-style-type: none"> 425,854 visitors in 1999.
	On-site visitor center in Tataouine	<ul style="list-style-type: none"> Assumed to be the sum of the following: 75% of visitors to Tozeur 5% of those registering at hotels in the Jerba-Z region (these visitors represent those who visit Tataouine without going to the Sahara area) (those registering at hotels in the Jerba-Z region: 1,282,118)

Note: These assumptions are based on preliminary considerations such as the following for the 3D theater at the Carthage visitor center:

Carthage Park receives a number of visitors that are not reflected in the statistics, those entering the park free of admission, including students on a graduation trip and Tunisians visiting the park on a admission-free day (available only for Tunisians once a month). The number of visitors to Carthage (the basis of this assumption) would probably be considerably higher than the statistics above which are based only those who paid the admission fee, while the study is obliged to rely on the official statistics due to lack of relevant data. Considering this as well as the standard targeted for this facility (which is to be of international standard), the facility is assumed to be able to attract at least a half of those paying for visiting the park.

Source: JICA Study Team

Table 15.3.9 Estimated Number of Visitors to Facilities to be Built (2007-2026)

Year	Growth factor 1999 = 1.0	Package A			Package B	Package C		Package D	
		Carthage Park	3D Theater at Visitor Center	Multimedia Presentations at AM	Tourist coaches (vehicles)	Sahara-Oasis World (Tozeur)	Sahara Field Museum (Douz)	El Jem	On-site Visitor Center (Tataouine)
1999	1.000	645,167						425,854	
2000	1.036	668,074						440,974	
2001	1.072	691,795						456,632	
2002	1.110	716,361						472,847	
2003	1.150	741,801						489,639	
2004	1.191	768,147						507,029	
2005	1.233	795,430						525,038	
2006	1.465	945,446						624,058	
2007	1.515	977,434	488,717	244,358	9,774	430,824	354,233	645,173	527,945
2008	1.566	1,010,537	505,269	252,634	10,105	445,415	366,230	667,023	545,825
2009	1.619	1,044,797	522,398	261,199	10,448	460,515	378,646	689,637	564,330
2010	1.674	1,080,254	540,127	270,064	10,803	476,144	391,496	713,041	583,482
2011	1.731	1,116,954	558,477	279,238	11,170	492,320	404,796	737,265	603,304
2012	1.790	1,154,941	577,470	288,735	11,549	509,064	418,563	762,339	623,822
2013	1.851	1,194,262	597,131	298,566	11,943	526,395	432,814	788,294	645,061
2014	1.914	1,234,967	617,484	308,742	12,350	544,337	447,566	815,162	667,047
2015	1.979	1,277,107	638,553	319,277	12,771	562,911	462,838	842,977	689,808
2016	2.047	1,320,734	660,367	330,183	13,207	582,140	478,649	871,774	713,372
2017	2.117	1,365,903	682,951	341,476	13,659	602,049	495,018	901,589	737,770
2018	2.190	1,412,671	706,336	353,168	14,127	622,663	511,968	932,459	763,031
2019	2.265	1,461,099	730,549	365,275	14,611	644,009	529,518	964,424	789,188
2020	2.342	1,511,246	755,623	377,812	15,112	666,112	547,692	997,525	816,275
2021	2.423	1,563,179	781,589	390,795	15,632	689,003	566,513	1,031,804	844,325
2022	2.506	1,616,962	808,481	404,241	16,170	712,709	586,005	1,067,305	873,375
2023	2.593	1,672,666	836,333	418,167	16,727	737,261	606,193	1,104,073	903,463
2024	2.682	1,730,362	865,181	432,591	17,304	762,692	627,103	1,142,157	934,627
2025	2.775	1,790,126	895,063	447,532	17,901	789,034	648,762	1,181,605	966,907
2026	2.871	1,852,035	926,018	463,009	18,520	816,322	671,198	1,222,469	1,000,346

Source: JICA Study Team

Table 15.3.10 shows the revenues to be generated from these facilities and sites estimated based on the number of visitors to each facility/site and the proposed admission fees.

Total revenues were then estimated as the sum of the admission fees and the rent, and are compared in Table 15.3.11 with the total operating and maintenance costs (financial costs) for the priority projects.

The result indicates that the revenues to be generated from these facilities and sites are expected to sufficiently cover the operating and maintenance costs for all the components of the priority projects (including those that will generate revenue and those that will not).

However, it should be noted that the balance is far short of recouping the initial cost, with the cumulative balance during this 20-year period (2007-2026) amounting to TD 63.6 million even without discounting, considerably lower than the total initial cost (plus a reasonable level of financing costs).

Table 15.3.10 Estimated Admission Fees (2007-2026)

Year	Package A			Package B	Package C		Package D		Total
	Carthage Park	3D Theater at Visitor Center	Multimedia Presentations at AM	Tourist coaches (vehicles)	Sahara-Oasis World (Tozeur)	Sahara Field Museum (Douz)	El Jem	On-site Visitor Center (Tataouine)	
2007	1,466	2,444	489	195	4,308	886	645	1,320	11,753
2008	1,516	2,526	505	202	4,454	916	667	1,365	12,151
2009	1,567	2,612	522	209	4,605	947	690	1,411	12,563
2010	1,620	2,701	540	216	4,761	979	713	1,459	12,989
2011	1,675	2,792	558	223	4,923	1,012	737	1,508	13,430
2012	1,732	2,887	577	231	5,091	1,046	762	1,560	13,887
2013	1,791	2,986	597	239	5,264	1,082	788	1,613	14,360
2014	1,852	3,087	617	247	5,443	1,119	815	1,668	14,849
2015	1,916	3,193	639	255	5,629	1,157	843	1,725	15,356
2016	1,981	3,302	660	264	5,821	1,197	872	1,783	15,881
2017	2,049	3,415	683	273	6,020	1,238	902	1,844	16,424
2018	2,119	3,532	706	283	6,227	1,280	932	1,908	16,986
2019	2,192	3,653	731	292	6,440	1,324	964	1,973	17,568
2020	2,267	3,778	756	302	6,661	1,369	998	2,041	18,171
2021	2,345	3,908	782	313	6,890	1,416	1,032	2,111	18,796
2022	2,425	4,042	808	323	7,127	1,465	1,067	2,183	19,443
2023	2,509	4,182	836	335	7,373	1,515	1,104	2,259	20,112
2024	2,596	4,326	865	346	7,627	1,568	1,142	2,337	20,806
2025	2,685	4,475	895	358	7,890	1,622	1,182	2,417	21,525
2026	2,778	4,630	926	370	8,163	1,678	1,222	2,501	22,269

Note: Unit: TD thousand

Source: JICA Study Team

Table 15.3.11 Revenues from Facilities to be Built and Total O/M Costs for the Priority Projects (2007-2026)

Year	Revenue from facilities		Total revenue	Total O/M costs	Balance
	Admission fees	Rent			
2007	11,753	1,308	13,061	10,418	2,643
2008	12,151	1,308	13,459	10,771	2,688
2009	12,563	1,308	13,871	11,136	2,735
2010	12,989	1,308	14,297	11,514	2,783
2011	13,430	1,308	14,738	11,905	2,833
2012	13,887	1,308	15,195	12,310	2,885
2013	14,360	1,308	15,668	12,729	2,939
2014	14,849	1,308	16,157	13,163	2,995
2015	15,356	1,308	16,664	13,612	3,052
2016	15,881	1,308	17,189	14,077	3,112
2017	16,424	1,308	17,732	14,558	3,173
2018	16,986	1,308	18,294	15,057	3,237
2019	17,568	1,308	18,876	15,573	3,303
2020	18,171	1,308	19,479	16,108	3,372
2021	18,796	1,308	20,104	16,661	3,443
2022	19,443	1,308	20,751	17,234	3,516
2023	20,112	1,308	21,420	17,828	3,592
2024	20,806	1,308	22,114	18,443	3,671
2025	21,525	1,308	22,833	19,080	3,753
2026	22,269	1,308	23,577	19,740	3,837

Total = 63,562

Note: Unit: TD thousand

Source: JICA Study Team

(2) Financing the initial cost

As shown below, with the assistance of a soft loan that could potentially be available from a foreign aid organization, the initial cost is expected to be recouped in a sound fashion with the tax proceeds to be additionally generated by the priority projects.

To analyze this, it is assumed that the Tunisian government will borrow fund for implementing the projects under the following conditions:

(Assumptions)

- Loan amount: equivalent to TD 133,080 thousand (equal to the total initial cost)
- Interest rate: 3.0% per year
- Repayment period / Grace period: 25 years / 7 years

(Note)

- Note that these conditions are indicative.
- *For analytical simplicity*, it was assumed that all the initial cost is financed with a soft loan.
- In reality, however, the portion that can be covered by a soft loan will depend on the amount of such a loan that could be available for this particular project.
- In addition, a borrower of such a loan is normally required to partially finance a project with its own fund.
- Moreover, while this will depend on the decision of the Tunisian government and on the amount of such a loan that could be available, part of the priority projects could be implemented with its own funds (i.e., the national budget). In this case, the initial cost for the self-financed portion will have to be borne by the Tunisian government, while the interest payment will not occur for this portion.

The tax proceeds to be additionally generated will come from the incremental tourism earnings (foreign exchange earnings) estimated as project benefits (or the amount of value added additionally generated by the projects) for the economic evaluation. The incremental tourism earnings will bring tax proceeds in various forms during the process of their spreading in the economy.

For the entire economy, approximately 20% of total value added (GDP) has been brought for the government as tax proceeds as shown in Table 15.3.12. It is assumed that this ratio (tax ratio) applies also to the tourism earnings.

Table 15.3.13 summarizes the repayment schedule of the assumed soft loan, compared with the tax proceeds resulting from the increment in tourism earnings, assuming the tax ratio of 20%.

The incremental tax proceeds are projected to sufficiently cover the principal and interest payments in every year from 2007 on, indicating the projects' strong ability for servicing debt.

In addition, the priority projects are expected to result in operating surplus as shown above, which can be another source for servicing debt.

Table 15.3.12 Ratio of Total Tax Revenue to GDP

	1996	1997	1998	1999	Average 1996-99
Tax revenue / GDP (%)	19.9	20.2	21.0	20.9	20.5

Source: Central Bank of Tunisia, Annual Report 1999, June 2000.

Table 15.3.13 Repayment Schedule of Soft Loan and Incremental Tax Revenue

Year	Loan repayment schedule				Increment in tourism earnings	Tax revenue (20% of tourism earnings)	Cumulative balance
	Balance	Interest payment	Principal repayment	Total annual payment			
2002	133,080	3,992	0	3,992	0	0	-3,992
2003	133,080	3,992	0	3,992	0	0	-7,985
2004	133,080	3,992	0	3,992	0	0	-11,977
2005	133,080	3,992	0	3,992	0	0	-15,970
2006	133,080	3,992	0	3,992	6,395	1,279	-18,683
2007	133,080	3,992	0	3,992	26,454	5,291	-17,385
2008	133,080	3,992	0	3,992	41,038	8,208	-13,169
2009	125,687	3,771	7,393	11,164	56,592	11,318	-13,015
2010	118,293	3,549	7,393	10,942	58,532	11,706	-12,251
2011	110,900	3,327	7,393	10,720	60,541	12,108	-10,863
2012	103,507	3,105	7,393	10,499	62,622	12,524	-8,837
2013	96,113	2,883	7,393	10,277	64,777	12,955	-6,158
2014	88,720	2,662	7,393	10,055	67,008	13,402	-2,812
2015	81,327	2,440	7,393	9,833	69,320	13,864	1,219
2016	73,933	2,218	7,393	9,611	71,715	14,343	5,951
2017	66,540	1,996	7,393	9,390	74,195	14,839	11,400
2018	59,147	1,774	7,393	9,168	76,765	15,353	17,586
2019	51,753	1,553	7,393	8,946	79,427	15,885	24,525
2020	44,360	1,331	7,393	8,724	82,185	16,437	32,238
2021	36,967	1,109	7,393	8,502	85,044	17,009	40,744
2022	29,573	887	7,393	8,281	88,005	17,601	50,065
2023	22,180	665	7,393	8,059	91,074	18,215	60,221
2024	14,787	444	7,393	7,837	94,255	18,851	71,235
2025	7,393	222	7,393	7,615	97,552	19,510	83,130
2026	0	0	7,393	7,393	100,969	20,194	95,931

Note: Unit: TD thousand

Source: JICA Study Team

15.4 ENVIRONMENTAL CONSIDERATION

15.4.1 Methodology

An Environmental Impact Assessment (EIA) is one of the essential requirements in Tunisia for obtaining administrative authorization for the realization of industrial, agricultural, and commercial projects, particularly those that may affect the environment (Figure 15.4.1). The priority projects proposed in the Study also needs to clarify their possible impacts on the environment and to consider mitigation measures if needed.

In the Interim Report submitted in October 2000, the Study Team identified and proposed about 70 tourism related projects and programs to be undertaken by the year 2016. Among these, projects and programs related to construction works were selected and Initial Environmental Examination (IEE) was carried out according the JICA Environmental Survey Guidelines and in consultation with ANPE.

As a result of the IEE and discussions with ANPE and ONTT, none of components of the proposed priority projects was judged to cause major negative impacts (IEE Category A). However, it was decided that projects judged as “IEE Category B” (possible minor impacts) are desirable to carry out a Preliminary-EIA in order to clarify specific nature of possible environmental impacts. The Preliminary-EIA includes:

- 1 Review of IEE carried out by the Study Team,
- 2 Environmental impact study including:
 - Analysis of the reviewed IEE,
 - Identification of the projects and environmental items required to conduct a full-scale EIA upon the implementation stage, and
 - Proposal for mitigation measures.

Note that this scope was determined based on the result of the IEE and in consultation with ANPE.

Based on the scope above, a local consulting firm, thoroughly familiar with Tunisian laws and regulations related to EIA as well as with the natural and social environment, has conducted the Preliminary-EIA. As the summary of this EIA mentioned in the following section, no significant impacts have been identified with the priority projects. For the minor impacts, appropriate mitigation measures are proposed to avoid any adverse effects.

Figure 15.4.1 List of Annex I and II for EIA

APPENDIX I	APPENDIX II
<p>The units specified in Article 4, paragraph 1</p> <ol style="list-style-type: none"> 1) The first and second categories of the dangerous, unhealthy and inconvenient establishments as classified in Article 295 of the Law N° 66-27 of April 1966 concerning the Employment Code. 2) Refineries of raw petrol and installation of gas and liquefaction with a transformation capacity of more than 500 tons of carbon or oil shale per day. 3) Thermal power stations and other combustion installation of a calorific power of more than 300MW. 4) Installations to stock or eliminate wastes, whatever the nature and procedures of their elimination. 5) Installation for the production of cement. 6) Installations for the making of chemical, pesticidal, and pharmaceuticals products, paint and varnish, elastomer and peroxide. 7) Steel installations and installations for the production of non-iron metals. 8) Units for the exploration and exploitation of petrol and natural gas. 9) Surface extraction of mineral resources and mines. 10) Projects for regrouping rural lands. 11) Operations for the reforestation of areas of more than 100 hectares. 12) Clearance and allocation of uncultivated lands or semi-natural areas for intensive agricultural exploitation of an area of more than 100 hectares. 13) Sugar factories. 14) Units for the production of paper paste, paper and carton. 15) Units for the production and treatment of cellulose. 16) Units of tannery. 17) The construction of railways, highways, and airports with landing lanes of more than 2100M of length. 18) Commercial, fishing and pleasure ports. 19) Work for the development of industrial zones. 20) Works for the development of urban areas. 21) Works for the canalization and regulation of water flows. 22) Dams and other installation for the collection or storage of water in a continuous way. 23) The establishment of oil and gas pipes. 24) The installation of water pipes. 25) Holiday villages and hotels of a capacity of more than 250 beds. 26) Treatment stations. 27) Storage of scrap metal. 28) Fabrication of artificial mineral fiber. 29) Fabrication, conditioning, or charging of powder and explosives. 30) Quartering workshops. 31) The textile and dyeing industries. 32) The treatment stations of urban zones. 	<p>Units specified in Article 5</p> <ol style="list-style-type: none"> 1) Agriculture <ul style="list-style-type: none"> Projects of agricultural hydraulic Establishments that can shelter fowl Establishments that can shelter pigs Installations of aqua-cultivation Recuperation of lands of sea. 2) Mine industries <ul style="list-style-type: none"> Profound drillings, except for drillings for studying the quality of soils, and particularly: Geothermal drilling Drillings for the storage of waste Drillings for supplying water Extraction of mineral resources from underground mines. Cookeries (dry distillation of carbon) 3) Energy industries <ul style="list-style-type: none"> Industrial installations for generating electric energy, vapor, and hot water (other than those listed in Appendix I). Industrial installations for the transport of vapor gas and hot water, transport of electric energy through overhead lines Storage of natural gas. Storage of combustible gas in underground reserve tanks. Storage of fossil combustible gas. Industrial areas of coal and lignite. Installations for the generation of hydro-electric energy. 4) Metal industries <ul style="list-style-type: none"> Stamping, and cutting of large pieces Treatment of surface and coating of metals. Boiler-making, reserve-tank construction and other plumbing pieces. Construction and assemblage of automobile vehicles and construction of engines for them. Naval construction sites. Installations for the construction and maintenance of airplanes. Construction of rail materials. Stamping of depths by explosives. Installations of calcination and collection of metallic ores. 5) Fabrication of glass 6) Chemical industries <ul style="list-style-type: none"> Installation of storage of petrol, petrochemical and chemical products. 7) Industries of food products <ul style="list-style-type: none"> Industries of vegetation and animal fat. Conservation of vegetation and animal products. Fabrication of milk products. Brewing industries. Confectionery and beverage factories. Installations for the slaughtering of animals. Starch industries. Factories for the production of fish flour and oil. 8) Textile, leather, wood, and paper industries <ul style="list-style-type: none"> Factories for the washing, scouring, and whitening of wool. Fabrication of fiber, particle, and plywood panels. Fiber dyeing. 9) Rubber industries <ul style="list-style-type: none"> Treatment of rubber materials. 10) Infrastructure projects <ul style="list-style-type: none"> Constructions of roads and airports (projects that are not specified in appendix I). Tramway lines. 11) Modifications of projects specified in Appendix I and which have previously been subject to a study of impact on the environment.

Source: ANPE

15.4.2 Result of Preliminary-EIA

As a result of consultation with ANPE and taking into account JICA EIA guidelines, the Preliminary-EIA was conducted according to the following scope.

- 1 Developer or implementation agency,
- 2 Concept or objective of the project,
- 3 Preliminary-EIA schedule,
- 4 Definition of items to be examined,
- 5 Description of the project,
- 6 Analysis of the existing site condition as well as of its natural, socio-economic and human environment,
 - Description of the site: people and settlement; landscape; flora and fauna; water; soil; protection measures; current and possible future exploitation.
- 7 The direct and indirect foreseeable consequences of the project,
 - People and settlement; landscape; flora and fauna; water; soil; atmosphere and climate; protection measures; social, cultural and socio-economic conditions.
- 8 Justification of the project, and
- 9 Possible mitigation measures with a description of alternative measures.

A summary of result for each priority project package is described below.

(1) Package A: Carthage Heritage Park

a) Project Site

The environment concerned of all the nine project components is located within and around the site of the ancient Phoenician capital, Carthage. Partly being high standard residential areas and archaeological park or public gardens or even agricultural land, the site belongs to the most outstanding cultural heritage with unique history and values.

The landscape in the entire zone has features of equally high quality. The historic monuments of this large site are landmarks of highest significance and mythic messages. This composite of natural and manmade landscape features is filled up with a large variety of trees, shrubs, flowers, showing their harmony in this particular environment.

Tourism activities are still modestly marked in the area. The controlled and managed archaeological museum, parks and pertaining access and car parking areas, seasonal cultural events and festivals attract at present some 550,000 visitors per year that spread over the numerous sites. Very few facilities and tourist amenities are offered within the site, which kept its quiet character and exceptionally unspoiled natural bio-physical quality in spite of its international reputation.

b) Impact Identification

None of the proposed components is likely to cause direct significant impacts on the environment.

The physical improvement concerns reconstruction and safeguard measures aiming at preserving the cultural and historical environment, without creating any significant conflict with adjacent environmental components. Implementation of some access trails in connection with the Malga Water Circuit museum will be an exception.

The conversion of ancient ruins to museum space cannot be considered as environmentally harmful. The plan of flooding one or two cistern basins has been deleted from the initial scope of proposed action, as the measure may cause non-retrievable damage to the cistern relicts due to chemico-physical action of the water-contents under the present climate (high evaporation) and water quality (rapid mineralization).

The analyses confirm as well unspecified negative impacts originating from road beautification, renewal of museum equipment, minor but necessary structural repair works inside the roman theatre or the installation of information and road signs along visitor roads and circuits. Measures regarding the training of professional curators, guides and managers remain outside the consideration of this impact analysis scrutinizing the foreseeable scenarios as to possible negative effects.

With regard to the activities of the introduction of the tourist bus shuttle, this project looks like additional vehicle operation that may cause negative impact. However, seen the extremely limited capacity and effectiveness of alternative transport means (horse drawn coaches and miniature train vehicle) expected reduction of individual vehicles within the area, the final balance results rather in a decrease of motor vehicle movements than in densification and pollution increase.

As concerns the “Sound and Light Show”, concentrated light and sound effects must be avoided to protect the urban quality of the surrounding area.

c) Mitigation Measures and Conditions for Project Implementation

In conformity with the methodological approach and finality of EIA, mitigation measures shall be identified and developed in order to avoid or to reduce foreseeable significant negative impacts on the environment.

Consequently, the present environmental assessment pinpoints the last mentioned impact forecast: the sound and light impact on the neighboring urban residential areas.

The measure proposed by the present EIA concerns a particular managerial effort, that programs and organizes the respective events in appropriate time intervals, rather at early evening hours than at sleeping hours of the resident

population, and with specially designed sound system and light-beam orientation and intensity control devices.

d) Evaluation and Conclusion

The package is proposed in order to promote cultural tourism in the Cartage and to upgrade environmental features by introducing tourism oriented facilities (e.g., Visitor Centers and museum space for promoting tourism, preserving and valorizing cultural heritage and historic monuments). It also aims at sustaining environmental development (e.g., strengthening structural improvement measures for safeguarding the cultural sites and monuments), demonstrating, informing and training responsible actors for the operational and managerial ends (e.g., supporting the integrated environmental characteristics, beautifying access ways, organizing well equipped tourist circuits) in order to increase the cultural value and to decrease the negative impacts of tourism on the physical constituents of the environment.

The only foreseeable negative impact of a certain risk on the living environment (noise, light and dust at late night times) can easily be avoided by simple management and organizational measures, both under the responsible organizations (ONTT, Municipality). Such risk, even if not at all negligible but definitely avoidable, can certainly be considered as largely counterbalanced by an important positive impact on the environment expected to be generated by the Package A activities.

(2) Package B: Islamic Urban Heritage

a) Project Site

The environmental settings and conditions of the four target areas are mainly human and urban environment including i) cultural values of the historic sites and monuments, ii) social and cultural aspects of living quality, iii) socio-economic situation, iv) economic features and restrictions for development, and v) infrastructure and public health.

The common technical elements of these very particular sites are:

- Restricted traffic access,
- Inner-medina narrow road and paths network in rather deficient condition,
- Water supply and sewage networks in frail shape and conditions: mainly due to the extremely high density and lack of space for proper extension and maintenance,
- Deficient domestic waste disposal and collection systems.

The human environment components vary as they resulted from different historical development process: the modern capital in the case of Tunis, regional centers in case of Kairouan, Mahdia (both of which were capital city in medieval age) and Sousse.

While most of the commercial and economic services remained in Medinas, modern business and administrative functions have shifted to outside town centers.

- In the case of Medina of Tunis, particular renewal can be observed and specific local residents from outside the Medina move in, invest in structural modernization of buildings and enjoy new values of their quality of life in the medieval and very original environment,
- This trend towards improved socio-cultural environment, though having doubtlessly positive consequences at the socio-economic end, is far less visible in the case of Sousse.
- To a certain extent, the above observation regarding the Tunis case applies as well to the very original situation and socio-cultural content of Medina of Kairouan. It still contains families who never left and have never lost its traditional bearing pillars of the living culture and the typical human environment.
- Upon thorough study on various confirmed sources, it seems that Mahdia constitutes a forth distinct case of particular development, based upon the very particular history of the place, the traditional pride of its population aside the major demographic and economic moves that swept through the country, in particular during the last one and a half century.

At least three of four cases, Tunis, Kairouan and Mahdia, already provide certain indicators for conflict perception of farther going promotion of international tourism in the Medina areas. Well-conceived organization and intelligent management of both urban and tourism development may be helpful to guarantee the aimed sustainability.

b) Impact Identification

None of the proposed components is likely to cause direct significant impacts on the environment. The project package is considered to avoid any negative impact or even to reduce already existing negative effects on the environment.

The project component to improve garbage collection and disposal systems¹⁴, the repair works proposed for selected roads and paved paths as well as the introduction of tourist coach parking areas or even shuttle services are intended to resolve some of the major problems not only for tourism but also for living conditions inside the Medina.

Similarly, the repair works proposed for selected buildings are intended for both tourism and the urban environment, as far as the quality of their distinct

¹⁴ As informed by the Director of the Solid Waste Management Department of ANPE, a similar activity is presently under preparation including the provision of specially designed waste collection containers and the introduction of separate collection of waste plastic material at household level (door-to-door collection). Coordination between the present proponent and the mandated ANPE department shall be sought for before implementation stage design of the said project activity.

functions and sustainability are concerned.

The establishment of visitor centers and art and craft centers is meant to concentrate certain articulations of high standard cultural tourism, improving the basic structure and elements for efficient organization and management.

The tourist coach parking proposed for Tunis and Kairouan Medina, which require no requisition of the private land, will lessen the traffic congestion caused by the tourism activities.

Finally, it needs no specific mention that training and management courses will support the aforementioned aspects in order to guarantee sustainability of development.

c) Mitigation Measures and Conditions for Project Implementation

As indicated before, the negative impact that might be caused by this package is not as a direct and inevitable consequence of the activity.

It is important to reconfirm that investment promotion contains a risk only and exclusively in cases where the proposed activity is deviated through inappropriate management. If unconsciously (or willingly) applied, it could lead to promote or to allow commercial activities detrimental to sustainable development of the Medina. Thus, the mitigation of such risk necessitates management skill and project specific ethics.

Such skills shall be specifically targeted in the Training and Management courses intended for future tourism staff.

Besides, it is proposed that a special structure is to be developed and established. Representatives of the local population will be involved in its implementation and analyses as well as in decision making.

d) Evaluation and Conclusion

Package B aims at promoting cultural tourism in four outstanding Medinas of Tunisia: Tunis, Kairouan, Sousse and Mahdia.

All of the measures are considered to upgrade environmental features in the project areas if and where necessary to introduce cultural tourism oriented facilities (e.g., visitor centers and arts and craft centers), to improve existing exhibition and museum space, to preserve and to valorize cultural heritage and historic monuments, to promote cultural tourism, and to guarantee a sustainable development of the tourism sector. Consequently, Package B activities will increase the cultural impact on the tourists and reduce or even avoid the risks of impacts caused by tourism in terms of the physical, social and cultural constituents of the environment. More particularly, the Package activities will contribute to strengthen the economy of local Medinas and create new job opportunities.

The only risk of negative impact is excessive commercial development that might damage the traditional aspects of the Medinas (customs of the community, building design, etc). This can be encouraged by the investment promotion through the offer of incentives, preferable tax and customs.

However, such risk can easily be avoided:

- Through mitigating training and management courses and guidance, and
- Joint decision and follow-up control based upon consensus between the various implied partners: applicants, development management, the resident population and the concerned sector departments (environment and tourism).

Such risk of impact, definitely avoidable through application of the mitigating activities proposed by the EIA, can certainly be considered as counterbalanced by the important positive impact on Medina development and on culture tourism development that is expected to be generated by the Package B activities.

(3) Package C: Sahara and Oasis Life

a) Project Site

The project site is the greater Chott el Jerid area in southern Tunisia. It includes the towns of Tozeur, Nefta and Douz, the mountain oasis north west of Tozeur towards the international boundary.

It is important to confirm that this zone, potential impact area, is not at all a homogeneous, but it contains a variety of outstanding sites and environmental systems of exceptional or even unique values as well as of ambiguous nature such as the large dunes of moving sand.

The mountain oasis include small creeks, mountain slopes and mountain river banks, where valuable vegetation fills protected spaces, manmade monuments are situated around rocky surroundings, sites that gave shelter to human habitat since the early days of mankind, sites with prehistoric and with early roman history. These valuable environments are still in natural balance; however, stability of communities in the mountain oases should be carefully considered. These communities have been rather isolated from the other part of the Tunisia with difficult access, deficient facilities and amenities. Rapid development of this area and involvement of the local residents might devastate the traditional structure of the communities. The risk assessment regarding the promotion of these sites as interesting Sahara tourism and Sahara sports etc. determined the appropriate size of the tourism activities that is acceptable to the sustainable natural and social environment.

The Chott el Jerid is registered wetland and protected under Tunisian law. Undeniably exceptional beauty, unique in the world, and the world's largest Sebkhha in a system stretching out between Gabes in southeastern Tunisia and

Biskra in the Algerian Aures mountains, ought to be protected against any type of risk impact, even against minor effects.

The desert land and in particular the sand dunes, certainly, appear exotic and intriguingly interesting to tourists, but generally constitute nothing exotic for the resident oasis population or the men of the desert.

Men of the region fought since prehistoric days, and they still fight, for their survival and against the desert. To commercialise parts of that original hazard within the new tourism market is definitely appreciable but it shall be done without disbalancing established conditions that prevent from major damage through moving dunes. Particularly the desert environment, hyper-arid and exposed to strong wind action and sand-storms, admits some resistant life of sub-regional flora and fauna. As the Oasis micro-climate and morphology impact on the conditions of survival for flora and fauna, both high dunes and lower close-to-bottom ones are withheld from further moving (towards the cultures and human habitat) by scarce vegetation, which should be protected from car tyres (from 4 wheel sports drivers), by horses, camels and trekking tourist feet.

Limits are clearly implied by the conditions created and ongoing efforts under the internationally financed Desertification Control project.

b) Impact Identification

The package C components concerning tourist information and guidance as well as those related to the training and management program, are considered to be not as a negative impact, in the contrary, as a direct consequence of the aims and objectives justifying the package and having guided and oriented their design, the respective project titles are likely to engender positive impacts on both, the natural and the human environment.

Regarding two major facilities foreseen under the package, the Sahara-Oasis World and the Camelback Trekking Center, the project implementation remains without significant impact on the respective environments.

However, the operation needs to be well managed to avoid negative effects on the environment:

- Zoning particularly for the Sahara sports shall be determined to avoid entering into the Chott el Jerid area defined by the DPH¹⁵ alignment,
- Selection of sports to be promoted (under the respective project title) shall be fully compatible with the environmental protection objectives, and thus avoid motor vehicle rally sports and horse riding,
- Zoning particularly for the camelback excursions shall be determined to avoid entering into stabilized dunes,
- Dunes where vegetation (and/or other measures) are to be stabilized.

¹⁵ DPH = Domaine Public Hydraulique, or legal delimitation (in x and y) of the protected wetland area.

c) Mitigation Measures and Conditions for Project Implementation

As indicated before, most of the mitigation will be realized through appropriate management training of the key and operational personnel who will be in charge of project implementation and operation.

More specifically mitigating consideration will be required by appropriate design rather than by accompanied activities.

The zoning shall be defined and marked in the field, respecting the DPH of the Chott el Jerid as well as any other natural or manmade constituent of the environment that is either legally protected or that requires safeguard and conservation as part of the national or regional patrimony; the latter include the area of the mountain oasis, and the desert dunes, particularly the fragile stabilized or semi-stabilized dunes.

Avoid any horse riding, and replace by other riding species. Horseshoe action is destructive to plants and to root development. If adventurous alternatives are sought for, ostrich riding could easily be introduced as this species is farmed in the country.

The selection of appropriate sports to be promoted or, in other terms, the preclusion of certain sports still programmed in the context of the PDDT (Tunisian Tourism Development Plan) Short Term Priority Actions, shall be mentioned without, however, constituting a substantial mitigation measure. Indeed, certain sports shall be avoided or be limited and controlled as regarding their perimeter of application:

- Four wheel drive motor car rallies in desert environment shall not be part of the desert sport promotion program, as potentially destructive to the natural and human environment,
- Sand yachting shall be restricted to clearly determined and visibly marked circuits, and refrain from any penetration into the Chott protected area, and
- The organized excursion tourism of the mountain oasis destinations shall observe the general rule of limiting the number of simultaneous tourist visits, as the sites are of small dimension, and particularly the socio-cultural setting of the resident population requires respect and observation of appropriate restriction of the visitor volume.

d) Evaluation and Conclusion

This package aims at promoting a sustainable tourism development through a series of immediate actions. Thus, it is considered all of its operations to be compatible for environmental protection including all of its bio-physical and its human constituents.

Analyses were undertaken in order to identify remaining risk potentials for

the environment, and measures are proposed. If implemented in conformity with such measures, the Package C will increase the beneficial impact of tourism on the environment, and reduce or even avoid the risk of impact from the industry in terms of the physical, social and cultural aspects of the Tunisian environmental patrimony. With an complete implementation of protection procedure, the emerging impacts on natural environment (dunes and Chott el Jerid) and social environment (communities in mountain oases) can be diminished to some extent. More particularly, the package will contribute to promote sustainable tourism development, strengthen the international status and reputation of the destination, strengthen the local and sub-regional economies within the target zones, and be instrument of job and income creation.

As all negative impact potential shall be avoided through self-obliged application of said planning provisions, and due execution of the identified measures, only the positive outlook remains as a result of project implementation.

Thus, the package was evaluated and found as favorable environmental protection, improvement of preservation efficiency through strengthened management action and trained operators, and contributing to the consolidation of the resident oasis-populations' quality of life.

(4) Package D: Cultural Circuit Upgrading

a) Project Site

The environmental aspects concerned by the Package D for three regions are different and distinct.

The first sub-package groups consist of two distinct circuits, one starting from Tunis and going through Dougga, Bulla Regia, Chemtou, Aïn Tounga and Testour, and the other one following from Carthago / la Malga the ancient aqueduct through Mohammedia up to Zaghouan and finally targeting Tuborbo Majus.

As these two circuits never include the existing road improvements, and only pedestrian walking trails need to be upgraded, the only environmental constituents that have been considered under the present environmental assessment are the various ancient sites and monuments.

All of these sites have in common that these sites and monuments are in a rather frail shape and condition, though protected by national laws or even international conventions, due to their age and progressive stage of destruction resulting from natural erosion and human action, due to certain additional and still ongoing environmental aggressions (air and rain water pollution, noise, vibration, vandalism).

Protected throughout at least two millenniums by covering vegetation and clean soil, large parts of the low layers of the ancient buildings survived.

Excavation, whether professional or not, and exposure of the heritage to the climatic and environmental conditions of today, accelerate their decay.

As numbers of depredating factors are beyond human control, or even if escaped from these factors, the few remaining tools for preserving the valuable patrimony must quickly find application.

The second sub-part concerns the circuit Sousse/Hammamet (as origin of the circuit)–Kairouan–El Jem–Mahdia.

For Kairouan and Mahdia, the present environmental conditions have been described under the Package B: Islamic Heritage, and values without any change for the present Package title.

The third circuit, the southern excursion trail for experiencing the Sahara Berber life and life conditions, the Sahara beauties and threats, is located in a quite different environmental setting: man and nature, with a glimpse towards the past, the great events and the myths.

Located on one large circuit from Jertba/Matmata–Ksar Jemâa–Ksar Hadada–Douiret–Ksar el Farch–Ksar Debbab–Ksar Oued Soltane and finally Tataouine, the route passes through rough desert land starting from the world famous troglodyte heritage (Matmata), passing through massive Berber settlements hanging from the steep rocky walls of deep canyons, and giving access to numerous small Ksour almost traditionally established on hilltops, for reasons of security for men and animals. The biggest amelioration of the road network in the Package D is route improvement between Beni Khedache and Toujane (some 40km), which rehabilitate this local road to paved one (7 meter width).

Dry land, dry air, harsh climatic conditions, storms, heat and cold, sculptured the nature and forged the desert inhabitants. Two major aspects of this environment needed to be described, for further analyses and identification of eventual risks that the project components may import. The first one concerns the bio-physical conditions, water resource as water in these regions is the key to survival as well as scarce vegetation as part of the nutritional base of the entire region. The second pertains to the human environment, the social and socio-cultural heritage and their role and values in present life, the desert populations' place at the margin of the socio-economic and economic stage of development in Tunisia, the subsidiary character of the Berber economy, and their adherence to the values and hardships of the region, their more introverted life-style that might be walling up between tourism and the people, but that is much more a gesture of auto-protection going back to old traditions and experience.

b) Impact Identification

Two main findings reported in the EIA are:

- One regards the physical conditions of the various targets: places, sites and monuments, included in the circuits and proposed subjects to upgrading measures, and
- The other concerns the resident Berber population in the Ksar and villages opened up by the circuit and improved access conditions, to international cultural tourism.

The road improvement that connect Beni Khedache and Toujane may not cause any major negative impact on natural or social environment.

All of the measures for the upgrading of the environmental conditions prevailing in the different sites and sub-regions incorporated in the circuits will benefit from measurable positive impact.

It is obvious that the particularly well organized and high standard cultural tourism would engender animating impacts on the local economies (accommodation, food and beverage services, small commerce and repair services, specialized libraries and arts galleries, cultural events organization and management, services for international research and observation etc., communication and translation services, tourism organization, guiding and management). Such opportunities create income that partly will be recycled into the local economy, to create induced positive effects.

The production of information material and other support services for the tourism industry can be added. All together, an important positive impact.

Certain details of the package are not mentioned but have clear benefits (e.g. litter control for example, or the construction of the information premises, Visitor Centres and Training and Management courses etc.).

On the other hand, the assessment identified the risk of significant negative impacts, if not appropriately managed and run:

- Bio-physical scenario of evolution generated by long period laser beam illumination,
- Deep penetration of tourism into rather remote areas and villages may lead to the negative social impacts on traditional life,

c) Mitigation Measures and Conditions for Project Implementation

As indicated above, the technical measures required to mitigate the impacts of laser illumination on the community and monuments (it may damage the stone surface) is simple: the laser beam technique will be partly replaced by appropriate conventional light production with extended converging light function. The laser beam shall be projected only to screens for text writing and simple drawing.

Regarding the negative impact on the human environment, all weight shall be given to the training and management program, and the special provision

already made regarding the local population, will take maximum weight and importance. Appropriate resources will be created.

This mitigation element is of highest urgency. It is desirable to start from the project design stage and several local representatives (different age group, sex, and socio-professional strata) should be involved in the formulation of the package.

d) Evaluation and Conclusion

The package is designed for upgrading product quality, the environmental features and ecological conditions in the main inner regions selected for the cultural tourism development. Thus, it contains mainly project components with direct positive impact on the target segment, site or group.

But development must be planned and coordinated with all constituents of a community, of an economy, of an environment and of an ecological system or sub-system. Otherwise, sustainability will be left to the hazard, and it is more likely that uncontrolled development will lead to collapse than to sustainability.

Thus, the EIA identified certain risks mainly in the social and socio-economic sector of the residential population of the project for the southern region.

(5) Final Conclusion

The major objective of all the projects contained in the proposed Packages A through D is sustainable culture tourism development in Tunisia. Thus, the actions aim at either further improvement of the product (cultural sites, monuments, infrastructure) or strengthening of the pertinent services and their aptitudes (information, guidance, organization and management).

The various proposals have been integrated obviously with all the important environmental concerns from the early design stage, as protection of the human and bio-physical environment is imperative for the implementation of the major projects.

These project and design principles explain the positive results of the Environmental Assessment. After an analysis of impact potentials that more than 50 different activities may generate within at least 15 particular types of environment, none of the examined activities is likely to create significant negative effects or to induce evolutions that could lead to impacts detrimental to the environment.

Potential risks can easily be avoided through:

- **appropriate management:** strengthening management capacities and aptitudes are part of the projects. The challenge goes farther, as the projects have various partners and bodies responsible for the subsequent

operational phases of the projects as well as follow-up and maintenance.

- **appropriate project adjustments:** certain adjustment is required where details are found incompatible with environmental requirements (desert sports and pertaining circuits, lighting techniques).
- **appropriate programme adjustments:** Human environment may become exposed to avoidable stress. This point requires further strengthening of the training and management projects for local residents to prepare for their future roles in a steadily developing socio-economic and socio-cultural setting.

In summing up the findings and measures proposed by the Summary EIA, the entire plan encompassing the four packages of priority actions shall remain without any change.

16 RECOMMENDATIONS

Based on the national and regional tourism development plans as well as the development concepts with respect to the four main themes (Culture, Sahara, Quality, and Environment), six project/program packages were proposed as a group of projects and programs of high priority. The preceding chapters described specific components of each package, the organizational structure for their implementation, cost planning, economic and financial evaluation, and environmental impact assessment. These project packages are estimated to benefit the national economy, generating tourism earnings substantially higher than the cost required. At the same time, the environmental and social impacts of these projects are expected to be not significant.

Recommendations on the Next Steps

With respect to these priority project/program packages, it is highly recommended that the priority projects and programs be authorized by the Tunisian government and be moved smoothly toward their actual implementation.

Specifically, the following actions should be made with the active initiative to be taken by ONTT as well as MTLA:

- 1 Determine the components to be implemented under each of the priority project/program packages
- 2 Determine the order of priority for these packages, making clear which package is of higher priority than others
- 3 Determine the organizational structure for the implementation of these packages, including the establishment of a coordination body as proposed in the preceding chapter

These actions are also needed in case the Tunisian government will seek for a possibility to receive financial assistance from a foreign aid organization.