

**Title of Project** : **Road Project VI**  
**Project Number** : **P-TN-DB0-010**  
**Country** : **Tunisia**  
**Department** : **OINF** **Division:** **OINF 2**

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### **a) Brief Description of Project and key environmental and social components**

This project involves the upgrading of classified network roads. It is in line with Tunisia's 11th Economic and Social Development Plan (2007-2011) and supplements a first tranche under implementation (ADB Project V). The classified road improvements involve: (i) works on 863.8 km of road (rehabilitation and widening of the carriageway to 7.6 m and flood proofing); (ii) reinforcement of 691.3 km of road (roadway foundation); and (iii) structure renewal for these sections (reconstruction of bridges and replacement of sagging sections of 12 structures spanning 50 to 450 ml, for a total length of 1770ml); (iv) 52.6 km under an additional programme; and (v) upgrading of feeder roads (repair and widening from 5 to 6 m) over a total stretch of 760 km, with 72% resurfaced. The project is classified as category 2, since it does not affect any protected natural areas and is not expected to have any negative direct or indirect effects in sensitive areas or with regard to displacement of dwellings. The works are sited within the existing public domain.

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### **b) Principal environmental and social impacts**

#### **b.1) Negative Impacts**

**Site Phase:** The preparation phase is important for the site set up and mobilization of machinery. The first physical impacts on the environment and inhabited area are seen in this phase, followed by those arising in the construction phase.

#### Inconvenience and risks for inhabitants of the project area

- i) The works entail the displacement of certain electrical and telephone networks and water piping as well as demolition of fences. The brief power outages expected will inconvenience the user populations.
- ii) The site works will cause temporary disturbances (noise, vibration, smoke and dust) owing to the circulation of machinery and transporting of materials. These passing inconveniences are not expected to affect the population's health.
- iii) The works will temporarily slowdown movement or extend itineraries, disrupt traffic, cause deviations and pose the risk of accidents.
- iv) Risk of pollution of wadis and/or water tables owing to accidental spillage of used oils and fuel, or trickling of such substances onto the materials stored.
- v) In the hilly areas, there is the risk of erosion in the areas of right of way (land sliding, sloughing in).
- vi) In the forest regions, there is need to guard against fire and envisage its control
- vii) In the regions with scanty water resources, there could be additional pressure on the reserves built up to meet the needs of the population. The works will however not affect any catchment area or water table.

#### Adverse Effects at Sites

- i) The use of new or existing borrow pits could increase soil erosion. Unrestored borrow areas will favor stagnation of unclean water and attendant disease/illness, e.g., through proliferation of mosquitoes.
- ii) The coating/embedment gear also carries the risk of contaminating the water tables as well as polluting the air through dust and emissions from combustion.
- iii) Limited pollution could come from the living quarters on the site, specifically through used water or owing to poor waste management.

- iv) The widening of roadways, the strengthening of their capacity and improvement of their practicability should lead to changes in the current occupation and utilization of the roadside areas. This could have consequences in terms of land acquisition and road safety. The project already envisages the acquisition of a few plots, with a budget allocation to compensate the owners.
- iii) The project does not envisage any additional degradation of the quality of the abiotic environment (air, water, soil) through utilization of the rehabilitated roads. The project does not affect any archeological, cultural or religious sites.

### **Operations Phase:**

- i) Since the works envisaged concern only the existing roads already integrated in their natural environment, the project will not affect the natural habitats, the fauna and flora. The project will have no negative impact on the natural parks, biosphere reserves or sensitive or protected areas. The use of the renovated and rehabilitated road is not expected to give rise to any additional degradation of the abiotic environment. The project does not affect any archeological, cultural or religious site.
- ii) Noise pollution: In the operations phase, the speed limits for the different road sections will be higher. Traffic on these sections will remain on the increase. The noise will be worsened by the movement of an increased number of vehicles at the same time.

### **b.2) Positive Impacts**

- i) The improvement of the classified road network will favor intra and inter-regional trade and strengthen the integration of the territory by reducing the regional social disparities. The existing classified network will be extended. The project will help to meet the objectives relating to economic growth, social development and inter-regional balance that the Government is seeking to meet through the 11th Plan (2007-2011).
- ii) It will make movement less costly. Access to administrative, economical, educational, medical and tourist centers will be facilitated. The component concerning 760 km of rural tracks will contribute to opening up the agricultural production areas and link them to the classified network, thereby extending it.
- iii) The rectification of certain layouts, curves and longitudinal profiles, as well as a more effective road sign system will help meet the growing demands with regard to road safety.
- iv) The flood control measures envisaged entailing improvement of the water structures and rain water drainage networks will help protect the water resources and guard against soil erosion by water, and thus enhance the environmental integration.
- v) The project will support the rural integrated development programmes, projects to promote cultural, ecological and Saharan tourism, including the ongoing creation of industrial and trade free zones in the country (Zarzis Port in the south, the industrial areas and logistics platforms at Kairouan in the central part of the country and in Béja, Jendouba and Kef in the north-east and west).
- vi) Employment to be created during the site phases, in the order of 4000 jobs for the duration of the project (5 years).
- vii) Development of activities linked with the construction sites (canteen services, sale of fuel and food, accommodation), which will generate additional income for the local populations, as well as trade in the centers near to the work sites.

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### **c) Compensation and Mitigation Programme**

#### **c.1) Supporting measures relating to right-of-way areas**

Only the acquisition of a few plots and displacement of a few power and telephone networks and water pipes will be necessary. An overall amount of TND 13.03 million (not including the network displacement costs) representing 2% of the total tax-free cost of the project, has been set aside for compensation for acquisition of plots.

### **c.2) Mitigative measures for the works phase**

The main mitigative measures as recommended in the contractors' specifications, primarily concerning organization of works and the site quarters and installations, as well as the tasks of the experts required to implement them, are as follows:

i) Works siting The works will be set up in delimited, non-agricultural areas with facilitated access, and which will be far removed from plantations, religious sites, public grounds or unstable land. The living quarters will be at a distance from the wadis, so as to avoid the risk of pollution of the resources. No material depots such as would release lixiviates and affect the resources will be authorized within the protected perimeter; leachates will be collected and neutralized. Access to these areas will be controlled, to limit interaction with the external environment. The work hours will be set in such a way as to limit inconvenience to and disturbance of the local populations. Machinery circulation speed limits will be set for the works and construction sites, especially those along public routes.

ii) Traffic flow and deviation plans: Machinery circulation plans will be drawn up with a view to ensuring optimal mobility and access for the local populations. They will be extendable so as to correspond to the envisaged work sequencing. These plans will be backed up with road signs and information dissemination. The work sites will be clearly marked out.

iii) Possible installation of fuel and lubricant depots. The petrochemical products will be stored either in reservoirs or drums placed in the appropriate containment areas, so as to avoid any spillage or leakage and minimize fire risks. The project will envisage isolation measures as well as equipment to clean up any spillage or seepage. This equipment and material will be maintained in perfect condition.

iv) Containment of dangerous substances. (Inflammable products, mainly the bitumen, lubricants and other petrochemical derivatives). The storage areas should have appropriate emergency equipment, maintained in good working order. Similarly, the radioactive equipment (troxler) will be stored in a special area and handled only by specially designated persons.

v) Bottled gas. The oxygen, propane and acetylene will be stored in a special area, fenced in so as to avoid accidents involving vehicles.

vi) Used oils and lubricants. Used oils will be collected in reservoirs or drums and channeled outside the sites by the suppliers, or recycled in accordance with the ANPE requirements.

vii) Soil contaminated by fuel and lubricants. There will be a special area for treatment of any soil contaminated by oil products. This soil will be excavated and placed in the confined area for decontamination using solvents. The treated soil will be evacuated to authorized dumping areas.

viii) Compensation for expropriated population. The plantations and orchards marked for provisional or definitive appropriation will be made available to the project before the start of the works, so as to avoid any claims or procedures that could bring about implementation delays. The compensation will also be paid out prior to works start-up.

ix) Tree felling and hedge cutting. The preparation of works sites may involve clearing vegetation with particular ecological value; such procedures will require prior authorization (ANPE – CRDA). The project will require that all wood cut be processed or used optimally.

x) Soil displacement The extraction sites (quarries) or areas for storage of excess material will be selected in such a way as to avoid any alteration of landscape or danger; they will be restored on completion of the works.

xi) Water intake in wadis. Installation in the wadis of water intake facilities for the purposes of the works will be conducted very carefully to avoid pollution or ecological damage. After the works, the ground will be restored. The works will be designed in such a way as to protect the natural courses of these wadis and ensure their availability for use by dwellers further downstream.

xii) Structures. Civil works will be conducted on several sites, with measures taken to maintain circulation throughout. Depending on its volume, the water drained from the concrete production areas will be gathered in a decanting basin with no outlet to the wadi concerned. The suspended

particles in the water will be collected and the dry residue sent to a controlled or authorized discharge area.

xiii) Risk of erosion and assessment of soil stability With the natural slant of certain areas, there may be some risk of erosion (rain and runoff water from the works). The contractors will monitor the soil stability, identifying the parts of their sites or works areas that are prone to erosion prior to and following construction. Drainage systems will be set up and physical and/or biological slope stabilization systems adopted (low separation walls, plantations, etc.). Subsequent follow up will make it possible to determine the effectiveness of the techniques applied in terms of soil stabilization.

xiv) Liquid waste and water pollution risk. Depending on scale of works and sites, the effluent will be collected and evacuated in watertight tanks or mobile collection systems (according to its composition). Water used in engine cleaning and servicing might be treated for separation from oil in special siphon tubs; the water will be channeled to the tanks and the oil and bitumen residue extracted for recycling or destroyed. Any depots for oily or petroleum products (for machinery) will be carefully designed in order to avoid spillage on the ground and into the wadis.

xv) Solid waste. The solid waste from sites will, to the extent possible, be collected and sorted on the spot, provided the required facilities are far enough away from inhabitants. If not, they will be channeled to the authorized dumps.

xvi) Dust emission to reduce dust emission arising in the conveyance of materials, the site managers will, where possible, schedule the dampening of roads and tracks running across the inhabited areas. The truck and machine bodies will have canvas covers. It might also be necessary to dampen the accumulated fill and debris in order to control dust.

xvii) Replanting and restoring of areas. Planting and seeding will be carried out in the road right-of-way areas (on completion), with the aim of embellishing the work site and urban space. As needed, there will also be modeling work. The surveillance and ensuing measures will make it possible to avoid erosion of the temporarily bared surfaces.

xviii) Demobilization and rehabilitation. Special attention should be given to the natural environment in rehabilitating the works areas. Dismantling will be scheduled and conducted in such a way as to cause the least harm possible to the environment (accidental spillage or emissions, dust, noise, vibrations, etc). Collection and management of debris and solid waste will be carefully carried out. The works areas will be restored with an effort to minimize the residual visual impact of the sites and bring them near their initial state. This work will be in function of the importance of the sites to the overall landscape: shade tree plantation, landscape remodeling, etc.

xix) Reforestation. The Ministry of Agriculture, which oversees reforestation, will use local fast-growing species so as to protect the specific biodiversity of the zone and improve the production of wood which could benefit the local population (thinning out at a later stage).

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#### **d) Monitoring program and additional initiatives**

In accordance with the Tunisian institutional arrangements, the monitoring of the project components will be organized and overseen by DGPC under the supervision of MEHAT, which will centralize the observations of other ministries involved in the project (Ministry of the Environment, ANPE, Ministry of Planning and Regional Development, Ministry of Agriculture and Fishery Resources, etc.). The project management unit within the Ministry of Infrastructure, assisted by an environmentalist and a sociologist recruited for the purpose, will carry out the regular monitoring of the works up to handover. Since Tunisia's new environmental code does not impose the conduct of environmental impact assessments for road rehabilitation projects, ANPE will not be directly involved in the environmental control of the project; its action will be more in line with its prerogatives, namely nuisance control and managing pollution risk (liquid effluents, solid waste including bitumen, etc.). The CDRAs will manage forestry aspects (tree felling and new plantations), erosion risk and water preservation.

The works environmental surveillance and monitoring programme will be an integral part of the social and environmental reporting for each road section conducted by the consulting firms entrusted with the preliminary and final designs. It will also be taken into account in the TD and special specifications.

The principal contractor will be responsible for incorporation of the social and environmental component of each sub-project and made accountable in that regard. On its initiative, the works contracts drafted will contain descriptions of the penalties to be applied to contractors that fail to comply with the specific technical provisions relating to environmental and social aspects. The contractors will refer to the environmental assessments to minimize or offset the risks to the physical, natural and human environments.

The annual Bank supervision missions will be opportunities to determine the quality of the environmental and social monitoring of the project.

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#### **e) Institutional Arrangements and Capacity Building**

The Civil Works Authority, which is responsible for implementation of the Environmental and Social Management Plan, has experienced staff and adequate technical resources in these two fields. The assistance of environmental and social experts may be needed for supervision of the sites and works and in ensuring compliance with the general recommendations of ANPE and CRDA.

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#### **f) Consultation with Public and Information Dissemination**

The participatory approach is specifically required under different laws and decrees: law n° 94-122 of 28 November 1994 promulgating the Urban Development Code, Law 115-1992 of 30 November 1992 establishing ANPE, Decree n°93-1549 of 26 July 1993 concerning the establishment of outreach units (Bureaux des Relations avec le Citoyen) in the different ministries and governorates. In accordance with the Tunisian institutional provisions, on the initiative and at the request of the competent local representatives, and following consultation with the local communities concerned, the regional infrastructure delegations (Délégations Régionales de l'Équipement -DREHAT) draw up proposals for consideration by MEHAT, which in turn provides the local administrations with useful data that they consolidate. The data is then submitted for arbitration at the central level, then to MDCI and finally approved through a MEHAT decree, with the clearance of the Ministers for Urban Development, Planning and Regional Development. The regional discussions organized by the DRHEAT with the populations and their delegates thus predetermine the different sections to be considered. They are definitively budgeted by the Ministry of Finance and included in the investment plan. The participatory approach is thus mandatory for development projects. The lead contractor (in this case MEHAT, the promoter) is responsible for its organization. The procedure starts from the project design phase and continues through to the definitive acceptance of the works.

The actual monitoring programme will incorporate the data from the final design and the environmental and social assessments; it will indicate the types of consultations required, the objectives of the project, the expected results (regional opening up, road safety, accessibility, etc.) as well as the environmental and social risks perceived (expropriation, loss of farmland, tree felling, etc. It should also identify the target groups, the appropriate consulting procedures and frequency of consultations, the reporting methods and the procedures for dissemination of information gathered.

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#### **g) Estimated Cost of Environmental and Social Measures**

The costs relating to the environmental and social measures are included in the works costs. The allocations for compensation in respect of property acquired represent 2% of the total tax-free cost

of the project, in the amount of TND 13 million, earmarked for the compensation in respect of the few plots required, aside from displacement of networks and piping

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#### **h) Implementation and Reporting Schedule**

The procedures for application of the compensation and remuneration measures are established and governed by decrees and laws. They are implemented prior to the start of works. The schedules for activities and reporting are in line with those for the project implementation. The reports provided will cover the physical implementation of works, the environmental impact assessment forms and the audits conducted. Supervision missions involving a consulting environmentalist as well a sociologist will be fielded annually and followed by submission of mission reports. The overall project schedule is as follows:

- i) (a) Road rehabilitation works: 380 km to be completed in 2011 and 862.8 km in 2015; (b) road strengthening: 691.3 km to be completed in 2011; (c) structures: 8 units to be completed in 2013 and 12 in 2015; (d) feeder roads: 315.4 km to be completed in 2013 and 759.4 km in 2015, of which 25% (192 km) paved; and (e) dual lane works for the RVE814 and 812 at Sousse and MC116 and MC117 at Médenine): 52.6 km to be completed in 2013.
- ii) The audit report will be produced yearly starting from 2011; an annual report on environmental activities and monitoring will produced each year from 2011.

<b>Supervision Programme</b>	<b>Parties Responsible</b>	<b>Monitoring/Follow-up Programme</b>	<b>Parties Responsible</b>	<b>Costs</b>
<b>PRIOR TO WORKS</b>				
Land audit; Acquisition of plots-identification of owners-renting of land for storage purposes	DREHAT, Regional administration	Compliance with land legislation; Verification of proper compensation process; Included in works costs	Land Registry Service; DREHAT; MARH, MPDR	13 MTD
Planning and organization of works (works planning, execution plans, site installation plans, etc)	Contractors and their specialists	Compliance with contract and regulations	MEHAT and DREHAT	Included in works costs
Selection of work sites; land rental; Provision of access	Contractors and specialists	Consistency of goals pursued and legislation concerning protection of water, crops, forests, natural biotopes	MEHAT, ANPE inspectors, CRDA,	N.A
Obtaining necessary authorization for works start-up	DREHAT,ANPE, CRDA, Regional administration	Compliance with regulations	MEHA, ANPE, CRDA	N.A
Participatory approach; Participation of stakeholders and NGOs; publications, public survey Register of claims available to populations;	Communes and Municipal Offices Local NGOs	Verification of information provided to land owners;	MEHAT, ANPE,	N.A

<b>WORKS AND SITE PHASE</b>				
Delimitation and marking of road right of way and construction sites (drainage, bridges, flood control structures, etc.); marking itineraries of road deviations; identification of trees for felling;	Firms' Topographers and Environmentalists	Consistency with actual land needs for organization of works and sites; Consistency of plots acquired and indemnification;	MEHAT, ANPE; Land registry services	N.A
Moving water pipes, electricity posts, telephone lines, transformers	Regional water, electricity, telecommunication department	Consistency with requirements concerning health, housing, sanitation, etc.	Min. of TIC, Min. of Energy, Min. of Water Resources	
Sites set-up, storage of fuel storage, preparatory works	Firms and their specialists	Consistency with actual land needs for works;	MEHAT, ANPE	Included in works costs
Transportation of equipment, various materials; storage conditions; possibility of quarries	Firms' Environmental experts; highway police; contractors;	Road circulation and safety; State of land and ecosystems; Respect of legislation concerning quarries;	ANPE, MEHAT-DREHAT, Municipal offices	Included in works costs
Physical risk of road accidents, site and road sides;	Firms; road police;	Respect of legislation concerning works and circulation of engines, road deviation;	Regional administration Min. of Infrastructure	Included in works costs
Site works (control of preparation of coatings and concrete; control of dust and gas, waste from liquid, oil and solid effluents)	Contractors' environmental experts;	Conformity with labor legislation and recommendations of environmental assessment;	Technical departments of MEHAT; ANPE Control Department;	Included in works costs
Conditions of scraping roadways; Excavation, bridge construction, flood proofing, stabilization of road shoulders, drainage;	Contractors and their environmental experts. CRDA Experts	Compliance with recommendations of environmental assessment; Circulation and road security;	MEHAT; MARF; Min. of Transport, ANPE;	Included in works costs
Storage conditions of fuel depots,	Firms and their	Consistency with recommendations	Min. of Transport; MARF,	Included in works

Maintenance of site vehicles and engines	Environmental experts; CRDA	of environmental assessment	MEHAT	costs
<b>SITE/WORKS PHASE (contd.)</b>				
<b>Supervision Programme</b>	<b>Parties Responsible</b>	<b>Monitoring/Follow-up Programme</b>	<b>Parties Responsible</b>	<b>Costs</b>
Acceptance of structures and related infrastructure; handling	Contractors and Concessionnaires, CRDA experts	Consistency with constructors' recommendations and standards	MEHAT, ANPE, MPDR; Min. of Tourism; Min. of Transport MARF	Included in works costs
Evacuation of bitumen debris; Restoring of works sites; embellishment, plantations, etc.	Firms and their environmental experts; CRDA	Compliant management of toxic waste depots; Consistency with APD – consistency with environmental assessment	ANPE; MEHAT Ministry of Health; MARF	Included in works costs
<b>OPERATING PHASE</b>				
Maintenance of road structures, bridges, water control, drainage,	DREHAT	Compliance with Security standards	MEHAT	Budgets of departments concerned
Control of plantations along roads for optimal landscaping	CRDA Regional Forestry departments	Esthetic-landscape aspects	MARF – CRDA	Included in their operation budget
Maintenance of road shoulders: accumulation of various types of detritus and debris	Road brigades	Anti-erosion measures; sanitation; landscape aspect;	Ministry of Environment; MARF, MEHAT	Included in their operation budget
Erosion control, water and soil conservation work	CRDA	Rational elimination of residue of oil and other products outside site; compliance with anti-pollution standards	MARF, MEHAT	Included in their operation budget