

AFRICAN DEVELOPMENT FUND



TUNISIA

TUNISIA - MONASTIR AND ENFHIDA AIRPORTS PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY

EXECUTIVE SUMMARY

**PRIVATE SECTOR DEPARTMENT
INFRASTRUCTURE AND PPP DIVISION
(OPSM.3)
August 22th 2008**

Project Name: Tunisia: Monastir and Enfhida Airports Project

Country: Tunisia

Project Number: XXXXXXXX (Mahib, to be completed)

Department: OPSM.3

Date: August 22th, 2008

1. Introduction

1.1 Environmental and social categorization and rationale

This is a Category 2 project because a limited number of specific environmental and social impacts may result from minor upgrading in the existing airport facilities in Monastir and from construction and operation of the new airport at Enfidha¹.

These impacts, including land acquisition and resettlement, being implemented by the Government, are being managed, in close detail, to international standards and best practices.

The new airport in Enfhida has been planned since a Presidential request of February 1998 and the government has since then conducted various public meetings regarding the proposed developments.

The Monastir Airport, located 8 km from the city of Monastir, has been in operation for 40 years; the terminal will undergo minor modification, including safety, security and waste management upgrades, as part of the project.

It is worth underlying that the Enfidha Airport is currently under construction (40% have been achieved to date, construction works started in summer 2007) and will meet international standards.

2. Project description and justification

Tunisia's existing airports are either already saturated (Monastir airport handled 4.2 million passengers for a nominal capacity of 3.5 millions) or nearing saturation (Tunis-Carthage airport) during the peak summer months.

Due to growing tourism, further encouraged by the current negotiations on an open skies agreement with Europe as well as major tourism and industrial developments planned to sustain the country's growth, the upgrade and expansion of Tunisia's airport infrastructure is a key Government priority.

Given the existing capacity and physical area constraints and current saturated operational levels during summer months, the State of the Republic of Tunisia, acting through its Ministry of Transport, launched a bid process for the award of a concession for a new airport in Enfhida, on a BTO basis.

Specifically, in 2007, the Government of Tunisia awarded two concessions to TAV of Turkey:

- a concession to upgrade and operate the Monastir airport, and
- a concession to build, finance and operate a new airport at Enfidha, also located in the Central Eastern part of Tunisia, 45 km away from the Monastir airport².

¹ Refurbishment works at Monastir Airport are minor (internal changes, such as computer operations and re-building of toilet facilities), will have little or no environmental impact and will not result in the deterioration of any existing environmental impacts relating to the operation of the Airport. On this basis, Monastir has been classified as Category C for purposes of the Equator Principles.

² The scope of the concession includes both the existing and new airport to be built to better coordinate traffic allocation between the two airports.

Both airports will serve the major tourism areas of Monastir, Sousse and Hammamet, located on the Mediterranean coast.

The decision to build a new airport at Enfidha on 5,788 ha stemmed from the fact that the Monastir airport cannot be expanded on site, owing to geographical and environmental (e.g. noise) constraints.

TAV created TAV Tunisie, a special purpose company which will be the concessionaire of the two airports.

The proposed project is to finance: 1) the concession for the construction and operation of a new international airport at Enfidha, for an initial capacity of 7 million passengers, and 2) the concession for the operation of the existing Monastir international airport (4.2 million passengers in 2006). The project, with total costs of approx 560 million euros (approximately equivalent to \$840 million), will be one the largest recent private sector investments in Tunisia and the 1st airport private sector concession in the Maghreb region.

Development impacts. The proposed project is a central element of Tunisia's growth strategy: by expanding and modernizing the airport infrastructure of Tunisia, the project is expected to directly contribute to the success of the Tunisia's economic strategy, which is built on two pillars:

- 1) export-oriented industrialization, in particular with a specialization in low cost light manufacturing;
- 2) tourism development, with major efforts underway by the Tunisian Government to increase tourist arrival numbers and re-position Tunisia towards the higher end of the market.

The project furthers both those goals as:

- it will be critical to the development of the Enfidha industrial district; and
- it will considerably expand Tunisia's tourism capacity by offering a new gateway to Tunisia, as the Monastir airport has reached saturation.

The project, one of the largest private sector investments in Tunisia in recent years, will also be the 1st private airport concession in the Maghreb region and is a key factor in the success of the Tunisian Government's PPP strategy in infrastructure.

3. Policy, Legal and Administrative Framework

The project complies with Tunisian's environmental regulations, particularly Decree N°91-362 of March 1991, modified in July 2005, on ESIA requirements, and with the international standards in project finance, the Equator Principles. Additional information on the legal, regulatory and administrative framework is provided in the detailed ESIA Study.

IFC's prominent role, in this transaction, ensures that the project also follows the IFC/World Bank Group best practices environmental standards. Specifically, while all Performance Standards (PS) are applicable to this investment, IFC's environmental and social due diligence indicates that the investment will have impacts which must be managed in a manner consistent with the following Performance Standards:

- PS1: Social and Environmental Assessment and Management Systems
- PS2: Labor and Working Conditions;
- PS3: Pollution Prevention and Abatement;
- PS4: Community Health Safety and Security
- PS5: Land Acquisition and Involuntary Resettlement
- PS6: Biodiversity Conservation and Sustainable Natural Resource Management

- PS8: Cultural Heritage

There are no indigenous communities or peoples in the area or that will be affected by the new or existing airport.

4. Description of the Project Environment

1) Monastir Airport: the airport is located 7 km from the centre of Monastir, Tunisia's 11th largest city in terms of population (41,000) located 160 km south to south-east of the capital, Tunis, and a major tourist centre. The city is in the centre of the Tunisian Sahel region, between Sousse to the north and Mehdia to the south. The city of Monastir is connected to the rest of the country through railway service, with multiple daily schedules to/from Tunis, Sousse, Gabes, Sfax and Djerba. The city and the airport are accessible from Tunis by highway (2 hours). The airport itself is close to the coast. In terms of facilities, the airport has one runway, 2950 m long, one passenger terminal (capacity of 3.5 m passengers) and one main apron comprising 25 aircraft stands. The airport is served mainly by charter flights bringing low cost tourists to the surrounding coastal area.

2) Enfidha airport: will be located in the Enfidha district, on the coast, 100 km south of Tunis, served by the Tunis-Sousse highway, a railway station and at a 35 km of the Sousse port (a new deep-water port is planned in Enfidha). The airport will be in the immediate vicinity of the Enfidha industrial zone, a 2 million square meters area earmarked for the development of an industrial zone aiming to attract industrial firms active in the automotive sector. Total airport area will be 5,788 Ha with an estimated total construction capacity of 130,000 square meters. The airport will have one 3,300 m long runway and two apron areas, allowing for a total capacity of 32 aircraft stand. Upon completion of the 1st phase, the airport's capacity will be 7 mn passengers. Subsequent expansions will be realized as needed to satisfy traffic growth. It is expected that the Enfidha airport will cater mainly to tourists.

The Concession is located between the City of Enfidha and the village of Hergla. It is bounded by the A1 Highway to the west (2 km from the runway); the Gulf of Hammamet (1.6 km from the runway) and the seasonal sebkha (wetland) of Assa Jriba to the east; and agricultural and grazing lands to the north and south.

The Enfidha Airport is not located near any densely populated areas or any critical or protected habitats and is not anticipated to have any negative impacts on surface or groundwater. The nearest town or village is 5 km away and the nearest households are 3 km away. The flight approach paths will not pass directly over Hergla or Enfidha or the IBAs, noise impacts are thus not significant. Rather the potential diversion of traffic from Tunis and Monastir to Enfidha will result in noise reductions in these more densely populated areas.

While the project does include land acquisition and resettlement of 20 households, both being implemented by the Government; this process is being managed through a very well defined process consistent with PS 5. TAV has presented plans to address the impacts and other requirements, and will, upon implementation of specific agreed measures, comply with the IFC Performance Standards on Social and Environmental Sustainability.

The existing land is of relatively low environmental value (dominated by cereal crops, grazing and some seasonally inundated salt marsh vegetation dominated by halophytes) as it has been set aside for a new airport for some time. This zone is characterized by marshy land depressions during the winter period. The coastal strip dunes beyond the immediate site known as the Forest of El Madfoun is dominated by alien species, such as Eucalyptus, presumably introduced to stabilize the dunes.

5. Project alternatives

Based on the location of the village of Hergla and the presence of two Important Bird Areas (IBA) 13 km north and south of the Concession, the Ministry of Environment and Sustainable Development required the suppression of a second (originally planned) runway to eliminate low level flights (and their subsequent noise impact) over human populations and sensitive habitats. No impacts on these IBAs are anticipated due to the project.

6. Potential Impacts and Mitigation/Enhancement Measures

The main components of the project which could affect the biophysical and human habitats include the following:

1. Site preparation, in particular, the removal of the vegetal layer and landscaping works;
2. Road traffic: transport activities and material mobilization on the project site will impact negatively on the local traffic;
3. Heavy trucks movements will generate noise and dust emissions which could impact on the surrounding communities;
4. Influx of migrant workers (on average more than 1,175 workers) could result in emission of solid and liquid effluents which will require management control;
5. Installation of the construction site will have indirect impacts on water and energy consumption;
6. Presence and manipulation of electrical equipments and others require the establishment of health and safety measures;
7. Opening and operation of borrow pits will result in visual impact, air pollution, traffic, etc.

The above mentioned impacts have been reviewed in light of the IFC's Performance Standards and Environmental, Health and Safety Guidelines.

- PS1: Social and Environmental Assessment and Management Systems:

An independent EIA for Enfidha and an independent Environmental Audit for Monastir was completed in December 2007. Both reports include an Environmental Management Plan (EMP) which, along with TAV Construction's Health, Safety and Environmental (HSE) Plan, will form the basis of a corporate Environmental Management System (EMS). The Government has developed a Master Plan for this region of the country which includes development of a deep water Port, a Tourism Zone and an Industrial Zone. Consultations at the municipal and central government level on the proposed plans have occurred over the past several years and the project is well known at the local and national level.

It is considered that the construction of a new airport in Enfidha, whilst involving considerable works, is unlikely to have any significant environmental and social direct effects due to the location of the proposed site. This assumes the appropriate implementation of the environmental mitigation measures and the Resettlement Action Plan (RAP).

Major issues are considered to be hydrology, archeology, ecology, noise and air, socio-economic and drainage/flood control.

However, as induced impacts, the airport will open up more of the coastline to development. The environmental impact of any controlled tourism development could, if not adequately controlled, lead to some indirect impacts being attributed to the airport.

- PS2: Labor and Working Conditions:

TAV has a detailed written HR Policy and follows all national laws with regard to minimum employment age, maximum work hours and permits freedom of association. Similarly contractors whom TAV hires will be required to ensure their hiring and employment practices are consistent with national law and the requirements of PS2. TAV has a detailed HS&E Plan which sets standards for occupational safety and work procedures for employees and contractors. Training for employees and contractors on worker safety and emergency response has been conducted at Monastir and Enfidha.

TAV intends to establish a corporate wide OSHAS 18001 certification of its global airport HS&E management systems by 2010. There is no redundancy anticipated as part of the project, a certain number of staff will eventually be transferred from Monastir to Enfidha on an initial voluntary basis. Following this, if necessary, first single staff and then married staff will be assigned to move to the new airport. Many staff members in fact have expressed a desire to work at the new airport as the work environment will be very modern. Given that distances between Monastir and Enfidha (about 30 km) are not great, many staff would be able to work in Enfidha without moving. A shuttle service will also be set-up to facilitate the movement of staff between their residences and the two airports. TAV employees absorbed from the OACA as part of the privatization have retained all their rights as former OACA employees and have union representation to assist in the negotiation of all HR related issues.

- PS3: Pollution Prevention and Abatement:

The main waste materials generated during construction and operation are general solid waste (plastics, paper, used parts, metals and oils etc.), used oils and fluids, and sewage. These will all be handled by licensed contractors and disposed of at designated municipal sites. Used oils will be recycled and where possible, metals and plastics will be recycled. As part of the Master Plan, the Government intends to develop a new landfill in the Enfidha area to serve the public and private sector. During the operational phase, all wastes from aircraft and the airport will be disposed of at these sites.

Storm water channels, equipped with oil separators, are being built at Enfidha and are being improved and retrofitted at Monastir. No fugitive oils are expected to enter the sebkhas (salt lagoons) or other surface areas. TAV's EMP requires regular sampling and testing of storm water discharges.

The main hazardous material handled and stored on site are aircraft and vehicle fuels. Tank farms at Monastir are managed and operated by oil majors (e.g., Agip) to international standards. Hazardous Materials Management plans for these facilities exist and will be developed for Enfidha.

TAV has established a Construction Camp on site that houses employees and contractors. This camp is equipped with power and water supply. All generator fuel tanks and fuel storage tanks have been equipped with secondary containment. The camp is supplied with treated drinking and a sewage treatment plant handles all wastes from toilets, kitchens and offices. Solid waste is handled by licensed contractors and disposed of at designated municipal sites.

Water and power for the operational phase of the project will be supplied from the national grid; the pipeline and power line will be constructed by the Government. Minimal impacts are anticipated with regard to this infrastructure as the national grid is well developed in the area and right of way distances are minimal and involve no disturbance of sensitive areas or displacement of communities.

These facilities will be part of a separate Government managed environmental assessment process. Similarly the construction of the interchange from the highway to the airport will be Government financed and constructed and will be assessed as a separate project by the Government.

The Government is constructing a new Sewage Treatment Plant (STP) on the Concession to handle sewage and liquid wastes from the Airport, the town of Enfidha and the village of Hergla. This plant will be financed, designed, and built by the Government. This will improve water quality and volumes discharged to the seasonal sebkhas.

Independent Fire Safety Audits have been completed for Monastir and will be completed for Enfidha. TAV intends to construct Enfidha to meet NFPA fire safety standards and will continue to operate Monastir to French Fire Codes.

TAV is interested in pursuing energy and resource (water, heat, etc.) efficiency measures at Monastir and Enfidha and has completed an initial study for Monastir. IFC has agreed to explore the possibility of supporting additional and more detailed efficiency audits and studies.

- PS4: Community Health Safety and Security:

No significant impacts on community safety are anticipated as a result of the project. As the airport site is several km from the nearest houses dust and noise during construction will be within acceptable limits. Access roads and the site are being watered regularly to minimize/eliminate fugitive dust. Traffic movement on site is being controlled through training and strict adherence to speed limits and transit routes. The construction site is off limits to the public and a security perimeter has been established. As part of airport design, ADPi (Aéroports de Paris “Design and Architects”) conducted noise modeling studies to assess impacts on neighboring communities.

Based on the modeling results and the location of the village of Hergla, and the presence of two IBAS 13 km north and south of the Concession, the MESD required exclusion of a second runway from the project in order to eliminate noise impact on Hergla. Given that the nearest houses are now 2-3 km from the airport, noise impacts are not expected to be significant. Rather the potential diversion of traffic from Tunis and Monastir to Enfidha will result in noise reductions in these densely populated areas. TAV will not employ any armed staff, contracts with any armed security will take cognizance of the requirements of PS4 and specifically address training related to key issues associated with the use of weapons or force.

- PS5: Land Acquisition and Involuntary Resettlement:

The establishment of the airport at Enfidha entailed Government expropriation of agricultural land and the relocation households. A Resettlement Action Plan (RAP) detailing the process and procedure of expropriation together with a summary of compensation, relocation, tenure issues and restoration of livelihoods has been completed in May 2008 (see attached document). This Plan is conducted in accordance with Law N°76-85 of August 1976 (as amended and completed by Law N°2003-26 dated April 14th, 2003). The sponsor will ensure that this RAP is consistent with PS5 and national law.

Titled landowners are being compensated at independently negotiated market rates and untitled households will be given titled land adjacent to the concession and will maintain grazing practices. Tenancy and livelihoods are expected to be improved as part of this process as no households previously possessed title. The economic displacement of agricultural land comprises 190 titles

representing 884 ha and the physical displacement involves 20 households.

The agricultural land is of marginal productivity and not all plots were being cultivated; many plots have absentee landlords who do not live in the area. All 20 relocated households are being provided with titled land adjacent to the site enabling them to improve their livelihoods through security of tenure. Those households that were grazing livestock on the Concession (state-owned land) will be allowed by TAV and the Government to continue this practice freely. Household economic base is not solely dependent upon grazing or agriculture; many family members and individuals are employed in nearby towns and the new airport will increase their opportunities. The expropriation process involved the appointment of a special Inspection and Conciliation Commission to implement the consultation and an independent valuation process. This process entailed initial consultation in 2005.

Compensation is paid for crops, structures, improvements, houses and land based on market value. All individuals have the right to appeal the valuations. In the case of an appeal, the Court appoints three independent evaluators and provides claimants with free legal counsel throughout the appeal process. To ensure livelihoods are improved or maintained, where skills match available jobs, TAV will give first priority to employing individuals who were physically and economically displaced and to local people. Whilst a number of landowners are appealing their compensation, all households have accepted their compensation and new plots adjacent to the Concession have been identified. Completion of the outstanding appeal cases could take up to 1 year. TAV will coordinate with the Government to confirm the completion of this process and will follow-up directly with the 20 households to ensure their livelihoods have been at minimum maintained and to ensure they are given priority in employment over all other communities.

Payment for 14 households to be physically displaced has been done (varying from 14,000 DT to 68,000 DT – 7,840 to 38,210 Euros) and received free land parcels of 1,500 m². The houses of families to be relocated are in the limit of the concession but do not obstruct the construction progress in the airport.

- PS6: Biodiversity Conservation and Sustainable Natural Resource Management:

No endangered or protected species of flora or fauna or any protected habitat are present in the Concession or in the close vicinity of the project. Immediately prior to construction large areas of the Concession have either been under low intensity seasonal agriculture and/or low intensity grazing, with the additional presence of 20 households. Grazing will continue during and after construction.

Based on the location of Hergla and the presence of two Important Bird Areas (“IBAs”), Sebkhah Halk El Menjel and Sidi Khelifa, 13 km north and south of the Concession, the MESD required the elimination of the second runway from the project to eliminate low level flights over Hergla and sensitive habitat. No impacts on these IBAs are anticipated due to the project following a bird survey and land use strategy.

On its eastern boundary, the Concession is bordered by the seasonal Sebkhah Assa Jriba. While an approximate 100mx100m area of Assa Jriba will be filled for the runway, according to AAO (“Association des Amis des Oiseaux”, representative of Birdlife International in Tunisia), the Enfidha Airport will have no measurable impact on this sebkhah (salt pans). The project will not reduce or negatively impact natural seasonal flows of surface water to any of these sebkhahs; seasonal flows of water through the Enfidha plain to Assa Jriba will be maintained.

A dyke is being constructed that will divert water around the airport and feed the coastal plain from the north and south. It should be noted that construction of the national highway, railway and Enfidha town dyke in previous decades have considerably altered this natural flow regime, reducing, by some degree, seasonal flows.

With respect to potential for bird strikes and evaluation of potential impacts on bird movements in the area TAV have contracted AAO to study bird movements in the Enfidha area and along the coast. TAV will implement, in coordination with OACA and the MESD, the recommendations of the study through a bird management plan and adjust, as necessary, flight approach paths in order to minimize impacts on birds and aircraft.

- PS8: Cultural Heritage:

The “Institut National du Patrimoine” (National Institute of Cultural Heritage) has signed an agreement with TAV agreeing to provide support for archaeological and cultural resource management. A survey conducted by the Institute revealed that the Concession contains a Roman granary (comprising a storage shaft containing grinding stones, clay storage pots and pottery shards) and two sites suspected to be Roman granaries. These sites have been designated “no-go” areas and a 25 meter buffer zone has been established as required by the Institute. Construction staff has been alerted to their presence and procedures to follow in case of chance finds of other sites/resources are being developed. During construction, a representative of the Institute will visit the site on a regular basis to inspect and monitor identified sites. Following construction completion the Institute will excavate these sites.

Environmental results from the audit at the existing airport in Monastir: located at low level close to an existing series of lagoons used as salt crystallizers. Although, there are a number of minor improvements that need to be undertaken, the airport is generally sound and with the future reduction in traffic, there will be an improvement in the biophysical environment at and around the airport.

The Lenders’s Technical Advisor note that the Monastir’s Environmental Management Plan (EMP) is a comprehensive document which identifies the key areas of risk and provides suitable methods to address the potential environmental issues. Areas to be addressed include the use of oil interceptors in the drainage systems, improvements to waste (liquid and solid) storage, and upgrades to the fuel storage areas to improve containment.

7. Environmental Hazard Management

Two successive winter bird surveys (one already carried out in 2008) will be commissioned in order to develop a bird management strategy based on ecological management (instead of bird scaring) for bird strike avoidance.

Hazardous Materials Management plans for these facilities exist and will be developed for Enfidha. Independent Fire Safety Audits have been completed for Monastir and will be completed for Enfidha. TAV intends to construct Enfidha to meet NFPA fire safety standards and will continue to operate Monastir to French Fire Codes.

8. Monitoring Program

TAV has a dedicated HS&E Manager working on site at Enfidha since February 2008 and requires each contractor to appoint an HS&E coordinator; a HSE Manager has been appointed at Monastir. An independent engineer has been appointed since May 2008 and is monitoring EMP implementation

during construction at Enfidha. As currently exists at Monastir, an HS&E Coordinator will be appointed at Enfidha for the operational phase of the airport.

Implementation of all EMP mitigation measures are thus monitored on an ongoing basis by a combination of in-house staff, independent consultants and the ANPE. TAV's management structure incorporates reporting lines for HS&E issues and management responsibility for these issues is diffused and formally defined in the company's structure. As currently exists at Monastir, a HS&E Coordinator will be appointed at Enfidha for the operational phase of the airport. A formal Environmental Management System (EMS) is expected to be launched in April 2008.

9. Public consultation and public disclosure

This project has been in the planning stage for several years and the regional authorities governing Hergla held 2 public meetings on the planned airport and regional development with affected communities of Enfidha and Hergla in 2005. The site is very sparsely populated and directly affected communities are relatively limited. Numerous meetings were held with landowners and residents of the Concession area explaining the expropriation process, a process started over 1 year ago. Based on the location and relative proximity of the town of Hergla to the Concession, the MESD required elimination of a second runway from the project to eliminate noise impacts on Hergla. Detailed EIA disclosure meetings have been held by TAV and the MESD on March 30, 2008. TAV, in coordination with the MESD and OACA, will review the feedback received during this consultation and incorporate relevant feedback into the project's EMP.

10. Complementary Initiatives

TAV intends to establish corporate wide ISO 14001 and OSHAS 18001 certification of its global airport HSE management systems by 2010.

The Government has developed a Master Plan for this region (Hergla-Selloum Development Plan) which includes development of a deep water Port, Tourism Zone and an Industrial Zone. Consultations on the proposed plans have occurred over the past several years and the project is well known at the local and national level.

A Cumulative Environmental Assessment and a Groundwater Study for the Master Plan are currently underway. The Enfidha Airport is not anticipated to have any negative impacts on surface or groundwater. While the project does include Government managed and implemented land acquisition and a small amount of resettlement (20 houses), this process is being managed through a very well defined process as mandated by Tunisian law and consistent with IFC Performance Standards.

Titled landowners are being compensated at independently negotiated market rates and all households will be given titled land adjacent to the concession. Tenancy and livelihoods are expected to be improved as part of this process as all families are being given titled plots adjacent to the Concession and will be compensated for structures and losses. TAV has presented plans to address the impacts and other requirements, and will, upon implementation of specific agreed measures, comply with the IFC Performance Standards on Social and Environmental Sustainability.

The Lenders's Technical Advisor (Mott MacDonald ("Motts")) has undertaken an independent review of the environmental and social aspects associated with the refurbishment and operation of Monastir Airport, and also with the construction and operation of the new Enfidha Airport. The Lenders's Technical and Environmental Consultant has noted that there should be a major socio-economic benefit in terms of employment both during construction and operations.

11. Conclusion

The new Enfidha airport requires considerable construction works both on-site and in the surrounding area. The existing land is of relatively low environmental value as it has been safeguarded for a new airport for some considerable time. Provided that the contractor and operator comply with the obligations of the Environmental Management Plan, then the direct impacts of the airport would be classed as Category B.

However, the airport will open up more of the coastline to development and the environmental and social impacts of any uncontrolled tourism development could, if not adequately controlled, might lead to some indirect impacts being attributed to the airport.

Site visits by the Lenders' Technical Advisor in May 2008 has confirmed that the project construction works are generally well managed, although some areas have been identified as needing attention, namely better storage of waste, improved housekeeping at the batching plants, and sampling of wastewater.

The continuation of the good work being undertaken by the HS&E Manager will enable matters to be controlled, especially as an environmental engineer has been assigned in May 2008 to help the HS&E manager in the implementation of the EMP.

Key environmental and social issues to address the construction works progress include:

- ongoing liaison with local residents and the government to ensure resettlement is appropriately addressed and completed to the satisfaction of all;
- ongoing public consultation and provision of information;
- further development of the future reinstatement plans for the borrow pit areas;
- ongoing design iteration/mitigation, where necessary, in relation to ongoing archeological information and bird survey results;
- ongoing assessment and monitoring of wastewater treatment to ensure appropriate functioning;
- ongoing training of all sub-contractors and TAV staff to ensure that environmental and social issues are communicate effectively.

The most important issues in relation to the Equator Principles appears to be indirect impact on tourism which will be boosted by the proposed airport and also robustness of the flood alleviation scheme in relation to potential sea level rise due to climate change.

12. References and contacts

Key documents reviewed by AfDB include:

- Environmental Impact Assessment for Enfidha International Airport, prepared by Comete Engineering, February 2008;
- Health Safety and Environment (HSE) Plan for Enfidha Airport, prepared by TAV construction, February 2008;
- TAV Construction – Corporate Environmental Policy, February 2008;
- Environmental Audit of the Monastir Aiport, prepared by CEFED, December 2007;
- Technical and Environmental Due Diligence Report Monastir and Enfidha Airports, Mott MacDonald, February 2008;
- BirdLife International and Association 'Les Amis Des Oiseaux' (AAO) – Tunisia Important Bird Area (IBA) Factsheets, 2008; and
- Resettlement Action Plan for Enfidha, March 2008, prepared by TAV in coordination with the Regional Director, Sousse, Ministry of Public Domain.

For enquiries about the project, please contact

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Local access of project documentation

The Enfidha EIA is available at: MESD offices Tunis, and TAV offices Tunis, Enfidha, and Monastir. The Monastir Environmental Audit is available at TAV offices in Tunis, Monastir and Enfidha. The RAP will be available at TAV offices in Tunis, Enfidha, and Monastir. Availability of the EIA, Audit and RAP at these locations will be announced during the March 30, 2008 meetings at Enfidha. For additional information, contact:

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The Enfidha EIA, Monastir Audit and RAP (when finalized) are available through the following link:
www.tavairports.com

Annexe A. Environmental and Social Management Plan. Septembre 2007

Annexe B. Environmental Monitoring Plan. September 2007

Annexe C. Institutional strengthening Plan. September 2007

Annexe A. Plan de Gestion Environnemental / Atténuation des impacts

Phase du projet	Impact environnemental potentiel	Mesures d'atténuation proposées	Responsabilités institutionnelles	Coût estimatifs (DT)
Phase avant la construction de l'aéroport	Démolition de quelques habitations en dur	Compensation des coûts d'expropriation	OACA	100.000 DT
Phase de construction de l'aéroport	Changement du paysage naturel (décapage, dénivèlement du terrain, aménagement, installation de chantier, évacuation des déchets)	Réhabilitation de la zone d'emprunt après achèvement des travaux d'excavation (aplanissement du terrain) Réintégration du site dans le paysage naturel (aménagement des espaces verts) La création d'une base vie afin de mieux gérer le personnel du chantier et les effets induits (eau, déchet, ...)	TAV	-
	Risques d'inondation de la future plateforme aéroportuaire pendant des crues exceptionnelles	Aménagement de deux canaux au Nord et au Sud du site pour dévier les eaux de ruissellement vers leurs exutoires naturels (sebkha de Halk El Menjel et sebkha de Sidi Kalifa) Aménagement de deux digues de ceinture au Nord et au Sud du site pour la protection de la plateforme aéroportuaire contre les risques d'inondation Maintient d'une voie d'eau de un (01) km entre le Port en Eau Profonde et la digue nord de l'aéroport. Une partie de la butte de la zone d'emprunt sera rétablie ou maintenue à la cote +5.60 m NGT et ce, afin de ne pas changer le cours des écoulements naturels et leur permettre de suivre leur trajet antérieur au projet.	TAV	Prévus par le projet
	Possibilité de contamination par les rejets de chantier	Mise en place au niveau des bassins de collecte des eaux pluviales de débourbeurs-déshuileurs pour la récupération des HC Décantation des EP avant rejet et curage régulier des bassins		Non prévus dans le projet initial
	Diminution de la superficie de recharge de la nappe	Mettre en place de deux stations de prétraitement compacte pour l'épuration des eaux usées issues du chantier	TAV	150.000 DT
	Possibilité de contamination par les rejets de chantier	Procéder à l'analyse de la qualité des eaux épurées avant rejet définitif pour s'assurer de leur conformité avec la norme NT106.002		

	Perturbation de la faune et la flore du milieu (Forêt El Madfoun) par les émissions	Installer le chantier dans la partie Nord-Est du site du projet afin de minimiser l'effet des émissions sonores sur la forêt	TAV	-
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	sonores et les vibrations	<p>Ouvrir une zone d'emprunt dans le site du projet afin de minimiser l'effet du bruit dû au trafic des engins de chantier</p> <p>Minimiser les émissions sonores par la limitation des déplacements dans les zones environnantes du projet et l'utilisation d'engins de chantier insonorisés</p>		
	Pollution atmosphérique due au trafic de poids lourds, au ravitaillement et à la maintenance des engins de chantier, au dégagement de poussières	<p>Entretien régulier des engins de chantier</p> <p>Arrosage des pistes par temps sec</p>	TAV	25.000 DT
	Augmentation des besoins en eau et en énergie dans la zone d'étude	<p>Branchement de la base vie au réseau d'adduction et de distribution de l'eau potable de la SONEDE</p> <p>Raccordement de la base vie au réseau de moyenne tension parcourant la zone limitrophe équipée par des postes de transformation dans les localités de Hergla et Enfidha</p>	<p>SONEDE</p> <p>STEG</p>	
	Augmentation de la quantité de déchets	<p>Elaboration d'un plan de gestion des déchets générés par l'activité du chantier :</p> <p>-collecte des déchets ménagers et leur transport vers la décharge la plus proche du site du projet -collecte des huiles usagées et leur transport à la Sotulub pour une éventuelle récupération -collecte des matériaux de construction</p> <p>et des déblais excédentaires et leur envoi vers la décharge contrôlée - réutilisation de la terre végétale décapée dans l'aménagement des espaces verts</p>	TAV	180.000 DT/an
	Perturbation du trafic sur les routes d'accès aux zones d'emprunt des matériaux de construction	<p>-Elaboration d'un plan de circulation routière spécifique au chantier</p> <p>-Renforcement de la signalisation au niveau des voies d'accès concernées</p> <p>-Renforcement des mesures de contrôle</p>	TAV + Tunisie Autoroute + MEHAT (DGPC) + Ministère de l'Intérieur	20.000 DT

	Augmentation des risques d'accidents	et de sécurité		
Phase d'exploitation de l'aéroport	Pollution des eaux de ruissellement provenant des aires imperméabilisées (aires de stationnement, pistes, aires d'entretien des avions, zones de stockage des carburants, ...)	-Mise en place d'un réseau séparatif : eaux usées - eaux pluviales -Distribution du kérosène par un système d'oléoréseau -Raccordement de la zone de lavage des avions au réseau des eaux usées par temps sec pour le traitement dans la station d'épuration et au réseau des eaux pluviales par temps de pluie - Traitement des effluents issus des	TAV	Prévus par le projet
		ateliers de réparation des avions et des stations de service avant leur rejet - Mobilisation d'équipements capables d'absorber les rejets accidentels d'hydrocarbures afin d'éviter le plus possible la présence des hydrocarbures dans les eaux pluviales ; -La décantation des matières en suspension dans le bassin d'écroulement nord avant le rejet des eaux pluviales vers l'exutoire naturel situé dans la partie nord de la sebkha de Assa Djeriba. -Mise en place de débourbeurs - déshuileurs le long du réseau de collecte et d'évacuation des eaux pluviales et au niveau du bassin d'encrêtement -Prise en charge des huiles usagées récupérées par une société spécialisée pour un éventuel recyclage		
	Nuisances sonores pour les riverains (population additionnelle) surtout en période nocturne	Elaboration d'un PEB pour toute la région	Commission d'urbanisme	-
	Emissions atmosphériques engendrées par le trafic aérien d'une part et le trafic routier induit par l'activité aéroportuaire d'autre part	Mise en place d'une station de mesure permanente pour le contrôle de la qualité de l'air dans la région	ANPE	-
	Augmentation des besoins en eau et en énergie dans la zone d'étude	Branchement de l'aéroport aux différents réseaux concessionnaires	Concessionnaire (SONEDE, STEG Tunisie TELECOM)	Prévu par le projet
	Possibilité de contamination du sol et des eaux par les rejets d'eaux sanitaires	Acheminement des eaux usées issues de l'aéroport vers la station d'épuration d'Enfidha-Hergla pour un éventuel traitement	TAV	150.000 DT
	Augmentation de la quantité de déchets (activité aéroportuaire + population additionnelle)	Prévoir l'augmentation de la capacité de traitement des déchets dans la région	ANGED	-

Le coût de total des mesures d'atténuation : 196.000 DT/an.

Annex B. Plan de suivi environnemental

Le suivi de la réalisation et de l'exploitation d'un aéroport international constitue une composante essentielle et indispensable pour assurer une bonne gestion des différentes phases de construction et d'exploitation du projet.

Lors de la phase de construction

Durant la période de construction de l'aéroport international d'Enfidha, l'entreprise chargée des travaux mettra en place un plan de suivi des travaux de réalisation qui se base sur :

- Le suivi des différentes activités de réalisation de l'aéroport et de la conformité des travaux à exécuter avec les normes connues et prescrites dans le cahier des charges ;
- Le suivi de l'exécution des mesures de protection de l'environnement et notamment l'aménagement des deux canaux de déviation des eaux pluviales et des deux digues de protection de la plateforme aéroportuaire contre les inondations, l'aménagement d'un réseau de collecte des eaux usées et l'aménagement d'un collecteur des eaux de ruissellement issues de la plateforme pour leur déviation vers la sebkha ;
- Le suivi mensuel de la qualité des eaux usées traitées de la station : analyses physico-chimiques des eaux à la sortie de la station : pH, DBO5, DCO, huiles et graisses, MES, azote et phosphore ;
- Le suivi mensuel de la qualité des eaux de ruissellement : huiles et graisses, hydrocarbures, pH, DBO5, DCO, quelques métaux (Pb, Zn, Cu, Fe, Al). □ La mise en place d'un plan de gestion des solides (tri, collecte et enlèvement) générés par les travaux et par le centre de vie ;
- La mise en place d'un plan de circulation routière pour le trafic du chantier.

Lors de la phase d'exploitation

Durant la période d'exploitation de l'aéroport international d'Enfidha, le maître de l'ouvrage mettra en place un plan de suivi et surveillance des différentes activités. Ce plan de suivi de la gestion comportera une composante principale relative à la mise en place d'un plan d'intervention d'urgence en cas d'accident ou de sinistre.

Le plan de gestion de l'exploitation de l'aéroport international d'Enfidha comportera :

- Suivi, entretien et maintenance des systèmes de drainage des eaux pluviales. □ La mise en place d'un système d'intervention d'urgence en cas d'accident (incendie, accident d'exploitation, épandage accidentel de carburants, ...) ;
- La mise en place d'un Plan d'Exposition au Bruit (PEB) qui définit avec précision les zones de bruit selon les nuisances sonores aux quelles elles sont exposées et la surveillance des trajectoires de circulation aérienne qui ont été préalablement construites afin de limiter les effets sonores sur les populations actuelles et futures ;
- La mise en place d'un système de contrôle de la qualité de l'air (ANPE) : poussières, particules fines, CO, NOx et SOx ;
- Suivi de la qualité des eaux de ruissellement au niveau de l'exécutoire vers la sebkha et au niveau des rejets ultimes vers la mer (la fréquence des opérations de suivi varie selon la saison : suivi mensuel par temps sec et suivi quotidien par temps pluvieux) ;
- Suivi quotidien et trimestriel de la qualité des eaux usées après traitement à la sortie de la station d'épuration : analyses physico-chimiques : pH, DBO5, DCO, huiles et graisses, MES, azote, phosphore et quelques métaux (Pb, Zn, Cu, Fe, Al) ;
- Suivi trimestriel de la qualité des eaux marines: analyses bactériologiques des eaux de mer

(coliformes fécaux et streptocoques) au niveau des berges ainsi qu'en profondeur (à 2m et à 3m) ;

- Suivi des opérations de tri, collecte et transfert des déchets solides vers la décharge contrôlée.

PLAN DE GESTION ENVIRONNEMENTAL (PGE) / B- SUIVI

Impact	Paramètres de suivi	Endroit	Type de contrôle (méthodes et équipements)	Fréquence et mesure	Norme applicable	Responsabilités institutionnelles	Coût estimatifs (DT)
Phase de construction							
Qualité des eaux de ruissellement	Huiles et graisses Hydrocar. pH DBO DCO Métaux	Sortie des bassins de collecte des EP	Analyses des paramètres de pollution de l'eau	01 fois/mois		TAV	5000 DT/an
Qualité des eaux usées après traitement	pH DBO5 DCO Huiles et graisses MES Azote phosphore	Sortie des stations compactes	Analyses des paramètres de pollution de l'eau	01 fois/mois	NT 106.002	TAV	5000 DT/an
Gestion des déchets (440 t/an)	Collecte Transport et élimination		Application d'un plan de gestion des déchets	01 fois/j	Loi n°96-41 du 10 juin 1996	TAV	26 500 DT/an4
Trafic routier	Circulation routière	Voies d'accès aux sites d'emprunt			Plan de circulation spécifique	TAV et Police de circulation	-
Phase d'exploitation							
Pollution des eaux de ruissellement	DBO DCO Hydrocar. MES Métaux Nitrates Nitrites Phosphate	Exécutoires des collecteurs vers les sebkhas / rejets ultimes dans la mer	Analyses des paramètres de pollution de l'eau	01 fois/mois par temps sec 01 fois/j par temps pluvieux 01 fois/an		TAV	5000 DT/an
Qualité des effluents après traitement	pH DBO5 DCO Huiles et	Sortie de la station d'épuration	Analyses des paramètres de pollution de l'eau	01 fois/j	NT 106.002	ONAS ou une société spécialisée sous le contrôle de	5000 DT/an

	graisses MES					l'ONAS	
	Métaux			01			

	Azote phosphore			fois/trimestre			
Qualité des eaux marines	Coliformes fécaux streptocoques	Sur les berges et en profondeur (2m et 3m)	Analyses bactériologiques des eaux de mer	01 fois/trimestre		APAL	1000 DT/an
Bruits	Décibels (dB)	Dans les habitations les plus proches	Mesure du niveau sonore Mise en place d'un PEB Surveillance des trajectoires de circulation	02 fois/an		TAV Ministère du transport et TAV OACA	1000 DT/an - -
Pollution de l'air	Poussières Particules fines CO NOx SOx	Station de mesures permanente	Mesure du niveau de pollution atmosphérique	04 fois/an		ANPE	-
Gestion des déchets solides	Collecte Transport et élimination		Application d'un plan de gestion des déchets	01 fois/j	Loi n°96-41 du 10 juin 1996	TAV	180000 DT/an à l'ouverture et 1 MDT/t en fin de concession

Le coût total du plan de suivi : 250 000 DT/an à l'ouverture et augmente progressivement pour atteindre 1 070 000 DT/an en fin de concession.

Annexe C. Plan de renforcement institutionnel

Le renforcement institutionnel comprend entre autres le renforcement des capacités de l'exploitant de l'aéroport en matière de la mise en œuvre et le suivi du plan de gestion environnemental (PGE), ainsi qu'en matière des techniques d'exploitation.

PLAN DE GESTION ENVIRONNEMENTAL (PGE) C- RENFORCEMENT INSTITUTIONNEL

Activité	Thème	Planification	Responsabilité	Calendrier	Coût estimatif (DT)
Renforcement des capacités de la TAV dans la mise en œuvre et le suivi du PGE pendant la période des travaux	Suivi et monitoring du PGE Contrôle des entreprises Formation sur les lois et réglementations en matière de protection de l'environnement et de gestion des déchets solides et liquides	05 cadres techniques	TAV	2007-2008	100.000 DT/an
Renforcement des capacités techniques d'exploitation	Formation sur les mesures d'atténuation du bruit (PEB) Affectation du personnel permanent pour le contrôle de la pollution sonore et atmosphérique	08 cadres techniques	TAV	2010	135.000 DT/an (après l'ouverture de la 2ème piste, ce coût passera à 250.000 DT/an)
	Affectation du personnel permanent pour les aspects liés à la gestion des eaux usées, des déchets solides et des huiles usagées	01 cadre technique 06 agents d'inspection 03 agents administratifs	TAV	2010	130.000 DT/an en 1ère phase (260.000 DT/an en fin de concession)

Le coût total du renforcement institutionnel : 365.000 DT/an

COÛT TOTAL DU PLAN DE GESTION ENVIRONNEMENTAL (PGE)

Le coût du plan de gestion environnementale a été évalué à huit cent seize mille dinars par an (816.000 DT/an) et augmente progressivement à un million six cent trente six mille dinars par an (1.636.000 DT/an), y sont inclus dans ce coût les mesures d'atténuation, le suivi et le contrôle, le renforcement institutionnel et la formation des opérateurs pour les différentes phases de l'aéroport international du Centre-Est à Enfidha.

Tableau de l'estimation du coût total du Plan des Gestion Environnementale (PGE)

	Coûts annuels (DT)
Atténuations	196.000
Suivi	De 255.000 à 1.075.000
Institutionnels	365.000
TOTAL	De 816.000 à 1.636.000