



MINISTRY OF AGRICULTURE & MARITIME FISHERIES

SAÏSS IRRIGATION PROJECT, MOROCCO

Non-Technical Summary

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1. INTRODUCTION

- 1.1 The Ministry of Agriculture and Maritime Fisheries (MAMF) is proposing to develop a water conveyance and irrigation scheme to deliver an average of 100 million cubic meters (Mm³) annually from the M'Dez Dam, to the Saïss Agricultural Plain, located between Meknes and Fes, Morocco.
- 1.2 The project will be implemented by a *Project Implementation Unit* ("PIU") that will be set up by MAMF.
- 1.3 The Project is principally intended to reduce agricultural irrigation abstraction of groundwater from the Saïss basin, which is presently unsustainable.

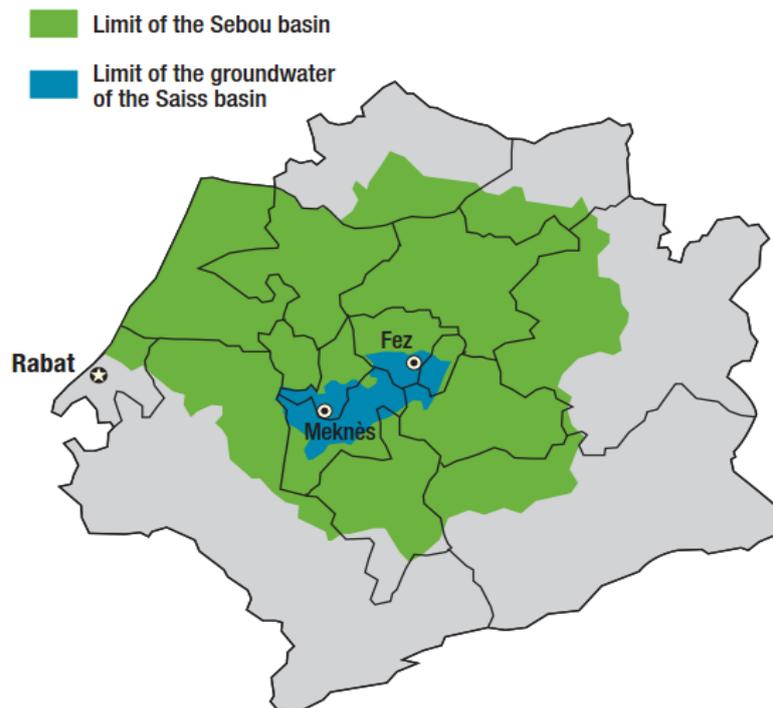


Figure 1.1 (Above): Limit of Sebou Basin and Saïss Basin

The Sebou basin comprises an area of c. 40,000 sqm, representing 6% of the national territory, and encompasses 30% of Morocco's surface water resources. It is drained by the *Sebou River* that originates in the Middle Atlas.

- 1.4 This Non-Technical Summary (NTS) provides a description of the project and describes the potential benefits and impacts associated with its construction and operation. It also describes how these will be mitigated and managed through all phases of the project. In addition, it also provides a summary of the public consultation activities and the approach to future stakeholder engagement.

2. WHAT DOES THIS PROJECT INCLUDE?

- 2.2 The water will be supplied from the M'Dez Dam ("*barrage de M'Dez*"), located within the Higher Sebou Basin, on the Sebou River ("*Oued Sebou*"). The M'Dez Dam has a designated retention capacity of 700Mm³, among which, an average of 100 million m³ will be released for irrigation annually.

Table 1-1 Overview of Saïss Irrigation Project Components

Phase	Component	Proponent	Finance
I	<p>Intake in M'Dez dam reservoir and Main Transfer Pipeline Section 1 (17km)</p> <p>The main transfer pipeline has been designed to convey a maximum discharge of 15m³/s, allowing a supply of a maximum of up to 30,000 Hectares under irrigation with a gross irrigation duty of 0.5L/second/hectare.</p>	MAPM	Saudi Development Fund
II	<p>Main Transfer Pipeline Section 2 (43km)</p> <p>Section II of comprises a total of 43km of pipeline of 3.0 or 3.2m diameter – depending upon the final design adopted) and a number of hydraulic structures.</p>		EBRD and Government of Morocco
III	<p>Main Distribution Pipeline (90km)</p> <p>The Main Distribution Pipeline (“conduite d’adduction” or CA”) conveys water within the project irrigation perimeter before reaching the irrigation sectors. The adopted solution consists in a main single pipe, 90km long (0.7-3.2m diameter), supplying 12 primary pipes (“Conduites primaires” labelled “CP”).</p>		EBRD and Government of Morocco
	<p>Primary Distribution Pipelines (92.7km)</p> <p>The Primary Distribution Pipelines, (“conduites primaires” or “CP”) which deliver water from the main distribution pipeline and convey it to the pumping plants or the Irrigation Sectors. The total length of the primary pipes is 92.7km (0.25-1.8m diameter).</p>	Government of Morocco	
	<p>Secondary Distribution Pipelines</p> <p>The Secondary Distribution Pipelines (“conduites secondaires”), which convey water to Irrigation Blocks within each Irrigation Sector.</p> <p>The final design of the Secondary Pipeline will be completed by the Operator after award of Contract.</p>	Private Financing	

3. WHY IS THIS DEVELOPMENT REQUIRED?

- 3.1 With annual renewable water resources totaling 22,000 million m³, corresponding to 730m³/inhabitant, Morocco is a water stressed country according to the definition of the United Nations (<1,000m³/inhabitant). Associated with the national water scarcity, there are concerns over the potential vulnerability and socio-economic consequences exposed on the agricultural sector –

which is central to Morocco's economy, as evidenced by the strong correlation between GDP and agriculture GDP (agriculture accounted for 15.6% of GDP in 2014).

- 3.2 During 2000-03, it was identified by MEMW (Ministry of Energy, Mines and Water, Directorate of Water) that the Saïss Aquifer water table was falling. Further studies conducted during 2009 determined that the Saïss Aquifer is experiencing a net loss of 100 million m³/year, due both to long-term decrease in rainfall, together with increased demand.
- 3.3 At current exploitation rates, it has been reported that the aquifer is estimated to be completely depleted within 25 years. As such, the '*No Project Alternative*', i.e. no intervention by the Project, would result in significant negative impacts to the Saïss aquifer and the people who depend upon it. It is noted that agriculture is the main economic activity of the 500,000 people (excluding urban areas) living in the Saïss plain.
- 3.4 The Project will substitute agricultural groundwater abstraction from the Saïss aquifer with conveyed water from the M'Dez Dam, which is currently under construction. The solution will achieve the objective of safeguarding Fez-Meknes aquifer water table and preserving the Saïss Plain agricultural activity.
- 3.5 This option to transfer water from M'Dez dam reservoir (already under construction as a flood control structure) was selected after an '*Alternatives Analysis*' by the Moroccan Technical Committees, which concluded that the proposed Project results in 40% lower investment costs and 500% lower energy costs, as compared to other alternatives.
- 3.6 The option to transfer water from M'Dez dam reservoir was also selected on the basis that:
- the average volume of water that will be available from the M'Dez Dam, will be at least equal to the shortfall within the Saïss Aquifer (i.e. 100 million m³/year);
 - the construction of the M'Dez Dam for flood control purposes makes available a reliable and regulated source of surface water on an inter-annual basis; and,
 - the location of the M'Dez Dam allows for an entirely gravity-fed transfer of surface water to the Saïss agricultural plain.

4. WHAT IS THE ROUTE OF THE CONVEYANCE PIPELINE?

- 4.1 The *preliminary* route identification has been performed for Phases I and II, and the main distribution pipeline of Phase III. The preliminary route identification employed a visual reconnaissance of the pipeline route in order to follow existing roads to the extent possible to make use of the existing state road easement (state-owned land) for the construction footprint of the Project and to avoid protected areas such as forests.
- 4.2 The final routing of all of the pipelines will remain consistent with this approach and, in particular, will avoid any physical resettlement and need for removal of buildings. MAMF is currently undertaking a more detailed topographical survey to determine the final route. The exact location of the pipeline will be determined by a team of engineers, environmentalists and social specialists, with the objective to optimize costs while minimizing environmental and social impacts.
- 4.3 The acquisition process has therefore not started and land owners have not been engaged to date. Expropriation is expected to begin in Q4 2016, and be finalised by Q4 2017. Expropriation will follow the procedure as described in Law no 7-81 related to expropriation for cause of public utility.
- 4.6 Within the Saïss Agricultural Plain (Phase III), the service area of the Project will be determined on the basis of a subscription open to farmers from the Saïss plain.

5. WHAT ARE THE PROJECT BENEFITS?

- 5.1 In terms of benefits, the Project will:
- **Improve Resource Efficiency**, through the sustainable management and reduction of groundwater abstractions. This will be complimented by other initiatives by MAMF to promote efficient irrigation techniques, such as drip-irrigation, throughout the Saïss agricultural plain.

- **Increased Value Added and Intensification of Agriculture** by provision of a sustainable and dependable source of irrigation Water. The security and volume of water will allow further development of high value crops.
- **Improved Revenues for Farmers** resulting through more efficient farming practices, high value crops and reduced exposure to rising electricity costs associated with borehole pumping. These benefits are anticipated to be widespread throughout the Saïss plain, as the Project will allow the direct participation of around 2,849 commercial and subsistence farms. This represents 40% of the total number of farms in the Saïss Agricultural Plain with existing private irrigation, and 12% of all farms in the Saïss Agricultural Plain.

5.2 The transition impacts of the Project include:

- **Improved Regulation of the Saïss Aquifer Resource**, facilitated via EBRD Technical Assistance, which will establish the tools and mechanisms to better manage the Saïss Aquifer resource, using a combination of technical / instrumental monitoring, contractual regulation of water user and management / administrative capacity.
- **Improved Private Sector Participation** through the successful contracting and implementation of the PPP through a *PPP Certification Programme* and training of MAMF's PPP management.
- **Public Participation Programme focusing on Economic Inclusion and Gender**. The programme will also encourage the adoption of more efficient and sustainable irrigation practices by water users; and, improved tariff collection rates. Specifically, in relation to Gender:
 - ✓ Less than 10% of farms within the Saïss Plain are led/owned by women. This means that within the Project irrigated area, there is likely to be no more than an estimated 67 farms led by women. The Project will include specific measures to promote access of women, in line with the principles of the Green Maroc Plan and National Development Strategy 2010-20.
 - ✓ The Project has the potential to increase the adoption of sustainable water management and drip-irrigation techniques on women-led subsistence farms, leading to direct improved economic opportunities.

6. WHAT ARE THE PROJECT IMPACTS & MITIGATION?

6.1 A collated summary of the principal environmental & social risks, together with the proposed mitigation is applied under Table 6.1, below.

Table 6.1: Summary of Principal Project Impacts & Mitigation

Potential Impact & Description	Mitigation
<p>Waste Production</p> <p>An estimated 14,400 tonnes of plastic irrigation tubing waste will be produced every 3 years during operation, as the working life of the PVC tubing is typically 3 – 4 years. At present, the nearest specialised waste recycling facilities are located at Casablanca.</p>	<p>Establishment of Waste Management Contract \ Agreement for Operation</p> <p>The collection and transport of wastes is the responsibility of the Local Authority (Commune) and for these quantities of waste, agreements will be required for collection and recycling between the waste producers and the Local Authorities to prevent fly-tipping of used tubing.</p>

Potential Impact & Description	Mitigation
<p>Biodiversity</p> <p>Upstream</p> <p>Upstream of the M'Dez Dam reservoir, the upper Sebou catchment, will not be adversely affected by the Project.</p> <p>Ecological Flow of Sebou River</p> <p>Downstream, from M'Dez Dam to Allal al Fassi Dam (located 28km downstream – straight line distance), the river flow will be reduced and limited to the environmental flow (i.e. a regulated volume of water that will be allowed to constantly pass the M'Dez Dam) on the first kilometers. Thereafter, the river is fed by a number of permanent tributaries and springs (notably, the <i>Aïn Sebou</i> spring).</p> <p>Legally Protected and Internationally Recognised Areas</p> <p>Within the Project area <i>Dwiyate SIBE</i> (Site of Biological and Ecological Interest) and <i>Important Bird Area</i> is the only site that requires specific attention. <i>Dwiyate</i> is an artificial wetland located at the northern edge of the Saïss plain, in an agricultural sector that might be supplied by the Project.</p> <p>However, it is considered that the risk is low due to the pipeline alignment being 15km to the south of <i>Dwiyate</i>, and principally, the risk is restricted to the potential for negative impacts during the distribution network construction.</p> <p>Protected or Sensitive Species and Habitats</p> <p>The available desktop and baseline studies have identified a number of species within the Project area, that are considered 'vulnerable' or 'endangered' under the IUCN:</p> <ul style="list-style-type: none"> • Three reptile species, comprising (<i>Psammotromus microdactylus</i> - EN, <i>Salamandra algira</i> – VU and <i>Testudo graeca</i> – VU). • One chiropter species, <i>Rhinolophus mehelyi</i> – VU, that is mainly threatened by the loss of roosting sites resulting from disturbance of caves and abandoned mines – the species does not utilize artificial roosts. • One bird species, <i>Neophron percnopterus</i> – EN, which is a raptor that breeds in Morocco and has been affected worldwide by a number of factors, including loss of breeding sites (typically cliffs, caves or ledges). 	<p>In relation to the establishment of an appropriate environmental flow, the Technical Support that will be provided by EBRD in the frame of the Project will allow resources to be mobilized to define the minimum flow requirements.</p> <p>The final alignments of pipelines are not yet fixed, and therefore, the principal mitigation in the case of biodiversity risks is the adoption of the mitigation hierarchy during the final design, engineering and implementation of the Project.</p> <p>In particular, a <i>Biodiversity Specialist</i> shall be appointed to undertake any necessary field surveys to inform the micro-citing, sympathetic timing, or any other such mitigation required to preferably avoid, or minimise, potential impacts to biodiversity.</p> <p>This is particularly pertinent with respect to the identified <i>Protected of Sensitive Species and Habitats</i>, since the Project is unlikely to directly impact upon associated habitats, with any disturbance being temporary and associated with construction works. An exception to this is the species of reptiles, which may be at risk should they coincide with work areas. To mitigate this risk, it is planned to conduct training and awareness raising of the construction staff about environmental protection and protected species: this is an approach that EBRD has followed on other projects with linear infrastructure in Morocco, and it has proven to be an efficient way to ensure that workers, as a minimum, do not voluntarily kill the reptiles they happen to see during construction works and, where possible, remove them. This awareness raising activity is included in the <i>Stakeholder Engagement Plan</i> prepared for the Project.</p> <p>In relation to <i>Dwiyate SIBE</i>, it is noted that:</p> <ul style="list-style-type: none"> • the <i>Dwiyate SIBE</i> is located within a farm territory, which is not easily accessible and is protected by its Royal status ('Domaine Royal', which prevents public access); • the PPP contractor will provide access to the water infrastructure at the boundary of agricultural parcels, not inside; and, • the <i>Dwiyate</i> farm is located on the edge of the Saïss plain, and therefore, there will be no necessity to cross its territory.

Potential Impact & Description	Mitigation
<p>Land Acquisition & Physical Disturbance</p> <p>The Project is not expected to trigger physical resettlement. Following the usual practice in Morocco for pipeline developments, MAMF have confirmed that the project is being designed to avoid any physical resettlement. However, there will be a need to secure the Project's Right of Way (c. 20m wide, including the necessary maintenance access).</p> <p>With regards to Phase III, current feasibility studies indicate that the adopted layout will require a total of 597.6ha to be expropriated (183.6ha for the main distribution pipeline and 414ha for the primary pipeline).</p> <p>The irrigation project will require land acquisition for the installation of the conveyance pipeline, within Phase I and Phase II.</p> <p>During the construction period, the physical impacts of the Project will essentially be related to the presence of a rolling work site, with an open trench of around 1km and associated temporary infrastructures, such as roads and storage areas. Once the pipeline is laid, the corresponding section of the trench will be kept open until pressure tests are performed, prior to closing of the trench. The Project's 150km of pipeline will be laid over the course of 4.5 years, meaning that an area that is located on the pipeline alignment will, on average, be physically impacted for a period of 10 days.</p> <p>Once the pipeline is laid and the trench closed up, grazing and agricultural activities will be authorized. During the operational period, impacts will be limited to temporary maintenance and repair works, such as addressing a leak.</p>	<p>A preliminary Land Expropriation Framework (LEF) has been developed for the Project and will form the basis for the final Land Expropriation Plan (LEP).</p> <p>MAPM will work with the appropriate surveyor and consultant groups experienced in carrying out expropriation activities at the national level, and it will also retain the expert services of an international advisor experienced in the development of best practice expropriation plans, in order to ensure all the necessary information is collected, structured and evaluated in the most effective and comprehensive manner, and that a robust LEP is prepared that is commensurate with the impacts caused by the Project's land-take.</p> <p>This independent advisor will support the MAPM and PIU in developing, implementing and reviewing the LEP and build their capacity to manage the process in line with EBRD's Environmental & Social Policy (Performance Requirement 5 and 10) over the entire duration of the expropriation and livelihood restoration period.</p> <p>With the assistance of a social expert familiar with the Moroccan expropriation process as well as the implementation of international standards, a land expropriation plan that complies with Moroccan regulations and satisfies EBRD's Environmental & Social Policy. This Plan will also be comprised of a brochure to inform and consult with the stakeholders affected by the expropriation process.</p> <p>A Public Consultation Plan (PCP), including a grievance mechanism, has been prepared for the Project that includes consultation requirements related to the land acquisition process, and that will need to be finalised by the MAMF.</p>
<p>Labour Management</p> <p>The development of the Project will require a significant worker force – an estimated 3,000 jobs are anticipated to be created. It is reported that preference will be given to local recruitment.</p> <p>Human resources within the MAMF are managed in accordance with the Moroccan Labour Code, which is relatively well-developed and progressive; adequately covering most of the requirements of EBRD in terms of Labour and Working conditions. Child labour, forced labour, non-discrimination are covered comprehensively in the Labour code. A Contractor has yet to be appointed. The Project Developer and Contractors will need to adopt thorough management policies and procedures - ranging from recruitment; worker accommodation; worker organisations; retrenchment; and, worker organisations - in order manage potential risks associated with Labour Management.</p>	<p>In order to mitigate labour management risks within the Contractor and sub-contractor chain, the Lenders Requirements will need to be integrated in the tendering process for both construction and operations contracts. In particular, requirements shall include:</p> <ul style="list-style-type: none"> • Comply with the Moroccan labour code and with EBRD's requirements concerning working conditions, and with the EBRD/IFC guidance on worker accommodation. Audit contractors and sub-contractors against these requirements. • Include in the tendering documents the establishment of a structured framework accessible to all contract workers that allows for the receipt of workers' requests or grievances. • Include conditions in service contracts with enterprises involved in the Project requiring (i) an assessment of the risks (health and safety, and working conditions) to which security staff will be exposed, carried out prior to hiring safety or security personnel and (ii) the implementation of the necessary preventive actions to eliminate any significant risks. <p>In addition to the above, a Complaints Mechanism, accessible to all employees and all subcontractor workers, shall be developed and implemented. This mechanism shall be prepared prior to the commencement of construction works.</p>
<p>Cultural Heritage</p> <p>The National Heritage Registry available on the Ministry of Cultures website indicates 33 sites in the Wilaya of Meknes. With regards to the Project footprint, the majority of the sites are recorded in either Meknes, or north of the Project at Volubilis, where there are Roman Ruins. As such, based on the Ministry of Culture records, the risk for the Project is considered low.</p>	<p>While the Project will cross territories that are not known to be particularly rich from an archaeological perspective, a chance find procedure will be prepared for the Project, as a standard requirement for this type of linear infrastructure project, and relevant training will be provided to construction contractors and their workers.</p>

Potential Impact & Description	Mitigation
<p>Health & Safety</p> <p>Occupational health risks are largely related to the presence of asbestos within existing infrastructure, which could potentially be released during connection works as part of this Project, if not appropriately managed. In addition, Community Health & Safety risks are present through potential collisions/traffic incidents; construction-phase impacts to water quality should a pollution event occur; and, increased exposure to airborne pesticide sprays where a change of crops require additional/change of application, and also, increased pesticide use associated with additional land being brought into production.</p>	<p>The Private Partner, prior to the engagement (direct or via a service provider) of staff, conduct a study of the risks (health, safety and working conditions) and on this basis, prepare a risk management plan to implement this activity.</p> <p>With regards to the potential risks associated with Asbestos Containing Materials; asbestos surveys, in accordance with international practice, shall be undertaken to ensure that materials potentially containing asbestos are identified and suitable mitigation and detailed management planning / formal control adopted during the construction works.</p> <p>Specific provisions shall also be included within the Project's Waste Management Plan, to ensure that wastes potentially containing asbestos are suitably handled, transported and deposited, in accordance with international practice and national requirements.</p>

6.3 With regards to **Greenhouse Gas (GHG) Emissions**, it is anticipated that during the operational period, the Project will result in a slight increase in GHG emissions, estimated to be a maximum of c.30,000 tonnes CO_{2e}/year. However, it is noted that this value conservatively assumed that 100% of the M'Dez supply could otherwise be turbined for power generation, and also, that the 'lost' generation is being replaced at a grid factor equivalent to Morocco's current power generation mix throughout the duration of the Project (i.e. fossil fuel dependent – currently being 85% of installed power generating capacity - with no account for further development of renewable component).

6.4 The Project is presently entering the final stages of design and engineering. During this process, further environmental and social assessment and mitigation will be completed in order to implement the principles of the 'mitigation hierarchy', avoiding potential environmental and social impacts all together where possible, and mitigating the residual impacts through micro-citing etc.

7. HOW WILL THE PROJECT ENSURE EFFECTIVE MANAGEMENT AND MONITORING OF IMPACTS?

7.1 In relation to the execution of the **Land Expropriation Plan (LEP)**, MAMF will be responsible for the implementation of all aspects of the LEP, which will have three key stages:

- 1) Survey and meetings are conducted.
- 2) Development and implementation of the LEP including payment of compensation in compliance with Moroccan Legislation.
- 3) Monitoring and reporting progress of the LEP.

7.2 The budget needed for the implementation of the LEP will be established after the completion of the census activities, once the number of affected people is confirmed. The budget will cover land acquisition, compensation, livelihood restoration, monitoring and evaluation as well as contingencies and administrative expenses. The cost of livelihood restoration will be included in the overall costs of the Project. Specific monitoring measures are included to ensure that income and living standards of affected people are restored to pre-project levels or improved. Monitoring indicators will include the number of compensation agreements signed, the number of affected people enrolled in livelihood restoration measures, spending on land acquisition and livelihood restoration, and the number and types of grievances received and resolved.

8. STAKEHOLDER ENGAGEMENT & PUBLIC CONSULTATION

8.1 **A Public Consultation Plan (PCP)** has been developed to ensure the timely provision of information and engagement in meaningful dialog with Project Affected People and other interested parties. The PCP identifies stakeholders and a programme for information disclosure and consultation with the identified groups, taking account of vulnerable people and specific measures to ensure their inclusion in the process. The presence of native Tamazight speakers is likely in some areas of the Middle-Atlas crossed by Phases I and II of the pipeline, and stakeholder engagement will take account of the Tamazight dialect spoken in these areas of the Project and

ensure information disclosure and consultation is carried out in an accessible and culturally appropriate manner.

8.2 The PCP also includes:

- a **formal grievance mechanism** to be used by stakeholders (internal and external) for dealing with complaints, concerns, queries and comments. It will be reviewed and updated on a regular basis; and,
- coordination with the EBRD-funded **Technical Cooperation Project for Supporting Women's Economic Inclusion in the Saïss Region through Sustainable Commercial Agriculture**. This coordination will build upon and support the integration of social issues related to water management, such as barriers faced by particular user groups, for example, women, in the development of proposed irrigation technologies and practices.

8.3 The PCP will be used as an input to the development of a **Stakeholder Participation Programme** (SPP) covering the whole of the Saïss plain. The SPP will be aimed at encouraging the adoption of more efficient and sustainable irrigation practices by water users, increasing awareness of water users' legal rights and obligations, and also effectively communicating the institutional changes underway within the Saïss Plain to assist in an effective transition.

9. FURTHER INFORMATION

9.1 Contact information for this project is provided below:

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