I. Introduction and Context

Country Context

As a semi-arid Mediterranean country, Tunisia faces serious challenges to manage water. Current annual availability is only 425 m³ per capita, compared to a regional per capita average of 1,100 m³, and a world average of 6,600 m³. Rainfall patterns are also highly variable across time and across different parts of the country with most of the rainfall concentrated in the North.

Water resources management is a strategic issue for Tunisia. Decades of sustained investment in the sector have allowed the country to become one of the most advanced countries in the MENA region, in terms of water management. It has achieved remarkable results in water supply and sanitation, with nationwide access to potable water exceeding 97%, and 88% of urban households connected to sewers. Almost all of the sewage collected (240 million m³ per year) is treated by the national sewerage utility ONAS through a network of 110 wastewater treatment plants. The country has also made considerable efforts to mobilize its limited water resources to promote irrigation, in order to foster employment and economic development in rural areas. Currently, agriculture employs more than 25% of the national workforce, and uses 80% of the country’s water resources.

In recent years, Tunisia has been facing a water crisis of major magnitude. Continuous pressure to support employment in rural areas through the development of new irrigation perimeters has exacerbated the over-exploitation of groundwater aquifers in several regions. Strong urban growth (especially in the Greater Tunis area) is increasing the demand for urban potable water, and it is expected that the nationwide share of water use for potable supply will increase from about 13% in 2010 to about 18% by 2030. The country is expected to be seriously affected by the impact of climate change. All models concur that there will be significant reduction in available water resources in the future. Additionally, diffuse pollution from agricultural drainage and treated or untreated wastewater discharge threaten the coastal and marine ecosystems on the Tunisian shores, especially in the Gulf of Tunis (with 2.3 million people and 86% of the volume of wastewater collected nationwide) and Gabes, resulting in adverse economic and environmental impacts. The Tunisian coast has been identified as a pollution “hot spot” for priority investments under the Strategic Action Program for the Mediterranean basin (SAP MED), the Strategic Action Program of the Mediterranean Action Plan (SAP-MAP) under the Mediterranean Sea Large Marine Ecosystem Strategic Partnership, a joint initiative of the countries of the Mediterranean Sea basin.

Sectoral and Institutional Context
Against this background of increasing water scarcity and the importance of the agricultural sector as a generator of rural employment, Tunisia needs to develop a strategy to avoid the economic and social consequences of a major water crisis. Promotion of the use of treated wastewater as a non-conventional source of water for agriculture has been identified as such a strategic priority in the Xth National Development Plan (2007-2011), which sets a goal of increasing the rate of wastewater reuse from the current level of 25% to 50% by 2015, together with the need to reduce nutrient discharges in the Gulf of Tunis and Gabores.

Tunisia has already equipped 8,100 hectares (of which 82% for agriculture) of land for irrigation through treated wastewater (TWW). This represents approximately 25% of the total volume of TWW produced by ONAS (60 million m3 per year). But there is still significant potential for developing new acreage of agricultural land using TWW, both in the Greater Tunis area (which produces, by far, the largest volume of TWW), and in the Center and South of the country (which faces acute water scarcity and where aquifers are overexploited).

The actual rate of wastewater reuse also needs to be improved in some existing irrigated perimeters where infrastructure is aging and the unreliable quality of TWW supplied by ONAS has reduced the actual demand by farmers (especially the Borj Touil reuse perimeter in the Greater Tunis area, which is by far the largest reuse perimeter in the country representing about 50% of agricultural land irrigated through reuse). Finally, institutional strengthening is needed to inter alia improve coordination between ONAS, the MAE and beneficiary farmers.

The proposed project was requested by the previous government in September 2010, but preparation was postponed due to the political events, until the new authorities confirmed to the Bank in April 2011 their willingness to implement this project, with the goal of raising the rate of reuse from the current level of 25% to at least 35% nationwide.

The Bank is already well involved in the wastewater reuse sector in Tunisia through several ongoing projects with both the Ministry of Agriculture and Environment (Ministère de l'Agriculture et de l'Environnement, MAE) and ONAS:

- The Second Water Investment Project (PISEAU II): a US$163 million investment program is financed jointly by the World Bank, the French Development Agency (AFD) and the African Development Bank (ADB). Reuse activities financed under the PISEAU II include (i) the rehabilitation, creation or extension of 4 irrigation schemes using TWW for a total of about 400 hectares, and (ii) a communication strategy to promote agricultural reuse nationwide.

- The Tunis West Sewerage Project: a EUR53.9 million loan from the World Bank to ONAS is funding the new El Attar wastewater treatment plant (WWTP) in the West Tunis area to treat approximately one-third of the wastewater generated in the Greater Tunis area (60,000 m3 per day). The project includes a 25.5 km discharge network to transfer TWW to the Mornaguia area for agricultural irrigation reuse.

- The Tunis North Sanitation Project: a US$52 million Bank loan and US$8 million GEF grant to ONAS, which became effective in 2011 and is funding wastewater discharge infrastructure in the North Tunis area (including a submarine outfall), and treated wastewater infrastructure to facilitate reuse by farmers in the nearby Borj Touil agricultural area. The GEF grant will finance ONAS' investments to facilitate the reuse of wastewater by farmers, in an effort to reduce TWW discharge into the Bay of Tunis.

- The PRN2 Project of US$67.7 million, includes a US$1.5 million grant from GEF for ONAS to carry out a feasibility study for a proposed conveyor system to transfer TWW produced in the Greater Tunis area to irrigation schemes in the center of the country. The new authorities have indicated to the Bank that this project may no longer be considered a priority. Reallocation of the GEF grant to other wastewater reuse activities, possibly under this new proposed reuse operation, is under discussion.

Relationship to CAS

The proposed Project is fully consistent with the Country Partnership Strategy released in 2010. In its Results Area 3, the CPS focuses on “Strengthening Environment and Natural Resource Management” and specifically includes “Strengthening infrastructure for wastewater reuse.” The project will also contribute to CPS results/outcomes related to the “improvement of irrigation intensity” and contribute to better “manage the impacts of climate change.”

II. Proposed Development Objective(s)

The proposed Project Development Objective is to sustainably increase agricultural productivity and to promote the use of treated wastewater, so as to overcome current and future water deficits.

Key Results
Indicators:

- Increased agricultural productivity in 8 irrigation perimeters (in US$ / ha)
- Number of farmers/water users provided with new or improved irrigation and drainage services in 8 irrigation perimeters
- Number of male farmers
- Number of female farmers
- Number of irrigation perimeters covered by the project where a contract framework has been signed between farmers, ONAS and CRDA
- Incremental employment generated by the project (person days)
- Volume of treated wastewater reused in agriculture according to international quality standards in 8 irrigation perimeters

Intermediate output/outcome indicators:

Result - Component 1
- Area provided with new irrigation and drainage services (ha)
- Area provided with improved irrigation and drainage services (ha)

Result - Component 2
- Percentage of compliance with Tunisian standards for TWW reuse of effluents from wastewater treatment plants financed under the project
- Ensure the availability of hydrological/water quality data that are regularly monitored to support effective management of water resources under the project

Result - Component 3
- Study on TWW tariff for agricultural reuse completed and disseminated
- Number of people trained to improve acceptance of treated wastewater for agricultural purposes under the project

III. Preliminary Description

Concept Description
The project will finance the rehabilitation, extension and creation of at least 8 irrigation perimeters for agriculture using treated wastewater (TWW) in the Greater Tunis area, in the Center and the South of the country, for a total of about 4,700 hectares. It represents the first tranche of the GoT program to expand irrigated reuse in agriculture over the coming years, raising the current surface equipped for reuse from 25% to at least 35% of TWW produced in the country. It will also improve the rate of reuse in the North Tunis Borj Touil perimeter (by far the largest in the country) which will be rehabilitated. The investments covered under the project were selected based on the preliminary results of feasibility studies (demand from farmers, technical and economic viability) and their readiness for execution.

The Tunisian experience with wastewater reuse in agriculture has brought many lessons learned which will be incorporated in the design of the project during the preparation phase. Key questions to be addressed shall include inter alia: (i) farmers demand, (ii) promotion of higher value crops, (iii) coordination between ONAS, CRDA and beneficiary farmers, (iv) design (such as use of large capacity reservoirs) and sustainability (adequate assets management) of reuse infrastructure, (v) tariff level of TWW and cost recovery, (vi) quality and reliability of TWW supply from ONAS, (vii) role of wastewater reuse within integrated water resources management at national level, (viii) possibility of combining agricultural reuse with groundwater recharge during periods of low demand, (ix) careful assessment of the economic and environmental viability of each reuse scheme, (x) strengthening and/or creation of water users association for reuse perimeters (most reuse schemes in Tunisia are operated directly by CRDAs, mainly because the very low tariff levels do not provide sufficient revenues for community-based operation).

The project will be organized around three components:

Component 1: rehabilitation/extension/creation of agricultural reuse perimeters (66.8 million TDN)

A total of 8 reuse irrigation perimeters will be covered under this component:

-Sub-component 1.1: Rehabilitation and extension of the existing Borj Touil perimeter in North Tunis (35.5 M TDN)
The Borj Touil perimeter is currently the only area irrigated with TWW in the Greater Tunis area. It is, by far, the largest reuse irrigation scheme in the country, representing around 48% of total agricultural lands currently using TWW. Yet, the infrastructure is significantly deteriorated and the soils suffer from insufficient drainage (high and salty water table), which prevent farmers from moving into higher value-added crops. The actual rate of reuse is low, with less than half of the usable available volume of TWW actually consumed by farmers.

The project will fund the following infrastructure:
- Re-habilitation of 3,200 hectares of existing irrigation network, together with drainage works in order to improve the soil quality and allow the farmers to move to more value-added crops;
- Extension of the existing irrigation network to an additional 470 hectares.

The MAE has considered possible alternatives for the design of the new rehabilitated network. The option selected will take advantage of the new sewerage infrastructure financed by the Tunis North Sanitation project, using the new retention basin as a starting point for distribution to a portion of the area in order to reduce electricity consumption and achieve lower pumping costs. The cost-benefits of the proposed extension will be carefully assessed during project preparation, compared to the alternative of using the corresponding funds for reuse perimeters in the Center and South of the country where water scarcity is higher and offering more possibilities of developing high value crops through reuse.

-Sub-component 1.2: Creation of new irrigated perimeter in West Tunis (Momaguia) (12 M TDN)
The new irrigated perimeter of Momaguia will use TWW produced by the new El Attar wastewater treatment plant (WWTP), which is due to start operation in early 2012 and is financed by the Bank through the Tunis West Sewerage project. It will be the second irrigation perimeter using TWW in the Greater Tunis area, after the Borj Touil perimeter in North Tunis. The total development potential of the Momaguia area reaches 6,000 hectares, based on early studies carried out with Bank financing in 1999. The project will fund the first phase of the project, corresponding to 1,000 hectares of irrigated land, using a design study completed in 2010.

The project team will analyze with MAE the scoping of this first phase during project preparation, to ensure that the selection of the first 1,000 hectares is the most efficient in terms of cost-benefits. Given the good effluent quality expected to be produced by the new El Attar WWTP, the possibility of financing a larger area for reuse will also be discussed with the Tunisian authorities, as a lower-cost and faster alternative to the project of transferring most of the TWW produced in the Greater Tunis area to the Center of country, and/or the proposed extension of the Borj Touil perimeter.

-Sub-component 1.3: Extension/creation of irrigation perimeters in the Center/South (19.3 M TDN)
The project will fund the extension and creation of reuse perimeters outside the Greater Tunis area, mainly in the Center and South
of the country, which are seriously affected by water scarcity and where the needs for non-conventional water resources is greater. The following infrastructure has already been identified (the list may be modified and/or expanded during project preparation):

- Extension of 3 existing reuse perimeters in the Sfax, Gabes and Medenine (Djerba island) governorates, for a total surface of 510 hectares;
- Creation of 3 new reuse perimeters in the Sfax, Gabes and Kebili governorates for a total of 490 hectares;

The MAE and the project team will analyze during project operation the economic viability of each proposed perimeters. They will also look for other reuse perimeters which could be financed under the project and are/would be located in the priority governorates (less developed rural areas in the center of the country).

Component 2: Improvement of the quality and reliability of TWW from ONAS WWTPs (amount to be determined)
This component will fund a series of improvement measures (rehabilitation and modernization of infrastructure, installation of control equipments, and buffer basins) for the various WWTPs which will provide TWW to the reuse perimeters covered under the project, to ensure that the TWW supplied to farmer is of adequate and reliable quality. The list of specific investments will be identified during project preparation.

Component 3: Technical assistance, monitoring and capacity strengthening (amount to be determined)
This component will fund a series of technical assistance activities directed at promoting wastewater reuse at the national level and strengthening the capacity of the various stakeholders involved. The list of activities under this component will be defined during project preparation, in coordination with donors. It would include inter alia: (i) establish a contractual relationship between ONAS (as supplier of TWW), the regional branches of the MAE (CRDAs) and farmers, to clarify the roles and ensure proper accountability of the various partners, (ii) carry out a study on TWW tariff for agricultural reuse, to foster cost recovery and financial sustainability in the long term, (iii) development of national strategy for wastewater reuse (as an integral part of integrated water resources management), (iv) purchase of TWW quality monitoring equipment, and (v) carry out training and promotion activities of reuse directed at beneficiary farmers.

Components 1 and 3 will be implemented by the Ministere de l’Agriculture et de l’Environnement (MAE), while component 2 will be implemented by ONAS.

IV. Safeguard Policies that might apply

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VI. Contact point

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