

## Ex-Ante Evaluation (for Japanese ODA Loan)

**1. Name of the Project**

Country: The Kingdom of Morocco

Project: Sewerage System Development Project (III)

Loan Agreement: March 26, 2013

Loan Amount: 10,790 million Yen

Borrower: Office National de l'Electricite et de l'Eau Potable (ONEE)

**2. Background and Necessity of the Project****(1) Current State and Issues of the Sewerage Sector in Morocco**

The sewerage system of the Kingdom of Morocco (hereinafter referred to as "Morocco") is one of the areas facing apparent delay in its infrastructure development. It is recognized as a priority issue to be solved immediately in order to improve sanitary conditions and to increase reuse of scarce water resources. Especially, in recent years, the amount of sewage has been rapidly increasing throughout the country due to population growth and improvement of access to water supplies. As a consequence, shortage of sewerage treatment capacity, aging of existing sewage treatment facilities, and insufficient operation and management structures have been seen to be important problems. Moreover, as residents frequently use raw sewage directly for agriculture and irrigation, there is risk of infectious diseases. In addition, inadequate rainwater distribution systems are causing inundation damage when heavy rainfall occurs.

According to the "Programme National d'Assainissement" (prepared in 2005, hereinafter referred to as "PNA") of Morocco, the sewer connection rate still has a large gap among metropolitan cities (76%), medium-sized cities (67%), and small cities (40%). Hence, urgent responses to medium-sized and small cities in local areas are required.

**(2) Development Policies for the Sewerage Sector in Morocco and the Priority of the Project**

The PNA plans to make investments of up to 43 billion dirham (= approx. 473 billion yen, 1 dirham = 11.00 yen) in construction of a 2,300km-length sewerage network and 260 sewage treatment facilities with its goals of ① improving the sewer connection rate in medium-sized and small cities to 80% by 2020, and ② 60% reduction of water pollution deriving from sewage effluent by 2020.

In Morocco, development of the sewerage system in regional cities falls under the jurisdiction of Office National de l'Electricite et de l'Eau Potable (hereinafter referred to as "ONEE"). As mentioned in the ONEE operational plan for 2011 to 2015, which allocates 6.8 billion dirham (= approx. 74.8 billion yen) for investment in the sewerage system out of 26 billion dirham (= approx 286 billion yen) of its total investment, the sewerage sector is one of the priority targets of ONEE.

### **(3) Japan and JICA's Policy and Operations in the Sewerage Sector**

“Water Resource Security and its Effective Usage” is set as one of the priority development issues in the JICA Rolling Plan for Morocco, as well as “Regional Development” to fill the economic gap among the regions. To address these issues, Japan has provided a total of 9.257 billion yen of ODA loans for the following 2 projects: Sewerage System Development Project (4.23 billion yen, 2005) and Sewerage System Development Project (II) (5.054 billion yen, 2007). As the Project aims to provide assistance for enhancement of sewage treatment capacity and improvement of sanitary conditions in medium-sized and small cities in local areas, the objective of the Project is in line with the aforementioned issues. Moreover, the Project contributes to climate change prevention by reducing greenhouse gas (GHG) emissions in the sewerage treatment process.

### **(4) Other Donors' Activity**

The sewerage sector in Morocco is assisted by the World Bank, the African Development Bank, Agence Française de Développement (AFD), Kreditanstalt für Wiederaufbau (KfW), the European Investment Bank (EIB) and other donors.

### **(5) Necessity of the Project**

ONEE selects nine regional cities as its focused areas for the sewage facility development project based on the following four perspectives: quality, shortage of treatment plants, necessity of expansion and reform in a few years, and odor problems. The Project aims to reinforce sewage systems improvements in nine regional cities, which are set as the focus of ONEE. Since the Project is in line with issues and the development policy of Morocco and Japan's prioritized area for its assistance, necessity and relevance of the Project is high.

## **3. Project Description**

### **(1) Project Objective(s)**

To improve the sewerage system and reduce greenhouse gas emissions by reinforcing the sewerage system in nine communities in order to improve environmental and sanitary conditions, preserve water resources and mitigate global warming.

### **(2) Project Site/Target Area**

Nine regional cities: Nador, Taourirt, Bouarfa, Essaouira, Berkane, Al-Aroui, Targuist, Ouarzazate, and M'irt.

### **(3) Project Components**

- 1) Expansion and reform of sewage treatment plant, etc. (international competitive bidding (ICB), local competitive bidding (LCB)), construction, expansion, and reform of sewer pipes (LCB), introduction of methane gas collection equipment (ICB), and improvement of facilities for water quality inspection, etc. (ICB).
- 2) Consulting services (detailed design review, bidding assistance, construction monitoring, and capacity building for operation and management) (a shortlist method)

#### **(4) Estimated Project Cost (Loan Amount)**

21,161 million Yen (Loan Amount: 10,790 million Yen)

#### **(5) Schedule**

From March 2013 to May 2020 (87 months in total). The Project is to be completed when the facilities are put into service (May 2019).

#### **(6) Project Implementation Structure**

- 1) Borrower: Office National de l'Electricite et de l'Eau Potable (ONEE)
- 2) Guarantor: The Government of the Kingdom of Morocco
- 3) Execution Agency: Office National de l'Electricite et de l'Eau Potable (ONEE)
- 4) Operation and Maintenance System: Departments of the ONEE sewerage sector in charge of each target region handle operation and management work after the end of the Project.

#### **(7) Environmental and Social Consideration/Poverty Reduction/Social Development**

##### 1) Environmental and Social Consideration

- ① Category: B
- ② Reason for Categorization: The project is not located in a sensitive area, nor has it sensitive characteristics, nor does it fall into sensitive sectors under the JICA guidelines for environmental and social considerations (April 2010), and its potential adverse impact on the environment is not likely to be significant.
- ③ Environmental Permit: The national legislative of Morocco obliges to prepare the Environment Impact Assessment (EIA) Report of the Project. The EIA is planned to be approved by the Ministry of Environment before the commencement of construction work.
- ④ Anti-Pollution Measures: Sludge generated in operation of sewage treatment facilities is disposed of appropriately at an existing disposal site after a drying process. Furthermore, construction work is implemented with consideration for noise and vibration and air pollution. Therefore, serious environmental impacts are not predicted.
- ⑤ Natural Environment: As the project site is not located in sensitive areas such as a national park or its vicinity, adverse impact on the natural environment is expected to be minimal.
- ⑥ Social Environment: Acquisition of approx 57.5 ha of land is expected, of which 2.5 ha of private land will be acquired based on domestic procedures in Morocco and the JICA guidelines for environmental and social considerations. There will be no relocation of residents for the Project.
- ⑦ Other / Monitoring: In the Project, ONEE carries out monitoring on noise and air quality during the period of construction work, and on solid waste and water quality after the completion of the project. Confirmation of implementation status of land acquisition is also conducted by ONEE.

##### 2) Promotion of Poverty Reduction: Nothing particular.

- 3) Promotion of Social Development (e.g., Gender Perspective, Measures for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for the Handicapped, etc.): Improvements in health conditions and living standards are expected through sewerage facility improvement.

#### **(8) Collaboration with Other Schemes and Donors**

KfW provides the funding to the extension and improvement of the main sewer pipeline network within the Medina of Essaouira (a traditional old city), one of the target areas of the Project, and part of the construction work has been started. JICA's ODA loan is provided to branch pipeline points extended from the main network to each household. It is therefore necessary to monitor the progress of KfW's construction work with departments of the ONEE sewerage sector in charge of each region through the occasion of donor meetings.

#### **(9) Other Important Issues**

Nothing particular.

### **4. Targeted Outcomes**

#### **(1) Quantitative Effects**

##### 1) Performance Indicators (Operation and Effect Indicator)

Indicator		Baseline (Actual Value in 2010)	Target (2021) 【Expected value 2 years after project completion】
Sewage treatment amount (m <sup>3</sup> /d)		48,816	69,287
Population served by sewage treatment service (person)		611,254	928,641
Sewer connection rate (%)		78%	96%
BOD concentration (outlet of treatment plant) (mg/l) *	Bouarfa and Targuist	-	<120
	Nador	<30	<30
	Other 6 cities	<120	<120

\* If the Project is not implemented, water quality is expected to fall below the baseline because of the limitation of treatment capacity. Therefore, the objective of the Project is to comply with the water quality baseline in Morocco through expansion and reform of treatment plants.

Indicator	In the case where the Project is not implemented (2025)	In the case where the Project is implemented (2025)		
	Anaerobic pond	Anaerobic pond	Gas combustion *	Electricity use**
GHG emission (ton/CO <sub>2</sub> conversion)	7,673	0	753	1,757

\* Combustion of collected methane

\*\*Electricity use by aeration at a sewage treatment plant in Berkane

## 2) Internal Rate of Return

Based on the conditions indicated below, the Project's Economic Internal Rate of Return (EIRR) is 20.33% and Financial Internal Rate of Return (FIRR) is 3.17%.

**【EIRR】** 20.33%

Cost: Project cost and operational and management cost (tax not included)

Benefit: Increase in sewage treatment amount, decline of the use of cleaning products for septic tanks, rise in land values, and reduction of methane

Project Life: 40 years

**【FIRR】** 3.17%

Cost: Project cost and operational and management cost

Benefit: Incomes from sewage rate

Project Life: 40 years

## (2) Qualitative Effects

Environmental improvement in the target area (water quality improvement in basins, quality control of water sources, prevention of floods due to rainwater and polluted water) and improvement of sanitary conditions of local residents (odor prevention, decrease of infectious diseases).

## 5. External Factors and Risk Control

Nothing particular.

## 6. Lessons Learned from Past Projects

Evaluation of the past project ("Southern Lima Metropolitan Sewerage Improvement Project" in the Republic of Peru) has suggested that sharing accurate information concerning objectives and benefits of a project and environmental impacts to local communities is crucial in construction of sewage treatment plants. It is important to implement information dissemination and educational activities to the regions before starting construction at the latest, in order to respond and minimize the concerns and misunderstandings of residents in the target region and to prevent unnecessary delays in implementation.

Based on the lessons as mentioned above, the Project held stakeholders' meetings for the target cities in the preparatory survey. Through provision of appropriate information on the Project to regional residents and other stakeholders and exchanging opinions with them, the residents have agreed with the implementation of the Project.

## 7. Plan for Future Evaluation

### (1) Indicators to Be Used

Sewage treatment amount (m<sup>3</sup>/d)

Population served by sewage treatment service (person)

Sewer connection rate (%)

BOD concentration (outlet of treatment plant) (mg/l)

Greenhouse gas emission (ton/ CO<sub>2</sub> conversion)

Economic internal rate of return (%)

(2) Timing of Next Evaluation

2 years after the completion of the Project

END