

Ex-Ante Evaluation

1. Name of the Project

Country: The Republic of Peru

Project: Northern Lima Metropolitan Area Water Supply and Sewerage Optimization Project (I)

Loan Agreement: September 28, 2009

Loan Amount: 5,550 million Yen

Borrower: The Republic of Peru

2. Background and Necessity of the Project

(1) Current State and Issues of the Water and Sewerage Sectors in Peru

Belonging to a desert climate area with almost no rainfall throughout the year, the Lima Metropolitan area faces an on-going problem of poor water resource and, compounded by an extremely dense population in the metropolitan area, water shortages in the region are severe especially during the dry season. Under such circumstances, Servicio de Agua Potable y Alcantarillado de Lima (SEDAPAL), the entity in charge of the water supply and sewerage service of the Lima Metropolitan area, works to explore new water resources and to expand water purification capacity as to utilize the limited water resource, in order to meet the demands of new water supply and sewerage services arising from an ever-increasing population in the metropolitan area as well as to achieve sustainable management which enables to cover the investment and maintenance cost by tariff collection. However, the rate of non-revenue water of SEDAPAL reaches 40%. The northern district especially has an extremely high rate of non-revenue water compared to the central district and southern areas where optimization¹ of water supply and sewerage have already been carried out.¹ The northern district has a lower standard of water supply hours per day compared to other areas due to insufficient water supply capability which is also caused by the high rate of non-revenue water. Furthermore, water leakage causes environmental damage due to ground sinkage and waste water flow, etc, and improvement in the related conditions is an urgent issue in the metropolitan area.

(2) Development Policies for the Water Supply and Sewerage Sector in Peru and the Priority of the Project

The Garcia Administration which took office in June 2006, has positioned the expansion and renovation of water and sewerage services as an important policy, and is carrying out its “Agua para Todos”(“Water for All”) program. Moreover, the Peruvian government established the “National Sanitation Plan 2006-2015”, which aims to promote the modernization of the management of the water and sewerage sector, to improve the sustainability of water and sewerage service, the quality of service, and the financial condition of the Water and Sewerage company (EPS), and to expand water and sewerage facilities, etc.

In the Lima Metropolitan area, SEDAPAL, as the party in charge of the related government policy, is carrying out construction of Huachipa water intake and treatment plant, under the Japanese ODA loan project “Lima Marginal Areas Sanitary Improvement Project”(PE-P30) to ensure water purification capacity. As described above, the rate of non-revenue water is extremely high in the northern district where water supply will be received through northbound pipes from the said water purifying plant. Moreover, there is concern that degrading water pipes will not be able to withstand the water pressure when water supply from the water purifying plant is initiated. In consideration of these circumstances, SEDAPAL has determined to place the optimization of the water supply and sewerage system in the water supply targeted area of the water purifying plant as a top priority task, in order to maximize the effectiveness of the Huachipa water purifying plant. This Project is thus positioned as the first phase.

(3) Japan and JICA’s Policy and Operations in the Water Supply and Sewerage Sectors in Peru

For assistance to Peru, JICA has positioned the reduction of poverty and disparity as one of the priorities, and within that, determined to focus on assistance in water supply and sewerage maintenance as a priority task. Supporting the implementation of this Project is in accordance with this policy.

(4) Other Donors’ Activity

Regarding the water supply and sewerage sector in Peru, World Bank provides assistance for facility maintenance mainly targeting rural areas, Kreditanstalt fur Wiederaufbau (KfW) provides technical assistance

¹ This establishes an infrastructure which can implement effective water supply management, operation and maintenance, by formation of sectors in the water supply system (implementation of effective water supply management, operation and maintenance by dividing the area into independent units called “sector”), maintaining a ledger on water supply and sewerage, as well as controlling physical water leakage by renovation of the water and sewerage network.

targeting the local city water supply and sewerage company, and Inter-American Development Bank (IDB) provides assistance for water supply and sewerage system improvement in addition to regulatory reforms in urban areas.

According to the above, the necessity and relevance for implementation of this Project is high.

3. Project Description

(1) Project Objectives

The objective of this Project is to enable the effective use of the water and to extend the water supply hours through the improvement of the high ratio of non-revenue water by optimizing the water supply and sewerage system in the Comas-Chillon Districts which are within the water supply area of Huachipa water purifying plant, thereby contributing to the improvement in the quality of water supply and sewerage service and sanitary environment of the residents.

(2) Project Site/Target Area

Northern Lima Metropolitan Area (Comas-Chillon Districts)

(3) Project Components

- 1) New construction of the water pipe network from the north main pipe: Approximately 22.53km
- 2) Rehabilitation of the water supply network: Approximately 573.41km
- 3) Rehabilitation of the sewerage network: Approximately 339.95km
- 4) Re-installation of the water supply connection to households: 63,745 locations
- 5) Re-installation of the sewerage connection to households: 43,041 locations
- 6) Sector formations (divisions): 17 sectors

The Japanese ODA loan will be targeted for part of the rehabilitation of the water supply network and re-installation of the water supply connection to households in 8 sectors.

- 7) Consulting Services: Elaboration of detailed design, preparation of bidding documents and assistance in bidding, environment assessment, social promotion activity assistance, construction supervision, elaboration of the water supply and sewerage ledger, and preparation of manual on asbestos pipes handling.

(4) Estimated Project Cost (Loan Amount)

22,337million yen (Loan Amount: 5,550 million yen)

(5) Schedule

August 2009-September 2013 (total 4 years and 2 months). Project completion is determined to be at the time of completion of the consulting services.

(6) Project Implementation Structure

- 1) Borrower: The Republic of Peru
- 2) Guarantor: None
- 3) Executing Agency: Servicio de Agua Potable y Alcantarillado de Lima: SEDAPAL
- 4) Operation and Maintenance System: Carried out by the North Branch (Gerencia Servicio Norte: GSN) of SEDAPAL, which is the jurisdictional base of the northern district.

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

1) Environmental and Social Consideration

① Category: B

② Reason for Categorization

The Project is classified as category B, because there are no corresponding sectors, characteristics, or areas which are easily affected, as listed in the "Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations" (established April 2002), and it is not considered to have any undesirable impact on the environment.

③ Environmental Permit

An Environmental Impact Assessment (EIA) of the Project will be prepared at the time of detailed design, and will be approved by the Office of Environment within the Ministry of Housing, Construction and Sanitation, before bidding for construction begins.

④ Anti-Pollution Measures

Regarding replacement of asbestos pipes which is also scheduled in the scope of this Project, a manual on how to handle and dispose of asbestos pipes will be provided by the consultant, and construction supervision based on the manual are to be carried out.

⑤ Natural Environment

The Project sites do not correspond to the areas or their surroundings which are easily affected, such as

national parks, and undesired effects to the natural environment are assumed to be minimal.

⑥ Social Environment

Since this Project is a rehabilitation of the existing facilities, land acquisition or resident relocation is not required.

⑦ Other / Monitoring

In this Project, SEDAPAL shall carry out monitoring based on the EIA. Also, the consultant will carry out monitoring based on the manual on the handling of asbestos pipes.

2) Promotion of Poverty Reduction

The structure of the water tariff collection system of SEDAPAL for households is based on the amount of water used, taking into consideration the capacity of the poverty group.

3) Promotion of Social Development(e.g. gender perspective, measures addressing infectious diseases including HIV/AIDS, participatory development, consideration for the handicapped, etc.): None

(8) Collaboration with Other Donors : none.

(9) Other Important Issues : none.

4. Targeted Outcomes

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

Indicator	Baseline (Actual Value in 2008)	Target (2015) (Expected value 2 years after project completion)
Rate of non-revenue water	50% (reference value) *2	25%
Accident cases (water supply)	36 cases	5 cases
Water supply hours per day	12 hours	24 hours

*1: Within the scope of this Project, the Japanese ODA loan targets only for parts related to the water supply system. Since the baseline data related to the sewerage system have not been collected by the Peru side, it is difficult to set quantitative indicators. Therefore, only indicators related to the water supply system were set.

*2: Since the independent statistics of the ratio of non-revenue water in the targeted district of this Project (Comas-Chillon Districts) have not been carried out at present, the ratio of non-revenue water in the Comas district, which is more extensive and includes the said area, was used as the reference value. However, water discharge area of the Comas-Chillon Districts has many areas with a lower meter installation percentage, and deterioration of the water and drain pipes is determined to be severe (average water supply hours per day is approximately 12 hours in the areas), and the actual rate of non-revenue water is assumed to be higher. Furthermore, since measurement of the ratio of non-revenue water by each sector unit will be possible after this Project is carried out, the target value was set as only the Comas-Chillon water discharge area.

(2) Internal Rate of Return

Based on the conditions indicated below, Economic Internal Rate of Return (EIRR) related to water supply component of this Project will be 8.9%.

EIRR

Cost: project expenses (excluding tax)

Benefits: Reduction in water leakage, reduction in management and maintenance expenses, and increased willingness by residents to pay for extended water supply hours

Project Life: 20 years

Since the Project is highly public, and the water supply and sewerage tariffs are kept relatively below the standard, the Financial Internal Rate of Return (FIRR) is not being calculated.

5. External Factors and Risk Control

Optimization of water supply system in sectors outside the Japanese ODA loan target, as well as optimization of sewerage system and new construction of the water pipe from the north main pipe to the water supply network in districts targeted for this project, are scheduled to be implemented with SEDAPAL's own resource.

6. Lessons Learned from Past Projects

In a previous ex-ante evaluation (Indonesian communication project), a case was pointed out that the supervision of the construction by the consultants for the project scope outside of the Japanese ODA loan target should also be considered needed. In this Project as well, from the viewpoint of maximizing the efficiency of the PE-P30 project now under execution, project scope outside of the Japanese ODA loan target are also determined to be included for construction supervision by the consultant, in order to secure the steady progress and quality of

the Project.

7. Plan for Future Evaluation

(1) Indicators to be Used

- 1) Ratio of non-revenue water
- 2) Number of accidents
- 3) Water supply hours per day
- 4) EIRR

(2) Timing

- 2 years after project completion