

## Ex-ante Evaluation

### 1. Name of the Project

Country: Republic of Peru

Project title: Iquitos Sewerage Improvement and Expansion Project

Loan agreement: December 4, 2008

Loan amount approved: 6,660 million yen

Borrower: Republic of Peru

### 2. Necessity and Relevance of JICA's Assistance

#### (1) Present condition and issue of the water supply and sewerage sector in Peru

In Peru, the water supply connection ratio is 76%, while that of sewerage is 57% as of 2005. This means that 6.8 million people are not provided with water supply, while 12.21 million are not provided with sewerage. Peru is far behind other countries in Latin America in this sector. The total connection ratio across Latin America is 91% for water supply and 77% for sewerage.

Iquitos, the capital of the Department of Loreto located in the Amazon region in northeast Peru, is one of the major cities in the region with a population of 370,000. The city's sewerage connection ratio is 65.1% as of 2007. During the rainy season, increased rainwater beyond drainage capacity combines with wastewater to flood the city, causing a terrible sanitary situation. Since there is no waste water treatment plant, untreated wastewater flows directly into the Amazon River. The morbidity rate due to acute diarrhea is 7.5/1,000 people, higher than the national average of 4.5/1,000.

#### (2) Water supply and sewerage sector policy in Peru

In Peru, water supply and sewerage services are the responsibility of provincial and/or district governments. Investment in this sector is basically based on the self-supporting system. Since wastewater treatment facilities do not directly generate fee revenue, it is very difficult for provinces and districts (or water supply and sewerage service corporations (EPSs) invested in by them) to invest in these facilities. This is one of the reasons hindering the development of wastewater treatment in Peru.

The current Garcia administration launched in June 2006 focuses on anti-poverty measures, especially those related to water and sanitation. Under a program called "*Agua para Todos* (water for everybody)," the national government has been subsidizing investment in the field. However, subsidies are only provided for small investments due to the limited budget. The new administration

of the Department of Loreto that started in 2007 regards the sewerage problem in its capital as a state-level problem. They have proposed a new scheme under which the state will build water supply and sewerage systems instead of the governments of provinces and districts or EPSs. The construction cost shall be covered by external borrowing secured by Department revenue from royalties for oil.

In addition, the water supply system is now under construction in Iquitos under a Yen Loan project called “Provincial Cities Water Supply and Sewerage Improvement and Expansion Project (Iquitos, Cusco and Sicuani)” As water supply will increase after completion of this project in 2010, improving and expanding the sewerage system is promptly required.

(3) Consistency with JICA’s assistance policy in the water supply and sewerage sector in Peru

JICA regards the alleviation of poverty and disparity as one of the focal fields of its aid to Peru. One of the focal tasks in this field is water supply and sewerage construction. In this regard, the implementation of this project conforms to this policy.

(4) Measures taken by other aid agencies

The World Bank provides aid mainly to rural areas, KfW, for public water supply, and sewerage corporations and IDB, for institutional improvements.

(5) Necessity of this project

For the reasons described above, there is significant necessity and relevance in implementing this project.

<b>3. Project Description</b>
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(1) Project objectives

The purpose of this project is to drain and treat sewerage, by improving and expanding the sewerage system in Iquitos in the Department of Loreto, one of the major cities in the Amazon region, thereby contributing to improved sanitary conditions and living environment in the area.

(2) Project site/target area

Iquitos, Department of Loreto

(3) Project outline

To procure materials and equipment, to implement civil works, and to provide consulting service as described below necessary for this project in Iquitos, Loreto

(a) Construction of a wastewater treatment plant

- (b) Construction of pumping stations
- (c) Construction of a sewerage network
- (d) Consulting service (detailed design, assistance for preparation of a bidding document, tendering assistance, supervision of civil works, technical assistance (technological transfer, awareness raising, education campaigns to promote house connections, etc.))

(4) Total project cost/ Loan amount

16,105 million yen (Yen Loan amount: 6,660 million yen)

(5) Project implementation schedule

From September 2008 to December 2011 (40 months). Project completion is defined as when the operation commences.

(6) Implementation Structure

(a) Borrower: Republic of Peru

(b) Guarantor: none

(c) Executing Agency: *Organismo Público Infraestructura para la Productividad, Gobierno Regional de Loreto* (OPIPP) (Public Organization of Infrastructure for Productivity, Regional Government of Loreto)

(d) Operation, maintenance, and management responsibilities: belong to the EPS SEDALORETO S.A. (Loreto Water Supply and Sewerage Service Corporation)

(7) Environmental and social considerations

(a) Environmental effects/Land acquisition and resident relocation

(i) Category: B

(ii) Reason for categorization: The project is not located in a sensitive area, nor has it sensitive characteristics under “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established in April 2002), and its potential adverse impacts on the environment are not likely to be significant.

(iii) Environmental permit: The environmental impact assessment (EIA) report on this project is scheduled to be prepared in concurrence with detailed design and permitted by the Environmental Bureau, Ministry of Housing, Construction and Sanitation before the bidding for the main works starts.

(iv) Anti-pollution measures: Wastewater coming from sewerage is planned to be treated according to the national wastewater standard and discharged into rivers. No significant impact due to discharged treated water is expected.

(v) Natural environment: The project area is not a vulnerable area such as a national park or near such an area. Negative impact on the natural environment is expected to be minimal.

(vi) Social environment: The land required for project implementation is public land. There is no need to acquire any land. However, at least six families of unauthorized residents are expected to move out as a result of the construction of sewer pipes. Their move-out will occur according to the country's procedures.

(vii) Other: monitoring: According to a monitoring plan to be prepared at the time of implementation of EIA, SEDALORETO is going to monitor water quality and other issues during the works and at the time of service commencement.

(b) Promotion of poverty reduction: To promote project effects, necessary measures will be taken for poor households to receive financial consideration so as to install the internal sewerage facilities smoothly.

(c) Promotion of social development (gender perspective, prevention of infectious diseases including HIV/AIDS, participatory development, care for people with disabilities, etc.): none

(8) Collaboration with other donors: In the district of Belen adjacent to the project area, *Fond Italo Peruano* (the Italian Fund), a form of grant aid cooperation by the Italian government, is going to construct a sewerage system. Wastewater collected by the system is planned to be treated in treatment plants constructed under this project.

(9) Other Important Issues: None

<b>4. Outcome Targets</b>
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(1) Evaluation indicators (operational and effect indicators)

Indicator	Baseline (actual value in 2007)	Target (in 2013, i.e., 2 years after project completion)
Population Treated (persons)	0	347,113
Amount of Wastewater Treated (m <sup>3</sup> /day)	0 m <sup>3</sup> /day	56,581 m <sup>3</sup> /day (average)
Rate of Facility Utilization (%)	0%	89.54%
Percentage of Population Connected (%)	65.1%	77.5%
Concentration of BOD at the Outlet of the Wastewater Treatment Plant	---	30 mg/l
Concentration of SS at the Outlet of the Wastewater	---	30 mg/l
Percentage of Population Served (%)	0%	100%

## (2) Internal Rate of Return

The Economic Internal Rate of Return (EIRR) of this project is 11.34% based on the following assumptions.

[Assumptions]

Cost: Project cost (except taxes) and operation and maintenance cost

Benefits: Increase in willingness to pay for the sewerage service; medical cost reduction due to decreased waterborne infectious diseases; and increase in tourist revenue

Project life: Twenty years

The Financial Internal Rate of Return (FIRR) is not calculated for this project due to its highly public nature, limited increase it will cause in the sewerage fee, and its low profitability.

## 5. External Risk Factors

Smooth implementation of internal house connection to the sewerage network at the user's responsibility

## 6. Lessons Learned from Finding of Similar Projects Undertaken in the Past

There was a water supply project in the past that did not have sufficient effect due to delayed construction of a secondary network, which was not financed by a yen loan. This case has taught us the lesson that monitoring the progress of parts not covered by the loan is required. In this project, the executing agency is requested to take measures to promote installation of internal sewage facilities, which is not financed by a Yen Loan and must be carried out at the user's responsibility, and such process shall be monitored.

## 7. Plans for Future Evaluation

(1) Indicators for future evaluation

(a) Population Treated (persons)

(b) Amount of Wastewater Treated (m<sup>3</sup>/day)

(c) Rate of Facility Utilization (%)

(d) Percentage of Population Connected (%)

(e) Concentration of BOD at the Outlet of the Wastewater Treatment Plant

(f) Concentration of SS at the Outlet of the Wastewater

(g) Percentage of Population Served (%)

(h) EIRR (%)

(2) Timing of next evaluation

Two years after completion of this project