

## Ex-Ante Evaluation

<b>1. Name of Project</b>
Country: The Republic of Indonesia Project: Denpasar Sewerage Development Project (II) Loan Agreement: March 28, 2008 Loan Amount: 6,004 million yen Borrower: The Republic of Indonesia
<b>2. Necessity and Relevance of JBIC's Assistance</b>
<p>Sewerage and sanitation facilities in Indonesia are still in the development stage, and the rate of access to existing sewerage and sanitation facilities (off-site treatment and decentralized treatment) is 55% (2004), which is low compared to neighboring countries (Thailand: 99%, Philippines: 72%, Vietnam: 61%). For urban populations, the rate of access to offsite wastewater treatment facilities such as those to be developed through this project is particularly low at 1.3%, the lowest level in Asia.</p> <p>In the National Medium Term Development Plan (RPJM: 2004-2009), the Government of Indonesia highlights the necessity of increasing the provision of basic sanitation services that are efficient, high quality, and available, across the nation, at a price suitable for all levels of society. For this reason, the government emphasizes the need for an improved rate of use of existing human waste and wastewater treatment facilities, the swift development of wastewater treatment services, and a stepwise diffusion of off-site sewerage treatment systems in large metropolitan areas.</p> <p>JBIC's Medium-Term Strategy for Overseas Economic Cooperation Operations (April 2005) specifies development of a foundation for sustained growth as a priority area, and calls for support for promoting sustained growth through the development of economic and social infrastructure, including waterworks. This project is consistent with this strategy.</p> <p>The tourist industry is highly developed in the Denpasar, Kuta and Sanur districts of Bali, the target area of this project. Commercial facilities such as hotels, restaurants and stores are concentrated in these areas and the population is dense. For this reason, a large quantity of polluted water is discharged. As this water flows directly into waterways and the sea, there is growing concern over the serious negative effects that this will have on the living and natural environments, such as the water quality of the sea that serves as a resource for tourism.</p> <p>In November 1994, JBIC provided the loan for the "Denpansar Sewerage Development Project," supporting the construction of sewer pipes, pump stations, and wastewater treatment facilities in districts where the urgency for development of a sewerage system was particularly high (the Denpasar, Sanur, Legian and Seminyak districts, covering 1,145 ha). JBIC also provided indirect support in 2007 for the establishment of a model for the provision of a sewerage service by local government.</p> <p>This project will support the development of a sewerage service targeting districts not</p>

covered by the abovementioned Phase 1 Project, including areas containing many commercial facilities such as hotels where the urgency is high and areas where residents strongly demand such a service, covering a total area of 715ha. By improving living and natural environments it is expected that this project will contribute to promoting sustained growth. Thus, the necessity and relevance of JBIC's assistance is high.

### **3. Project Objectives and Outline**

The objective of this project is to expand the coverage ratio of sewerage systems and establish an operation and maintenance system led by local government by expanding existing sewerage treatment facilities (sewer pipes) in the Denpasar, Kuta, and Sanur districts of Bali and developing an implementation system relating to the administration of sewerage treatment services by local government, thus contributing to the improvement of living environments and the protection of the natural environment that serves as a resource for tourism in these areas.

### **4 Project Description**

#### **(1) Target Area**

Denpasar, Kuta, and Sanur districts of Bali

#### **(2) Project Outline**

- (a) Description of civil engineering work and equipment to be procured
  - (i) Construction of sewer pipes (mains, secondary pipes, tertiary pipes and connections to households)
  - (ii) Procurement of equipment and materials for operation and maintenance (pipe conduit cleaning vehicles, etc.)
  - (iii) Procurement of other related equipment and materials (manholes, etc.)
- (b) TOR of consulting services
  - (i) Tender assistance
  - (ii) Construction supervision
  - (iii) Support to improve capacity of operation and maintenance system

#### **(3) Total Project Cost/Loan Amount**

8,004 million yen (Japanese ODA Loan Amount: 6,004 million yen)

#### **(4) Schedule**

February 2008-May 2014 (76 months). The project will be regarded as completed upon completion of construction work.

#### **(5) Implementation Structure**

- (a) Borrower: The Republic of Indonesia
- (b) Executing Agency: Directorate General of Human Settlements, Ministry of Public Works (DGHS)
- (c) Operation and Maintenance System: Public Service Organization of Wastewater Management (BLUPAL)

#### **(6) Environmental and Social Considerations**

- (a) Environmental Impact/Land Acquisition and Resettlement

(i) Category: B

(ii) Reason for Categorization: This project is classified as Category B because, based on Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (established April 2002), it is considered that any adverse effects on the environment it may have would not be serious since the sector it concerns and its characteristics are not likely to have an impact, and the target area is not susceptible to such impacts.

(iii) Environmental Permit: The environmental impact assessment (EIA) report concerning this project was approved by Bali province in September 2007.

(iv) Anti-pollution Measures: Based on environmental management plans, it is planned to implement measures regarding dust, noise and vibrations such as covering with sheets, sprinkling water on roads, and arranging appropriate construction work hours.

(v) Natural Environment: It is expected that adverse impacts on the natural environment will be minimal since areas to be targeted by the project do not include sensitive areas such as national parks and their surrounding areas.

(vi) Social Environment: It is not expected that this project will require the acquisition of sites or the resettlement of residents.

(vii) Other/Monitoring: Under this project, the executing agency will monitor the air quality, noise, vibrations and so on. With regard to traffic control during construction, it is planned to skirt traffic regulations by adopting the trenchless method for the construction of main pipes in the Kuta district where traffic volume is heavy. In addition, traffic congestion will be eased through advance notices of traffic regulations and by performing nighttime work suited to traffic volume.

(b) Promotion of Poverty Reduction: None

(c) Promotion of Social Development (gender perspective, measures for infectious diseases including AIDS, participatory development, consideration for the handicapped, etc): It is planned to implement measures against HIV/AIDS toward workers employed by this project.

(7) Other Important Issues

None.

## 5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicators)

Indicator Name	Baseline (2007 actual)	Target (2016, 2 years after project completion*)
Population treated (no. of persons)	-	142,600
Amount of wastewater treated (m <sup>3</sup> /day)	-	41,000
Effluent BOD concentration (mg/L)	-	20
Tariff collection rate (%)	-	95
Water quality improvement (Sinduh Beach, Sanur) (COD=mg/L)	17.8	5.0
Water quality improvement (Reef)	16.3	5.0

Beach, Sanur) (COD = mg/L)		
Water quality improvement (Kuta Beach, Kuta) (COD = mg/L)	12.4	5.0
Water quality improvement (Legian, Kuta) (COD = mg/L)	15.8	5.0

\* Figures include effects of Phase 1 project.

BOD (Biochemical Oxygen Demand): The amount of oxygen required to decompose organic substances in water.

COD (Chemical Oxygen Demand) : The amount of oxygen required to oxidize non-oxidizing substances in water.

(2) Number of Beneficiaries

142,600 persons

(3) Internal Rate of Return (Financial Internal Rate of Return)

Based on the assumptions given below, the financial internal rate of return (FIRR) of this project will be 11.6%.

[FIRR]

(a) Costs: Operation and maintenance costs, equipment and materials replacement costs

(b) Benefit: Tariff revenue

(c) Project Life: 20 years

## 6. External Risk Factors

Slowdown of project in the event that the local governments have difficulty in securing a budget due to an economic downturn in Indonesia.

## 7. Lessons Learned from Findings of Similar Projects Undertaken in the Past

From past similar projects, it was learned that benefits derived from projects was limited because a suitable operation and maintenance system was not established. In this project, it is planned through the consulting services to support training and the like for improving the abilities of BLUPAL employees and to provide assistance aimed at deriving continuous benefit from this project.

## 8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

(a) Population treated (no. of persons)

(b) Amount of wastewater treated (m<sup>3</sup>/day)

(c) Effluent BOD concentration (mg/L)

(d) Tariff collection rate (%)

(e) Water quality improvement (COD=mg/L)

(f) Financial internal rate of return (%)

(2) Timing of Next Evaluation  
Two years after project completion

