

## Ex-ante Project Evaluation

### 1. Name of project

Country: Socialist Republic of Vietnam

Name of project: Hai Phong City Environmental Improvement Project (II)

L/A signing date: March 31, 2009

Loan amount: 21,306 million yen

Borrower: The Government of the Socialist Republic of Viet Nam

### 2. Background and need for project

(1) Issues in environmental sector in Vietnam and development achievements (current status)

As Vietnam industrializes and more of the population becomes concentrated in cities, industrial wastewater and domestic wastewater is increasing in urban regions, but there has been no progress in developing a sewage system. Sewage discharged directly into rivers has led to serious water contamination. This water pollution is the result of multiple factors, including the fact that most industrial wastewater and domestic wastewater is released without having been treated and the dumping of solid waste in rivers.

Hai Phong is Vietnam's third largest city, with a population of about 1.8 million in an area of 1,500 km<sup>2</sup> in Vietnam's coastal region (about 100km east of Hanoi). It has been expanding as an international port city. Rapid industrialization and urbanization in recent years has led to a rapid increase in the volume of industrial and domestic solid waste, but water treatment facilities have not been built to cope with this. Much of the city's sewage is released into the river without treatment, resulting in severe contamination in areas with considerable stagnant water, such as canals and lakes. Most of the network of sewage pipes dates back to the French colonial period, and requires repairs and upgrading. In addition, Hai Phong City's location near the mouth of the Red River makes it particularly susceptible to typhoons. Flooding is common in the typhoon season lasting from May through September. As typhoons often make landfall, localized torrential downpours are frequent from May through September. At the same time, a lack of sufficient storm water drainage facilities results in flooding damage about once every two years, making the development and improvement of drainage systems an urgent issue for Hai Phong. Sanitary conditions have also deteriorated as the volume of solid waste generated has increased as a result of improved lifestyles and population concentrations. Solid waste is not sorted properly, and even hazardous waste is collected together with other solid waste in hand carts and collection vehicles. Collected solid waste is buried in landfills in three locations within the city (Tran Cat, Do Son, Dinh Vu), but as the landfill lacks adequate facilities for collecting and treating seeping water, smells and polluted water have resulted in public hazards. Moreover, the amount of solid wastes carried into the Tran Cat and Do Son landfills are expected to exceed planned capacity in 2011, making it essential that a treatment plant be built quickly.

(2) Role of this project and development policies for water environment sector in Vietnam and northern region

Ten-Year National Environment Protection Strategy (NSEP) (2003) and the Socio-Economic Development Plan 2006-2010 (2006) propose numerical targets for improving the environment. The targets related to the sewage and drainage sector aim to introduce centralized drainage systems to 40% of urban regions and 70% of industrial regions and export processing zones by 2010 and full introduction of a centralized drainage system by 2020 in urban regions, industrial regions and export processing zones. In addition, in the solid waste management sector, the Socio-Economic Development Plan 2006-2010 (2006) sets numerical targets for improvement the environment, with the aim of appropriately disposing of 90% of household and industrial solid waste, 80% of hazardous solid waste and 100% of medical solid waste.

(3) Japan and JICA's aid policy and achievements in the environmental sector

The aid policies outlined in the Aid Plan for Vietnam devised in April 2004 identifies environmental conservation as a priority sector, and states that “aid for sewage and drainage facilities and their maintenance and management will be treated as a priority” and “aid for systems and measures related to solid waste management and aid related to greater efficiency and optimization of disposal will be considered.” This project conforms with this plan.

In the four priority areas for aid noted in JICA's aid policy for Vietnam, urban environmental management is addressed as part of environmental conservation.

(4) Response by other aid organizations

a) World Bank

The World Bank lists “reinforcing management of natural resources and the environment” as one of its four pillars of its aid priorities for Vietnam. It is working to improve the urban environment with, among other projects, its Three Cities Sanitation Project in Da Nang, Haiphong and Quang Ninh Province (in Ha Long and Cam Pha).

b) Asian Development Bank (ADB)

The response to the negative impact that rapid economic growth has had on the presence of natural resources and the urban environment is one of the ADB's three pillars in its priorities for aid to Vietnam. In its efforts to improve the urban environment, the ADB has emphasized infrastructure development in small and medium-sized cities in central Vietnam and the Mekong economic corridors.

(5) Need for project

In the four priority areas for aid noted in JICA's aid policy for Vietnam, urban environmental management is addressed as part of environmental conservation. This project conforms with JICA's aid policy. Accordingly Japanese ODA loans from JICA are extremely necessary and relevant.

### **3. Project Summary**

(1) Project purpose

This project is aimed to prevent flood, improve water quality and increase appropriate solid waste treatment, by rehabilitating and developing the existing drainage system, sewage system and solid waste collection and treatment system, thereby improving urban environment in Hai Phong City

(2) Name of project site and targeted regions

Hai Phong City

(3) Project summary

- a) Improve sewage and drainage system in Hai Phong (pumping stations, installation of sewage pipes, drainage canals, etc.)
- b) Establishment of a solid waste treatment system (final disposal site, garbage collection trucks, facility for repair of trucks, etc.)
- c) Development of infrastructure in location to which residents are relocated
- d) Consulting services (detailed plan, bidding assistance, execution management, capacity building for organization responsible for operations, maintenance and management)

(4) Total project cost

28,501 million yen (of which amount from Japanese ODA loan: 21,306 million yen)

(5) Project implementation schedule

Planned for April 2005 – September 2013 (102 months)

(6) Project implementation system

- 1) Borrower: The Government of the Socialist Republic of Viet Nam
- 2) Organization implementing project: Hai Phong City People's Committee
- 3) System for operations, administration, maintenance and management: Sewerage and Drainage State Limited Company (SADCO) and Urban Environment Limited Company (URENCO)

(7) Environmental and social considerations, poverty reduction, social development

1) Environmental and social considerations

a) Category classification: A

b) Rationale for category classification

This project corresponds to Category A as defined in the JBIC Guidelines for Confirmation of Environmental and Social Considerations (established in April 2002), as it is likely to have significant adverse impact on the environment under the Environmental Guidelines.

c) Environmental permits

The Environmental Impact Assessment (EIA) for this project was approved by Vietnam's Ministry of Natural Resources and Environment in August 2004. The EIA for the solid waste treatment plan was approved by the Hai Phong City Department of Natural Resources and Environment in December 2007.

d) Measures for pollution control

Sewage sent to the wastewater treatment plant will be treated at the plant to meet Vietnam's wastewater standards and discharged into the river. No adverse effect is

expected from this release. Sewage sludge is disposed of in landfills, but no particular adverse effect on the surrounding environment is expected because cover soil is used at landfills to prevent odors and seeping water to meet Vietnam's wastewater standards. With the establishment of a secondary combustion chamber at incinerators, medical solid waste will undergo high-heat processing to meet Vietnam's emission standards.

e) Natural environment

The regions targeted in the project are not regions such as national parks that would be likely to suffer adverse impact, nor are they near such regions, and thus any undesirable impact on the natural environment would be minimized.

f) Social environment

The project is expected to result in the resettlement of 604 households with about 150ha of land acquisition. Hai Phong City's Resettlement Compensation Committee is moving ahead with the resettlement procedures and land acquisition in accordance with the resettlement plan and Vietnam's domestic proceedings. In December 2006 residents were notified about the sewage and wastewater component of the project and in July-December 2007 they were notified of the solid waste component in resident discussions. This confirmed that there was no particular opposition to this project. Infrastructure (sewage and wastewater and solid waste component for each location) of resettlement site will be developed by the project to ensure smooth implementation of the project.

g) Other, monitoring

PMU will monitor the project as regards air quality, noise, resettlement and land acquisition during construction, while after service begins SADCO will monitor the drainage component and URENCO will monitor the solid waste component.

2) Promotion of poverty reduction: None in particular

3) Promotion of social development (gender perspective, measures addressing infectious diseases such as AIDS, participatory development, consideration of handicapped people, etc.): The implementing organization will set conditions for AIDS measures in the contractors' bidding documents, so that the contractor carries out the HIV/AIDS education programs for workers during construction under their contract.

(8) Coordination with other donors: None

(9) Other notes: The site for the construction of the solid waste treatment facility has changed since the first loan (approved in fiscal 2004).

#### 4. Project Outcome

(1) Indicators for Operations and Outcome

Name of indicator	Standard value (2008 actual value)	Target value (2015 [two years after project is completed])
Amount of sewage treated (m <sup>3</sup> /day)	0	23,000
Population treated (person)	0	104,100

Rate of the wastewater treatment facility utilization (%)	0	64
Rate of population connected to Sewerage (%)	20 - 30	61
BOD <sub>5</sub> concentration (exit) (mg/l)	BOD <sub>5</sub> : 31 - 427	BOD <sub>5</sub> : < 20
Annual Inundation Area(one in five-year probability) (ha)	270	70
No. of beneficialies on solid waste treatment (person)	715,400	766,700
Amount of solid waste treated at Gia Minh landfill (tons/year)	0	223,015

## (2) Internal rate of return

Based on the assumptions below, the economic internal rate of return (EIRR) for this project would be 10.8%.

Cost: Project costs (excluding taxes), maintenance and management costs, etc.

Benefit: Reduction in flood damage and increase in land prices (near rivers, etc.) due to improved environment

Project life: 40 years

## 5. External conditions and risk control

None

## 6. Evaluation results for similar projects in the past and lessons for this project

Ex-ante evaluations of similar Japanese ODA loan projects in the water and sewage system and health sector have demonstrated the effectiveness of public awareness about the environment and health from an early stage in the project and ensuring the participation of residents. Moreover, past projects indicate that is essential that the operations and management system be strengthened in terms of its finances, technology and personnel to ensure the project's sustainability after completion, and that consideration should be given to providing consulting services as necessary to train employees and outsourcing work to private businesses. Evaluations of past projects also teach that support in improving systems is important, such as reviewing the fee system under the new sewage ordinance (2007) and supporting a funding system for poor residents that would find it difficult to pay the connection fee. Accordingly, the consulting service includes plans for public awareness on the environment and health, enforcement of capacity building on operation and maintenance for wastewater treatment facilities (including consideration of a scheme providing financial support to ensure the household connection on sewerage system), and studies on sector management plans and funding plans (including a study on setting appropriate wastewater treatment fees).

## 7. Future evaluation plans

### (1) Indicators to be used in future evaluations

- 1) Amount of sewage treated (m<sup>3</sup>/day)
- 2) Population treated (person)
- 3) Rate of population connected to Sewerage (%)
- 4) BOD<sub>5</sub> concentration (exit) (mg/l)
- 5) Annual Inundation Area(one in five-year probability) (ha)
- 6) Population whose solid waste is collected (people)
- 7) Amount of solid waste treated at Gia Minh landfill (tons/year)
- 8) EIRR (%)

### (2) Timing of future evaluation

Two years after project completion