

Ex-ante Evaluation

1. Name of the Project

Country: The Socialist Republic of Vietnam

Project: Hue City Water Environment Improvement Project

(Loan Agreement: March 31, 2008; Loan Amount: 20,883 million yen; Borrower: The Government of the Socialist Republic of Vietnam)

2. Necessity and Relevance of JBIC's Assistance

(1) The actual state of the water environment sector in Vietnam and the problems it faces

Accompanying industrialization and concentration of population into the cities, the urban areas of Vietnam have witnessed a surge in industrial wastewater and domestic sewage. However, the development of sewerage systems is not progressing, and polluted water is being discharged directly into rivers, causing serious pollution to the water environment. The water contamination is being triggered by a combination of factors including the fact that (i) nearly all industrial and domestic wastewater is being discharged without being treated and (ii) waste products are being dumped in rivers and the like.

Hue City, the capital city of Thua Thien-Hue Province, located in the central part of Vietnam, developed in the flat land of the downstream basin of the Huong River. The population of Hue City reached 330,000 in 2005, making it the sixth largest city after Ho Chi Minh, Hanoi, Haiphong, Da Nang and Bien Hoa. The importance of Hue as a place to invest has increased in recent years, as evidenced by the fact that, as of August 2007, the accumulated investment in Hue amounted to 784 million dollars (13th in Vietnam), which is on the same scale as the accumulated investment made in Binh Phuoc and Da Nang. Hue is best known as the seat of the Nguyen Dynasty, which lasted from the beginning of the 19th century to the middle of the 20th century. The Complex of Hue Monuments, which lies in the old city area and around the city, was recognized as a world heritage site by UNESCO in 1993. Some 1.3 million tourists, both domestic and foreign, come to Hue City annually to visit the world heritage site. An urban development plan designed to turn Hue into a metropolis is being implemented in Hue City, raising expectations of further population growth in the future. However, polluted water from an increase in domestic sewage (caused by recent population growth) and from public facilities such as hospitals and hotels is being discharged mostly untreated into rivers within the city. As a result, there is worsening water pollution in the Huong River, which flows through the center of the urban area and in the waterways of the citadel. This is leading to a loss of the former character of the water capital. In addition, the urban area is on flat and low ground, which, coupled with the inadequacy and insufficient capacity of water networks and recent environmental changes, has led to between one to seven floods annually for the past ten years. Thus the effects on the lives of the inhabitants and on the historic ruins are unavoidable.

(2) Water environment sector policy in Vietnam

In its Guidelines for Urban Drainage and Sewerage System Development Effective to Year 2020 adopted in 1999, the government of Vietnam set a goal of increasing the coverage rate of drainage systems in principal cities such as Hanoi and Ho Chi Minh and industrial areas to 80% or higher. The government also adopted goals of controlling urban floods and promoting the hygienic treatment of

sewage, as well as developing a fund-raising system for improving the drainage system in all urban areas of Vietnam. Moreover, the government has brought together the National Plan and Priority Tasks for 2010–2020 Involving the Water Sector in northern, central and southern regions, respectively, and this project is regarded as a high priority project in the national plan and priority tasks for the central region.

(3) Consistency with JBIC’s assistance policy

In its “global issues and peace building” as part of its Medium-Term Strategy for Overseas Economic Cooperation Operations (FY2005–2007), JBIC attaches importance to supporting “water pollution measures” as one of its priority areas. Since this project aims to improve the sewerage and drainage systems in Hue City, it is consistent with JBIC’s assistance policy. Thus it is highly necessary and relevant that JBIC should support the project.

3. Project Objectives

This project aims to enhance Hue City’s sewage treatment capacity and reduce flood damage by improving the sewerage and drainage systems in the urban area on the south side of Huong River in Hue City, and thereby contribute to the improvement of the hygiene environment of the city and the improvement of water quality in the Huong River, as well as the development of the city.

4. Project Description

(1) Target Area

South side of Huong River (new urban areas), Hue City, Thua Thien-Hue Province

(2) Project Outline

- (a) Sewage treatment plant (treatment capacity: 20,000 m³/day), pumping stations, laying of sewage pipes, etc.
- (b) Procurement of equipment and materials for operation and maintenance
- (c) Dredging of rivers, drainage pipes, and dikes, and improvement of bank protection
- (d) Consulting services (detailed design, bidding assistance, construction management, capacity building of operation and maintenance agencies, implementation and support for programs designed to raise environmental and hygiene awareness so that every household is connected to sewerage systems, as well as educational programs related to the preservation of heritage, detailed design of sewerage and drainage system for the old city area, etc.)

(3) Total Project Cost / Loan Amount

24,008 million yen (Yen Loan Amount: 20,883 million yen)

(4) Schedule

April 2008–December 2016 (105 months). Project completion is defined as when the period of technical assistance is completed.

(5) Implementation Structure

- (a) Borrower: The Government of the Socialist Republic of Vietnam
- (b) Executing Agency: Hue Urban Environment and Public Works State Limited Company

(HEPCO)

(c) Operation and Maintenance entity : HEPCO

(6) Environmental and Social Consideration

(a) Environmental Effects / Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

This project is not likely to have significant adverse impact on the environment due to the fact that the project sector and project characteristics are not likely to exert impact and the project is not located in a sensitive area under the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established in April 2002). Thus this project is classified as Category B.

(iii) Environmental Permit

The Environmental Impact Assessment (EIA) report concerning this project was approved by of Thua Thien-Hue Provincial Department of Natural Resources and Environment in November 2007.

(iv) Anti-Pollution Measures

Sewage that flows into sewage treatment plants will be discharged into rivers after it is treated in a manner that meets the water emission standards of Vietnam. Thus the discharge is not expected to have any adverse impact on the environment. Additionally, polluted sludge originating out of sewage treatment plants will be treated appropriately at existing landfill sites.

(v) Natural Environment

The area targeted by this project is not located in or around sensitive areas, such as national parks, and so adverse impact on the natural environment is assumed to be minimal.

(vi) Social Environment

The project will involve the acquisition of approximately 10 ha of land, which will be carried out in accordance with the domestic procedures of Vietnam. No resident relocation is expected.

(vii) Other/Monitoring

In this project, the executing agency will monitor water quality, air quality, noise and the like during construction and when the improved facilities are in use.

(b) Promotion of Poverty Reduction

With regard to question of who is to bear the initial cost for connecting each household to sewerage systems, in addition to taking the household income of the target area into consideration, efforts will be made in the People’s Committee of Thua Thien-Hue Province to study the possibility of establishing a scheme for offering low-interest loans, installment payments, and so on.

(c) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases Including AIDS, Participatory Development, Consideration for the Handicapped, etc.)

HIV/AIDS measures targeting construction workers will be implemented as a consulting service.

In addition, it is expected that a program for raising environmental and hygiene awareness for

securing household connection to sewerage systems as well as an educational program related to the preservation of heritage will be implemented.

(7) Other Important Issues

None

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2007 actual)	Target (2018, 2 years after completion)
Population treated (persons)	0	95,000
Amount of wastewater treated (m ³ /day)	0	17,100
Percentage of population served in area targeted by project (%)	0	65
Percentage of population treated in the planned target area (%)	0	26
BOD ₅ /SS concentration (exit) (mg/l)	BOD ₅ : – , SS: –	BOD ₅ : < 25, SS: < 30
Area inundated by rainfall of 2-year return period(ha)	177 ha	0 ha

(2) Number of Beneficiaries

145,600 (estimated population in area targeted by project as of 2018)

(3) Internal Rate of Return (Economic Internal Rate of Return)

Based on the conditions indicated below, the economic internal rate of return (EIRR) is 9.7%.

[EIRR]

- (a) Cost: Project cost (excluding tax), operation and maintenance expenses
- (b) Benefit: Reduction of health hazards to people caused by pathogenic microbes, etc., increase in tourist revenue resulting from the increase in the number of tourists by improving the regional image, rise in assessed land value
- (c) Project Life: 40 years

6. External Risk Factors

None

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

From the ex-post evaluation of similar projects in water supply and sewerage and health sectors in the past, the lesson learned is that to realize the effectiveness of a project it is useful to secure the participation of local residents by conducting awareness raising activities concerning the environment and hygiene from the early stages of the project. Additionally, from the perspective of securing sustainability after project completion, the lesson learned is that strengthening of operation and maintenance is indispensable on fiscal, technical and personnel fronts, and therefore implementing consulting services for staff education and training and consigning private companies should be considered as and when necessary. A further lesson learned is that, on the financial front, it is

important to support efforts to make improvements on the institutional front including reviewing the fee structure and establishing a lending mechanism for those too poor to pay the cost of connecting their homes to sewerage systems. On the basis of these lessons, in this project, JBIC plans to include in the framework of its consulting services awareness raising activities concerning the environment and hygiene, enhancement of the operation and maintenance capacity of sewage treatment facilities (including consideration of a scheme for providing support on the financial front to make sure every household is connected to sewerage systems), and surveys related to sector management and financial planning (including surveys on determining sewerage charge).

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

- (a) Population treated (persons)
- (b) Amount of wastewater treated (m³/day)
- (c) Percentage of population served in area targeted by project (%)
- (d) Percentage of population treated in the planned target area (%)
- (e) BOD₅/SS concentration (exit) (mg/l)
- (f) Area inundated by 2-year rainfall (ha)
- (g) Economic rate of return (EIRR) (%)

(2) Timing of Next Evaluation

Two years after project completion