

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: The Republic of Indonesia

Project: Countermeasure for Sediment in Wonogiri Multipurpose Dam Reservoir (II)

Loan Agreement: February 24, 2014

Loan Amount: 4,954 million yen

Borrower: The Republic of Indonesia

2. Background and Necessity of the Project

(1) Current State and Issues of the Water Resources Management Sector in the Republic of Indonesia

Various regions in Indonesia suffer annually from flood and sediment damage, caused in part by changes in rainfall patterns, which are thought to be the result of global warming. This has a serious impact on society and the economy. During the dry season, many regions in the county continue to suffer from the serious water shortages. The Wonogiri Multipurpose Dam located in the basin of the Solo River, which is the largest river in Java, is an important infrastructure contributing to the irrigation, flood control, water resources for public use, and power generation.

In recent years, however, the Wonogiri reservoir has been filled with sediments by the accumulation of sediment inflow caused by excessive farmland development upstream. Without any countermeasure to the sedimentation problem, the Wonogiri reservoir would, in the near future, lose its functions due to decrease of the storage capacity. In order to recover the capacity, fundamental permanent countermeasures should be established.

(2) Development Policies for the Water Resources Management Sector in the Republic of Indonesia and the Priority of the Project

The National Mid-Term Development Plan (RPJM: 2010 – 2014) in Indonesia emphasizes the importance of infrastructure to improve water resources management including flood control to promote economic and social growth as one of 11 priorities for national development.

“Countermeasure for Sediment in Wonogiri Multipurpose Dam Reservoir (II) (hereinafter referred to as “the Project”)” is intended to secure the long term reservoir capacity for irrigation, water resources for public use, power generation, and flood control by conducting countermeasures for sedimentation with construction of closure dike and overflow dike on Wonogiri Multipurpose Dam reservoir (gross reservoir capacity: 735 million m³), and watershed conservation in catchment area. The Government of Indonesia places high priority in implementing the Project to contribute stabilization for the lives of local residents

and improve their social and economic development in the region.

(3) Japan and JICA's Policy and Operation in the Water Resources Management Sector

The Government of Japan considers "Assistance for correction of inequality and establishment of a safe society" as one of the priority areas in the Country Assistance Policy for Indonesia (April 2012) and stipulates to support disaster prevention. JICA Analytical Work for the Republic of Indonesia also prioritizes disaster management as one of the cooperation programs. Therefore, the Project is consistent with such policies and analyses.

The Wonogiri Multipurpose Dam was constructed through the ODA Loan in 1981. JICA implemented a grant project to take an emergency sedimentation measures in 2002. In addition, the feasibility study was conducted for permanent sedimentation measures from 2004 to 2007. Based on the study, "Countermeasure for Sediment in Wonogiri Multipurpose Dam Reservoir (I)" has been commenced in 2009 with the loan amount of 6,060 million yen.

(4) Other Donors' Activity

The Asian Development Bank has conducted the Water Resources and River Basin Management and other related projects to consolidate water resources management and disaster management in response to large-scale flood damages in recent years.

(5) Necessity of the Project

As mentioned above, the Project is consistent with the country's issues and development policies as well as the assistance policies of Japan and JICA. Therefore, it is highly necessary and relevant for JICA to provide assistance through the Project.

3. Project Description

(1) Project Objective(s)

The Project is to secure the long term reservoir capacity for irrigation, power generation, water resources for public use, and flood control of Central Java Province and East Java Province by conducting countermeasures for sedimentation with construction of closure dike and overflow dike on Wonogiri Multipurpose Dam reservoir, and watershed conservation including check dams in the catchment area of Wonogiri Multipurpose Dam Reservoir, thereby contributing to the economic development in the region.

(2) Project Site/Target Area

Central Java and East Java provinces

(3) Project Component(s)

1) Construction of Closure Dike and Overflow Dike

2) Watershed Conservation

3) Consulting services: construction supervision and supervision of Watershed Conservation

* Constructions of Spillway and Spillway Gate, Procurement of Dredger, Watershed Conservation, and consulting services (detailed design, tender

assistance, construction supervision, support for watershed conservation) are currently conducted under Phase-1 Project.

(4) Estimated Project Cost (Loan Amount)

6,558 million yen (Loan Amount: 4,954 million yen)

(5) Schedule

February 2014 - December 2018 (59 months in total)

The Project will be deemed completed when construction of the facilities are completed (December 2017).

(6) Project Implementation Structure

1) Borrower: The Republic of Indonesia

2) Executing Agency: Directorate General of Water Resources, Ministry of Public Works

3) Operation and Maintenance System: Public Water Service Corporation Bengawan Solo (PJT I BS)

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

1) Environmental and Social Considerations

① Category B

② Reason for Categorization: The Project is not considered to be a large-scale dam project, is not located in a sensitive area, and has none of the sensitive characteristics under the JBIC Guidelines for the Confirmation of Environmental and Social Considerations (April 2002), it is not likely to have significant adverse impact on the environment.

③ Environmental Permit: The Project's Environmental Impact Assessment (EIA) has already been completed and approved by the Governor of Central Java Province in December 2011. The Environmental Study for Check Dams implemented under Watershed Conservation shall be conducted through Environment Management Plan (UKL) and Environment Monitoring Plan (UPL) in accordance with the government regulation. The environmental study on UKL/UPL will be completed and approved by the Environmental Agency of Central Java Provincial Office in February 2014.

④ Anti-Pollution Measures: The Project involves civil works within the existing dam reservoir, and no particular negative effects in the river basins are expected.

⑤ Natural Environment: The Project area is not located in and around any sensitive areas such as national parks, and it is likely to have minimal adverse impact on the natural environment.

⑥ Social Environment: The Project involves land acquisition, which will be conducted in line with Indonesia's domestic procedures. No resident relocation is required.

⑦ Other/monitoring: The Executing Agency will conduct water quality and

other forms of monitoring.

- 2) Promotion of Poverty Reduction: none
- 3) Promotion of Social development (e.g. Gender Perspective, Measure for Infectious Diseases including HIV/AIDS, Participatory Development, Consideration for the Person with Disability, etc.): Watershed conservation will be conducted through terracing, planting, promotion of agroforestry and other community empowerment on soil and water conservation. To achieve this, groups of local residents will be formed under the management of the watershed conservation management association of each target community. Measures against HIV/AIDS prevention will also be taken for workers employed on the Project.
- (8) Collaboration with Other Donors or Schemes: none
- (9) Other Important Issues: Since the amount of rainfall is expected to be increased due to climate change, the volume of sediment discharge would be also increased. The Project would contribute for adaptation to climate change in terms of prolongation of lifetime for the Wonogiri dam reservoir.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect indicator):

The operation and effect indicator, which includes the effects of the Phase-1 Project, is shown below.

Indicator	Baseline (Without Project: 2015)	Target value (2019) (2 years after project completion)
Volume of Sedimentation in the Reservoir from the Keduang Reservoir ($10^6 \text{ m}^3/\text{year}$)	0.77($10^6 \text{ m}^3/\text{year}$)	0($10^6 \text{ m}^3/\text{year}$)

2) Internal rate of return

Based on the conditions below, the economic internal rate of return (EIRR) of the Project (Phase-1 and Phase-2) is 17.81%.

Cost: project costs (excluding taxes), operation, maintenance and management cost

Benefits: Agricultural production income and electricity production value

Project life: 50 years

- (2) Qualitative Effect: stabilization of livelihoods, promotion of regional economic activities and facilitation of adaptation to climatic change

5. External Factors and Risk Control

None

6. Lessons Learned from Past Projects

- (1) Lessons from similar projects: The results of ex-post evaluation for Indonesia's Sipansihaporas Hydro Power Plant Project pointed out that the amount of sediment accumulating in reservoir should be monitored for appropriate management through dredging and sand discharge work, as measures against sand accumulation are expected to be necessary in the future.
- (2) Lessons applicable to the Project: In this Project, the Executing Agency will examine and monitor sand accumulation status and volume in reservoir. Systematic dredging and sand discharge methods will be considered in the development of the maintenance and management plan as part of the consulting services.

7. Plans for Future Evaluation

- (1) Indicators to be Used
 - 1) Volume of Sedimentation in the Reservoir from the Keduang Reservoir ($10^6 \text{ m}^3/\text{year}$)
 - (2) economic Internal rate of Return (EIRR) (%)
 - (3) Timing
Two years after the completion of the project