



## 1. Project Data

<b>Project ID</b> P096532	<b>Project Name</b> ID: Dam Operational Improvement (DOISP)		
<b>Country</b> Indonesia	<b>Practice Area(Lead)</b> Water	<b>Additional Financing</b> P161514	
<b>L/C/TF Number(s)</b> IBRD-76690	<b>Closing Date (Original)</b> 31-Dec-2013	<b>Total Project Cost (USD)</b> 70,430,000.00	
<b>Bank Approval Date</b> 19-Mar-2009	<b>Closing Date (Actual)</b> 30-Jun-2017		
		<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>
Original Commitment		50,000,000.00	0.00
Revised Commitment		50,000,000.00	0.00
Actual		47,021,857.19	0.00
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## 2. Project Objectives and Components

### a. Objectives

Project Portal Project Development Objective

The Project Development Objectives in the PAD (page 6) are: i) to increase the safety and the functionality with respect to bulk water supply of large Ministry of Public Works-owned reservoirs; and ii) to strengthen the safety and operational management policies, regulations and administrative capacity of Ministry of Public Works.

In the Financing Agreement for the loan (page 6) the objectives have the same meaning, but are simplified as i) to increase the safety and functionality of dams in selected locations and ii) strengthen management capacity of dam safety. This ICRR is based on the objectives as stated in the financing agreement.



The ICR notes (page13) that implicitly the aim of the PDO was to extend the lifetime of prioritized reservoirs and dams, thus delaying the urgency to build costly new reservoirs.

**b. Were the project objectives/key associated outcome targets revised during implementation?**

No

**c. Will a split evaluation be undertaken?**

No

**d. Components**

**Dam Operational Improvement and Safety Works and Studies** (estimated cost: US\$34.17 million, actual cost US\$31.79 million). This component supported minor rehabilitation and remedial works on about 34 prioritized large reservoir sites to restore operational performance; developing surveys, investigations and designs for medium to major works, providing Basic Dam Safety Facility (BDSF) repair and/or upgrading for improved safety monitoring and preparedness systems, establishing a river inflow and sediment monitoring system, and an assessment of spillway capacity and downstream flooding risks.

**Operation and Maintenance Improvement and Capacity Building**:(estimated cost US\$14.56 million, actual cost: US\$9.57 million). This component supported the preparation of Operations and Maintenance (O&M) plans, Standard Operating Procedures (SOP) and manuals, as well as undertaking needs-based budgeting and O&M activities.

**Reservoir Sedimentation Mitigation** (estimated cost: US\$15.06 million, actual cost: US\$5.5 million). This component supported i) surveys to determine the total available water storage in reservoirs affected by sedimentation; ii) feasibility studies, designs and the Environmental and Social Management Framework (ESMF) for medium-term interventions within the reservoir; iii) preparations for a sample study for decommissioning of severely silted reservoirs, (to be financed under a successor project); and, iv) piloting of institutional models and plans to construct sediment retention and river bank protection structures of upstream rivers and sub-catchments.

**Dam Safety Institutional Improvement** (estimated cost US\$ 2.25 million, actual cost US\$3.99 million). This component supported i) the preparation of the needed Government and Ministerial regulatory documents and concept/academic papers; ii) a public awareness campaign about dams and reservoirs; iii) strengthening and developing the Dam Safety Unit (DSU), providing it with a fully furnished and equipped office and updated guidelines; establishing a dam engineer and technician training and certification system; and, iv) supporting incremental costs of the Central Dam Management Unit within the Ministry.

**Project Management** (estimated cost: US\$ 4.38million, actual cost: US\$4.65 million). This Component provided overall project management including provision of (i) the principal Project Management TA Consultant; (ii) the incremental operating costs of the Central Project Management Unit's (CPMU) and Project Implementation Units (PIUs) activities for coordinating all project interventions; and (iii) a TA support to prepare for the successor project.



#### **e. Comments on Project Cost, Financing, Borrower Contribution, and Dates**

**Cost:** The estimated total project cost at appraisal was US\$70.43 million, Bank's contribution and counterpart funding included. The actual project cost was US\$ 55.50 million.

**Financing:** The planned Bank's financing was US\$ 50.00 million, the actual expenditures as of January 2017 when the ICR was prepared was US\$45.03 million.

**Borrower Contribution:** The Borrower contribution was estimated at US\$20.43 million at the design stage, the actual contribution was reduced to US\$10.45 million because the overall project cost decreased.

**Dates:** The original project closing date was December 31, 2013. This date was extended three times to allow the completion of project activities, reallocation of loan proceeds and revision of some intermediate outcome indicators. The third and last extension was on October 23, 2016 to extend the closing date to June 30, 2017. This was to allow time for the preparation of additional financing to be implemented as a second phase of the Dam Operational Improvement and Safety Project. In accordance with the Bank operational policy, this ICR was prepared at the time that the request for additional financing was prepared.

### **3. Relevance of Objectives & Design**

#### **a. Relevance of Objectives**

The project development objectives were relevant to the WBG Country Partnership Strategy (CPS) at project appraisal and relevant to the Country Partnership Framework (CPF) at the time of ICR: The CPS (FY09 – FY 12) for Indonesia focused on strengthening the country's institutions and investments in (water) infrastructure, climate change and disaster mitigation. The CPF (FY16 – FY20) acknowledged the historical underinvestment in infrastructure in Indonesia and identified water and sanitation projects, including irrigation and dams, to help close the infrastructure gap. Indonesia seeks universal access to water and sanitation by 2019 (CPF page 23). To this end the WBG is giving support to expanding existing and supporting new national level water-related programs.

The objectives were relevant to the country priorities: the Indonesian Government makes long-term development plans as well as five-year medium-term development plans (RPJMN). Each RPJMN identifies development priorities for the specified period. The first RPJMN 2004-2009 emphasized infrastructure development, and the sustainable development of natural resources and food security, all of which were reliant on the effective and sustainable use of water resources. In addition, there were programs prepared on energy, climate change, and environmental protection. The current government administration further developed its vision of water and food security by translating it into an ambitious program of constructing 65 new dams within its legislative period, 2014-2019. The project objectives are relevant to the latest vision and priorities of the Government.

#### **Rating**



High

## **b. Relevance of Design**

The project provided three main types of interventions to support the achievement of the objectives: 1) minor remedial works of 34 hazard dams the risks of which were assessed as "extreme" or "high" to lower the risk profiles and increase the safety of these dams; 2) improved safety monitoring and preparedness systems, establishing a river inflow and sediment monitoring system, and an assessment of spillway capacity and downstream flooding risks, and 3) capacity building of relevant government agencies for dam management. The Dam Operational Improvement Project (DOISP) was intended to consolidate the achievements of the earlier Dam Safety Project through developing a portfolio approach for dam safety, as well as carrying out essential preparation for more complex works to be done under a follow on project. The DOISP design was thereby aimed at advancing the Government's reform agenda and strengthening the performance of those institutions responsible for maintaining dam safety. About 60 percent of the total project cost consisted of investments in infrastructure, studies, investigations and designs as well as dam safety instrumentation. The project components were well-designed to support the project objectives and the results framework (with the exception of one over-ambitious indicator) were adequate to measure progress towards achieving the PDOs.

### **Rating**

Substantial

## **4. Achievement of Objectives (Efficacy)**

### **Objective 1**

#### **Objective**

Increase the safety and the functionality with respect to bulk water supply of large Ministry of Public Works-owned reservoirs

#### **Rationale**

The achievement of this sub-objective was to be achieved through dam rehabilitation, preparation of spillway emergency operation plans and improving the Government's dam portfolio management program.

Main project outputs pertinent to this sub-objective included:

- 33 dams were rehabilitated, meeting the revised target of 33; (originally there were 34, but one dam experienced slope sliding and had to be urgently repaired using Government funds).
- 10 basic dam safety facilities (BDSFs) were installed, 23 less than the target because of the delayed procurement process. The ICR reported that the remaining BDSFs were being re-tendered.
- Operation & Maintenance plans were prepared and submitted for review for 51 dams against a target of 56 dams;
- Memorandum of Understanding (MOUs) were signed with communities in the vicinity of 18 dams to



improve the community participation for dam safety and security.

**Outcomes:**

- The dam rehabilitation and the installation of BDSFs reduced the failure risk of dam failure for 33 dams through physical remedial works and by preparing Spillway Emergency Operation Plans. No dams are now considered at "extreme" risk. Twenty out of 31 dams now have a moderate risk instead of high. The overall hazard risk has been reduced to 25 percent, short of the target of less than 30 percent.
- In addition to the improved safety of the 33 dams supported by the project, the safety of dams managed by the Ministry of Public Works benefited from an increased dam O&M budget. The 2016 budget increased between 60 and 120 percent compared to 2009. It was also expected that enhanced community participation as a result of MOUs signed with communities would help enhance dam security and safety. As reported by the ICR (page 37), at the end of the project, 37 percent of households in the pilot project area joined watershed management, this percentage exceeded the original project target of 25 percent.
- While there is evidence on the improved safety of dams, the project neither defined nor had indicators to measure the "functionality" of large reservoirs. The ICR does not provide evidence on increased functionality with respect to bulk water supply of large Ministry of Public Works-owned reservoirs. Overall, while the safety of dams was improved as a result of project's support, there is no information available for increased functionality of bulk water supply of large reservoirs. The achievement of this sub-objective is assessed as being modestly achieved.

**Rating**  
Modest

## **Objective 2**

### **Objective**

Strengthen the safety and operational management policies, regulations and administrative capacity of Ministry of Public Works

### **Rationale**

The main project outputs associated with this sub-objective included:

- 56 Emergency Action Plans (EAPs) were prepared and publicly accepted;
- Reservoir survey of 30 or more severely sediment-impacted large dams completed and structural and non-structural sedimentation mitigation program for these dams is ready for execution;
- Training for staff responsible for the O&M and safety monitoring of 64 dams were conducted; the original target was to train the staff of 63 dams.
- Four Ministerial Regulations related with dam safety and management were finalized, another 29 related



guidelines and manuals were also prepared, 24 of which were completed at the time when the ICR was prepared.

In addition to the 56 EAPs prepared under the project, the Directorate General for Water Resources (DGWR) of the Ministry of Public Works and Housing and the river basin organizations developed approximately additional 24 EAPs without the assistance of WB, demonstrating evidence of enhanced capacity. A Dam Monitoring Unit (DMU) was established in each of the Balais (main towns) and a Central Dam Monitoring Unit (CDMU) was established in DGWR. The DMUs have become important and well-functioning entities in the Balais, they monitor dam safety and report to the CDMU regularly.

### **Rating**

Substantial

## **5. Efficiency**

Economic and financial analysis were prepared at the time of appraisal. For economic analysis, the cost was the project cost including physical contingencies, price contingencies and taxes. The main project benefit was the avoided loss to the households and agricultural production in the project area because of reduced probability of dam failure as a result of project support. The avoided total potential loss was estimated at US\$570 million. The economic rate of return (ERR) was estimated at 32.8% and the Net Present Value (NPV) was US\$108 million. At project closing stage, the team applied the same methodology, the ERR was 28.7% and the NPV was US\$ 22million. The lower values at closing date were mainly because the difference of assumption regarding reductions in the dam failure probability with the project interventions, and delays in project implementation that affected benefit build-up.

The financial analysis was to assess the fiscal impact on the budget of central and provincial governments, and the financial burden of water users, from increased O&M expenditure of dams and reservoirs, if the project dams were to be maintained at good condition. At appraisal stage, water users were not charged for using water for irrigation, the O&M cost was fully borne by the governments. If the practice continued, the annual fiscal burden to the central and provincial government would increase by 64% from US\$2.82 million to US\$4.63 million. At closing stage, a financial analysis was not conducted.

The project was extended by 3.5 years because of various reasons including the initial delays in implementation, the reorganization of the implementing agency and procurement and contract management. In addition, it was noted that some of the project activities were not fully completed by the time when the project was closed, e.g., only 10 basic dam safety facility (BDSF) were installed, 51 as against target 56 operation and maintenance plans were prepared. The overall project efficiency is assessed as being modest.



## Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	32.80	100.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	28.70	100.00 <input type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

The project was relevant to the World Bank Group country strategies for Indonesia and met the client's priorities. The project design was consistent with the objectives. The project interventions helped improve the safety of dams and strengthen the capacity of Ministry of Public Works. However, the project did not define or provide evidence on the improved functionality with respect to bulk water supply of large reservoirs. At the same time, the project implementation experienced 3.5 years of delay and some of project activities were not fully completed at the time when the project was closed. Given there were moderate shortcomings in the operation's achievement of its objectives and its efficiency, the project outcome is assessed as being moderately satisfactory.

### a. Outcome Rating

Moderately Satisfactory

## 7. Rationale for Risk to Development Outcome Rating

The main risk to development outcome is the sustainability of O&M funds for dams. While the actual O&M increased during the project cycle, the amount was still lower than the needs. Since the O&M funds are coming from the government budget rather than user fees (given the regulatory limitation on collecting user funds), there is risk that the O&M budget will be squeezed by other priorities of the government. Having said that, the 2016 budget increased O&M allocations by between 60 and 120 percent compared to 2009. Thus, the trend as seen in the increase in the O&M budget is a good sign that increased emphasis is being paid to ensure the safety of dams and its sustainable operations. Therefore, the risk to development outcome is **Modest**.

### a. Risk to Development Outcome Rating

Modest





## 8. Assessment of Bank Performance

### a. Quality-at-Entry

Dam safety and functionality are critical to the development of Indonesia economy, hence, improving the safety of dam was the priority of the government. The Bank team targeted at the right issue, the support for dam safety improvement included not only dam repair but also dam maintenance enhancement and capacity building of government agencies responsible for dam management, such approach of combining both structural and non-structural remedial measures proved to be more effective to ensure reservoir and dam sustainability. However, the team underestimated the complexity of project implementation which involved multiple implementing agencies, resulting in delays in implementation after project effectiveness. In addition, one of the project outcome targets set by the team proved to be over ambitious. The target of reducing the percentage of dams rated as 'high hazard' from 81% to less than 5% could not be achieved with the time and resources provided by this project. On top of that, there were no specific indicators monitoring the achievement of "increased functionality with respect to bulk water supply of large Ministry of Public Works-owned reservoirs".

#### Quality-at-Entry Rating

Moderately Satisfactory

### b. Quality of supervision

The supervision was regular. The team provided professional advices and technical support throughout the project. However, substantial delays in the procurement and installation of some work packages occurred. In addition, the team did not correct the over-ambitious target and add new indicators to measure the achievement of "increased functionality with respect to bulk water supply of large Ministry of Public Works-owned reservoirs".

#### Quality of Supervision Rating

Moderately Satisfactory

#### Overall Bank Performance Rating

Moderately Satisfactory

## 9. Assessment of Borrower Performance

### a. Government Performance

The Government was committed to the project as evident by: 1) Implementing this project as a "national government" project, the national government provided full budget support; 2) Commitment to a programmatic engagement to dam safety, the Dam Operational Improvement Project being the first one;





and 3) Increasing budget allocation for dam operation and maintenance and organizationally establishing a special Directorate for Operation and Maintenance within Ministry of Public Work and Housing.

### **Government Performance Rating**

Satisfactory

### **b. Implementing Agency Performance**

The Directorate General Water Resources (DGWR) in the Ministry of Public Work and Housing (MPW) had the overall responsibility for project implementation. A Central Project Management Unit (CPMU) established in DGWR, was responsible for overall project and financial management. A Central Project Implementation Unit (CPIU) was formed in the DGWR for central technical tasks and training, Project Implementation Units were established in the MPW regional offices and provincial offices were responsible for project implementation in the field. While most of project activities were completed, the implementing agencies did not pay sufficient attention to safeguards management and fiduciary including contract management as evidenced by missing reporting of Environmental Management and Monitoring Plan (UKL/UPL) for a number of subprojects, delayed procurement of Basic Dam Safety Facilities and delayed submission of Interim Financial Reports etc.

### **Implementing Agency Performance Rating**

Moderately Satisfactory

### **Overall Borrower Performance Rating**

Moderately Satisfactory

## **10. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

Most PDO and intermediate indicators are reflecting the main objective stated in the PDO, i.e. increasing the safety of reservoirs and the strengthening the safety and O&M policies, regulation and capacity of the Government. These indicators remained valid through out the project cycle. However, as project team commented that the targets of dam risk score turned out to be overambitious. In addition, IEG also noted that there were no indicators to measure to measure the achievement of the sub-objective of increased functionality of reservoirs.

### **b. M&E Implementation**

The project M&E system was put in place when the project started. The Central Project Management Unit responsible for monitoring project progress, work quality and other relevant aspects submitted monitoring reports quarterly. Independent monitoring and assessment of water resources and environment of the dams were done at the mid-term and the completion stage.



### **c. M&E Utilization**

The project monitoring information was used for correction and adjustment for the purpose of better project management and development outcomes. For example, the project quality information was used for identifying and remedying dam construction quality problems. An independent monitoring study provided recommendations to MPW on how to use the right method to calculate O&M demands and consequently led to increased O&M budget allocation to each dam.

### **M&E Quality Rating**

Modest

## **11. Other Issues**

### **a. Safeguards**

The project is a Category B project: at the design stage, the safeguard policies triggered included OP 4.01 on Environmental Assessment, and OP 4.37 on Safety of Dams. An Environmental and Social Safeguards Management Framework (ESMF) was prepared to set out the objectives and principles of the Environmental Management Plans (EMPs) of each individual subproject. At the initial stage of project implementation, four EMPs were prepared for the first four subprojects to be implemented in year one. The CPMU was responsible for preparing the EMPs for the following set of sub-projects and reporting semi-annually the performance on safeguards implementation. For the safety of dams, in addition to ensure the safety during the project cycle, the project also assisted Government of Indonesia in designing and mainstreaming programmatic measures of regulatory, administrative and financial nature to enhance the dam safety across the country's dam portfolio. At ICR stage, the team reported that while the project was in compliance, there was missing reporting on the safeguard implementation for a number of subprojects, the main reason being the absence of a safeguard focal point in the CPMU.

### **b. Fiduciary Compliance**

Procurement:

Procurement of Basic Dam Safety Facilities (BDSF) was delayed, at the end of the project, only two packages were procured and facilities installed, the procurement of remaining 23 BDSF was still in process. The execution of the contract for the supply of several dredgers encountered issues mainly because of 30% depreciation of Indonesian Rupiah (IDR) against US dollar after the contract in IDR was signed. This issue was resolved by extending the contract period but nevertheless incurred delays. Overall, the project complied with the World Bank's Procurement Guidelines and remained moderately satisfactory throughout project implementation.

Financial:



The project financial management encountered problems at the initial stage of project implementation. Problems included a disclaimer opinion on FY2010 project's financial statement, delay on Interim Financial Report submission and weaknesses on payment verification. CPMU together with the Bank team took up correction actions. The financial statements after 2010 consistently received unqualified audit opinions. The ineligible expenditures were refunded and financial reports were submitted on time.

### c. Unintended impacts (Positive or Negative)

N/A

### d. Other

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## 12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Risk to Development Outcome	Modest	Modest	The O&M funds, while increasing, are still below the actual needs. Long-term mechanism of sufficient funds allocation is yet to set up.
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Substantial	---

### Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

## 13. Lessons

**Targets should be set based on what is achievable within the scope of the project.** For this specific project, the target for the overall risk score reduction could only be achieved when the external factors beyond the project also changed. In the end, the risk score did not reduce to the level projected mainly because of factors out of the scope or not applicable to the project such as business risk to the dam owner in case of a



failure, the potential damage to downstream population in case of a failure, downstream asset development or structural specifications such as dam height or reservoir volume. It is recommended to carefully consider PDO indicator targets or using more disaggregated indicator targets that the project can influence.

**Continuous support to enhance client's capacity is key for a successful project implementation.** The project experiences substantial procurement delays because of various reasons including the rotation of key staff and the lack of capacity of preparing multiple procurement packages within required timeframe. In addition, the project also took note that the capacity of sub-national Balais needs to be enhanced as well. As the Bank is scaling up its support to dam development in Indonesia, providing continuous and systematic support to enhance client's capacity is important for a smooth project implementation and for a successful achievement of intended results.

**The M&E framework should measure all the PDOs.** This project had multiple objectives, but not all objectives had indicators to measure achievement. The absence of an indicator to measure a key sub-objective meant there could be no meaningful reporting of achievement when the project closed. Hence the project's outcome was diminished because of lack of evidence.

#### 14. Assessment Recommended?

No

#### 15. Comments on Quality of ICR

This ICR was comprehensive with detailed information on the process and results of the projects. The ICR also provided transparent and candid discussion on the ambitiousness of one of the key PDO indicators. The ICR could benefit from more discussion of functionality improvements of reservoirs which was a key project sub-objective.

##### a. Quality of ICR Rating

Substantial