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Report Number: ICRR0023265

1. Project Data

Project ID	Project Name
P089985	IN: Dam Rehabilitation & Improvement
Country	**Practice Area(Lead)**
India	Water

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
IBRD-79430,IBRD-89090,IDA-47870	31-Dec-2016	298,394,101.77
Bank Approval Date	**Closing Date (Actual)**	
29-Jun-2010	31-Mar-2021	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	350,000,000.00	0.00
Revised Commitment	307,877,655.98	0.00
Actual	298,394,101.77	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) of the Dam Rehabilitation and Improvement Project (DRIP) as articulated in the Loan Agreement (page 5) was almost identical (except where underlined) to the one in the Project Appraisal Document (PAD. paragraph 20) and aimed to:

"improve the safety and operational performance of selected existing dams in the Borrower's territory."

In the PAD the underlined was stated as: ***"in the territory of the participating states."***

Parsing the PDO. The PDO will be parsed according to the following two objectives:

1. To improve the safety performance of selected existing dams in the Borrower's territory.

2. To improve the operational performance of selected existing dams in the Borrower's territory.

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

Did the Board approve the revised objectives/key associated outcome targets?
Yes

Date of Board Approval
14-Jul-2015

c. Will a split evaluation be undertaken?
No

d. Components
The PDO was supported by the following three components:

1. Rehabilitation and Improvement of Dams and Associated Appurtenances (appraisal cost: US$378.40 million, IBRD Loan: US$151.36, IDA Credit: US$151.36, actual cost: US$333.59 million, IBRD Loan: US$143.00 million, IDA Credit: US$120.10 million). This component would focus on structural and non-structural measures at 223 project dams, many of which were more than 25 years old. The number of dams proposed for inclusion in the project was based on proposals received from the four participating states. The states had done a review of the status of their dams and determined those dams that were most in need of rehabilitation and improvement in order to guarantee their future safety and operational capacity. The proposed interventions would include, but not be limited to, such works as: treatment of leakage through masonry and concrete dams and reduction of seepage through earth dams; improving dam drainage; improving the ability to withstand higher floods, including additional flood handling facilities, as required by the hydrological assessments, accompanied by structural strengthening of dams; non-structural measures to cater for higher design floods in case structural measures are physically not feasible; rehabilitation and improvement of spillways, head regulators, draw-off gates and their operating mechanisms, stilling basins, and downstream spillway channels; improving approach roads; improving office and housing accommodation; and improving dam safety instrumentation. The project would also support hydrological assessments and specialized consulting services, e.g. for the design of state-of-the art, but affordable instrumentation. In addition, preparation and implementation of asset management plans, emergency preparedness plans, emergency warning systems, public awareness campaigns, and floodplain mapping would be included in all states. Operators of dams, state design organizations, and engineering

cells in Water Resources Departments (WRDs) and SEBs would provide design services and day-to-day construction supervision. Consulting services for the more complicated design and third-party supervision services and specialized tasks would be recruited to assist WRDs and State Electricity Boards (SEBs), as needed.

2. Dam Safety Institutional Strengthening (appraisal cost: US$25.20 million, IBRD Loan: US$10.08, IDA Credit: US$10.08, actual cost: US$21.86 million, IBRD Loan: US$11.77 million, IDA Credit: US$5.59 million). This component would focus on strengthening the regulatory and technical frameworks for dam safety assurance. The activities to be carried out would include, but not be limited to, targeted training nationally (especially at the National Water Academy in Pune) and internationally to Dam Safety Organizations at Central (CDSO) and State (SDSO) level to become effective organizations that could take the lead in ensuring that dams remain safe from a structural and operational point of view; in-country and external training of staff of WRDs and SEBs to assist with the development of appropriate skills and modern tools to adequately operate and maintain dams; attendance at dam safety courses; study tours, and linking with foreign country agencies that have advanced dam safety programs such as the United States and Switzerland; operation of independent dam safety review panels, comprising experts in relevant disciplines; development of capacity to carry out reservoir sedimentation studies; development of Management Information Systems (MIS) and other programs to capture and analyze data for long-term planning and guiding of dam operations; support to the further development within CWC of the Dam Health and Rehabilitation Monitoring Application (DHARMA) program that would allow a systematic presentation and interpretation of data for effective monitoring of the health of dams; support to the revision of existing guidelines on dam safety and preparation of new guidelines, as needed; and training in hazard and vulnerability assessment and dam-break analysis.

3. Project Management (appraisal cost: US$33.90 million, IBRD Loan: US$13.56, IDA Credit: US$13.56, actual cost: US$35.37 million, IBRD Loan: US$13.46 million, IDA Credit: US$13.96 million). This component would fund activities related to project management. The overall responsibility for project oversight and coordination would be under the Dam Safety Rehabilitation Directorate in the Central Dam Safety Organization (CDSO) of the Central Water Commission (CWC). This Directorate would act as the Central Project Management Unit (CPMU). The Directorate would be assisted by a management and engineering consulting firm. Each state would establish a State Project Management Unit (SPMU) attached to the WRD Chief Engineer's (CE) office in charge of the State Dam Safety Organization (SDSO). This Unit would have direct responsibility for the coordination and management of the project at state level.

Revised Components
According to the ICR (paragraph 18) "The rehabilitation and improvement activities for the Hirakud dam in Odisha and some non-structural and institutional strengthening activities were added through the AF. The AF increased the funding for the three components without revising their overall scope."

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

Project Cost. The total project cost at appraisal was estimated at US$557.70 million. This amount was revised downwards to US$459.44 million. The actual cost according to the ICR Data Sheet (page 2) was US$390.82 million. The difference was due to lower than anticipated disbursements from IBRD loan, IDA Credit and borrower contribution (see below for details).

Financing. The project was financed through a Bank Loan that totaled US$350.00 million. This loan was composed of an International Bank for Reconstruction and Development (IBRD) Variable Spread Loan (VSL), repayment in 30 years, including 5 years grace period, worth US$175.00 million and an International Development Association (IDA) Credit (repayment in 35 years, including 10 years grace period) worth US$175.00 million. The project also received additional financing (AF approved on February 28, 2019) in the form of an IBRD Loan of US$137 million. According to the ICR (paragraph 19) the AF was to "finance the additional project cost." With the AF the total Bank financing was US$487.00 million. This amount was revised downwards to a total of US$307.88 million with the original IDA Credit revised down to US$139.65 million, the original IBRD loan to US$139.65 million, and the AF revised down to US$28.58 million. The actual disbursed amount totaled US$298.39 million composed of original IBRD loan of US$139.65 million, IDA Credit of US$130.17 million, and IBRD AF of **US$28.58 million (ICR data Sheet, page 2)**. The total financing changed at project closing mainly because of currency fluctuation (significant currency fluctuation occurred during implementation where the exchange rates changed from US$1 = INR 48 at appraisal to US$1 = INR 73 at closing), including the cancellation of US$35.35 million from the original IBRD Loan and US$35.35 million from the IDA Credit in 2014 (ICR, paragraph 22). Also, AF was reduced from US$137.00 million to **US$14.12 million** at closing through multiple cancellations that totaled US$108.43 million, while US$21.88 million remained undisbursed at project closing. According to the ICR (paragraph 22) "this large reduction in use of AF was mainly caused by cancelation of works at Hirakud Dam."

Borrower Contribution. The borrower was expected to provide US$70.70 million of counterpart funding. This amount was revised upwards to US$151.56 million. The actual amount contributed was US$92.43 million (ICR, Data Sheet, page 2).

Dates. The project was approved on June 29, 2010 and became effective 22 months later on April 18, 2012. The Mid-Term Review (MTR) was conducted on October 17, 2014, about 3.5 years into effectiveness. The PAD had a planned MTR on May 1, 2012, but given the delay in effectiveness, the timing of the MTR was reasonable. The project closed on March 31, 2021 compared to a planned closing date on December 31, 2016. The four years and three months beyond the original closing date were to compensate for the delay in effectiveness and to ensure a sufficiently long project implementation duration as well as compensate for delays due to Covid-19 restrictions (ICR, paragraph 25). The project received one Additional Financing (AF) of US$137.00 million on February 28, 2019.

The project was restructured 8 times, all of which were Level 2 restructuring as follows:

1. On February 28, 2013, when the amount disbursed was US$5.07 million, in order to change disbursement estimates.

2. On April 7, 2014, when the amount disbursed was US$7.14 million, in order to change components and cost and US$70.70 million of financing was cancelled.

3. On September 26, 2014, when the amount disbursed was US$9.35 million, in order to change the implementing agency.

4. On July 14, 2015, when the amount disbursed was US$19.01 million, in order to change the implementing agency, change the Results Framework (RF), the changes in respect of the number of dams (design floods; stability and seepage; and having basic safety facilities) were relatively minor but there was a substantial increase in the number of emergency response plans (60 to 150) indicating that the authorities

were taking this aspect very seriously change, components and cost, change the institutional arrangements, change Financial Management, and change Procurement.

5. On May 25, 2017, when the amount disbursed was US$99.84 million, in order to change the Loan closing date from December 31, 2016 to June 30, 2018.

6. On June 19, 2020, when the amount disbursed was US$255.64 million, in order to change the Implementing Agency, change the Results Framework, change components and cost, change the original Loan closing date from June 30, 2018 to June 29, 2020 and the closing date of the DRIP-AF was extended once from June 29, 2020, to March 31, 2021, cancellation of US$8.10 million from the DRIP-AF financing, and reallocate funds between disbursement categories.

7. On December 3, 2020, when the amount disbursed was US$277.84 million, in order to change components and cost, cancel financing, reallocate funds between disbursement categories.

8. On March 18, 2021, when the amount disbursed was US$283.15 million, in order to change in components and cost, cancel financing, reallocate funds between disbursement categories.

Rationale for Changes and their Implications for the Original Theory of Change.

The above-mentioned changes were justified and did not impact the Theory of Change. Changes were justified because the project experienced a considerable delay in effectiveness. This delay resulted in staffing issues and "none of the State Project Management Units (SPMUs) were adequately staffed at the time of project effectiveness (ICR, paragraph 25)." Also, India had a limited number of contractors with the requisite expertise in dam rehabilitation during early implementation of the project. During implementation, other Indian states, namely, Karnataka and dam agencies in Jharkhand and Uttarakhand joined the project. The RF was revised after it was determined that some small auxiliary dams did not need specific dam safety measures. Cancellation of financing was due to significant currency fluctuation occurred during implementation as noted above. Also, the cancellation of the Hirakud Dam additional spillway and the cancellation of the Damodar Valley Corporation (DVC) project allocation as well as savings in project management costs, all of which contributed to cancellation of financing. Finally, the COVID-19 disruptions necessitated the extension of the closing date of the DRIP-AF by nine months for an additional construction season to allow more time to finish construction works.

3. Relevance of Objectives

Rationale

Context at Appraisal. Many large dams in India were ageing and had various structural deficiencies as well as shortcomings in their operation and monitoring facilities. In most states, budgets for dam O&M were part of the larger budget for irrigation system maintenance, which was typically decided on the basis of irrigated area rather than need-based. This project would act as a pilot, showing how to return dams to fully operational and safe condition in a technically and financially sustainable manner, in addition to building the needed capacity to monitor the performance of dams.

Previous Bank Experience. The Bank has extensive experience with water management projects in India. This includes the following projects: Hydrology Project Phase II, Madhya Pradesh Water Sector Restructuring Project, Maharashtra Water Sector Improvement Project, Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management Project, and Orissa Community Tanks Management Project. In addition, the Bank has similar experiences in other regions of the world including in Central Asia and China, among others. Based on its long involvement in the water sector and experience with the institutions involved both at the center and in the states, the Bank was well placed to assist India in developing the institutional framework required to
support and implement India's existing regulations and procedures in dam safety. In addition, the Bank has much global and regional experience to support dam rehabilitation and improvement operations. Also, the Bank's experiences with disaster risk management can assist the state governments with a better management of the dams and flood waters.

Consistency with Bank Strategies. At appraisal, the PDO was in line with the Bank's Country Assistance Strategy for the Republic of India (CAS, FY2009-FY2012), which focused on the development of infrastructure and support for the poorer states. The PDO was also in line with the Bank's water resources strategy which emphasized that: (i) water resources development and management were central to sustainable growth and poverty reduction; (ii) the Bank needed to assist countries in developing and maintaining appropriate stocks of well-performing hydraulic infrastructure; and (iii) the Bank's water assistance must be tailored to a country's specific circumstances and be consistent with the overarching country strategies. The PDO was also in line with two important objectives of the Bank's Operational Policy on "Safety of Dams" (OP 4.37), namely, (i) to work with borrowing countries to strengthen their institutional, legislative, and regulatory frameworks for dam safety programs; and (ii) to ensure that the borrower adopts and implements adequate dam safety measures for the design, bid tendering, construction, and O&M of the dam and associated works.

At completion, the PDO continued to be in line with the current Bank Country Partnership Framework (CPF, FY18–22). The PDO directly supported the first focus area of the CPF: "Promoting resource-efficient growth". The project aimed to: enhance the sustainable and efficient management of water resources, and contribute to more resource-efficient growth in the rural sector through better and more reliable irrigation supply from the dams (CPF Focus Area 1.1), improved living conditions and sustainability of cities through improved water supply for domestic drinking water and industrial use (CPF Focus Area 1.2), increased access to sustainable energy by strengthening dam safety and operation for better hydropower generation (CPF Focus Area 1.4), and enhanced disaster risk management through better drought and flood management (CPF Focus Area 1.5). The CPF also identified climate-smart engagement as a cross-cutting theme. The project contributed to climate-smart engagement through improving dam safety and disaster risk management.

Consistency with Government Strategies. At appraisal, the PDO was in line with India's National Water Policy (April 2002). The strategy had a section on safety of hydraulic structures, where it indicated that there should be proper organizational arrangements at the national and state levels for ensuring the safety of storage dams and other water-related structures. The PDO was also in line with the Dam Safety Act (updated in 2008) which called for regular inspections of all large dams and establishing functional independent dam safety review panels.

At completion, the PDO continued to be in line with the government's priorities for dam safety and climate change at project closure. Dam safety continued to be considered a national priority as indicated by the approval of the DRIP-II before the closing date of the DRIP. The PDO was in line with the Dam Safety

Act (December 2021), which emphasized the importance of dam safety in the country and mandates the establishment of dam safety institutions and the setting up of a National Dam Safety Fund. The 2021 Act provided legally binding framework for improving the O&M funding and sustainability of dams. The ICR (paragraph 28) stated that "the government also realizes that the optimum use of existing dams and guaranteeing their safety under climate change impacts are becoming increasingly important."

Level of Ambition of the PDO. The PDO was pitched at an appropriate level of ambition given the Bank's experience in India and globally. Climate change impacts were addressed in hydrological assessments, emergency management, O&M, and retrofitting of dams. Moreover, the project introduced a number of advanced technologies (ICR, paragraph 38).

Summary of Relevance of Objectives Assessment. The PDO statement was clear and focused and with an adequate level of ambition. Objectives were also in line with the Bank strategies and the GoI's priorities for dam safety and climate priorities. Therefore, Relevance of Objectives is rated High.

Rating
High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1
Objective
To improve the safety performance of selected existing dams in the Borrower's territory.

Rationale
Theory of Change (ToC). To achieve the stated objective, the project would support dam rehabilitation and improvement through: (i) structural rehabilitation including: leakage treatment, seepage reduction, dam drainage development, and improvement of spillways, head regulators and gates; (ii) non-structural measures including: establishing an asset management plan, emergency preparation and warning systems, and hydrological assessments. These activities were expected to: 1. Improve safety of project dams, specifically, dams would be able to safely cater for designed floods; dams would show acceptable stability and seepage; and basic dam safety facilities would be established in place, 2. Contribute to improved operational performance pf project dams. Anticipated long-term outcomes would be enhanced dam safety to ensure water security and strengthening of disaster risk management.

The achievement of the PDO was underpinned by the following assumptions: 1. Some initially selected dams might be replaced by other dams if more urgent rehabilitation works emerged, and 2. More States/Institutions were expected to participate in the project during implementation.

The stated activities in the ToC were directly connected to the PDO in a plausible causal chain. The assumptions that underpinned the achievement of the PDO were realistic.

Outputs

The following outputs were reported by the ICR (Annex 1) unless referenced otherwise.

- 186 project dams had the improved ability (structural or non-structural) to safely cater for the design floods (original target: 200, revised target: 198; achievement rate based on the revised target: 94%).
- 191 project dams had acceptable stability and seepage (original target: 200, revised target: 198; achievement rate based on the revised target: 96%).
- 198 project dams had basic dam safety facilities in place (original target: 200, revised target: 198; achievement rate based on the revised target: 100%). The access of 153 dams was improved with approach roads, bridges, and culverts; external lighting was provided at 101 dams; security systems were installed at 65; gallery lighting was improved at 27; critical equipment for emergency support was supplied to 69; central monitoring and control systems were installed at 26; staff facilities and other buildings were constructed or rehabilitated at 115; and environment protection measures were implemented at 15 dams. In addition, various monitoring instruments were installed at 118 dams, including 109 hydro-meteorological instruments, 95 geotechnical instruments, 73 geodetic instruments, and 43 seismic instruments. (ICR, paragraph 36).
- 198 project dams had the revised dam flood hydrology assessed and actions agreed to address changes in design parameters (original target: 223, revised target: 198; achievement rate based on the revised target: 100%).
- 189 project dams had the necessary remedial measures reviewed and addressed (original target: 223, revised target: 198; achievement rate based on the revised target: 100%).

Outcomes

- The project improved the ability of the project dams to cater the revised design floods. Revised design floods were calculated for all 198 dam projects (target achieved) in accordance with the new standards and according to the latest hydrological and meteorological data available. Improving the ability of the project dams to cater the revised design floods was achieved through the rehabilitation or reconstruction of spillway channels, additional spillway gates or increase in spillway length, re-sectioning of dams, construction of parapet walls, and construction of fuse plugs (ICR, paragraph 34). By project completion, 189 project dams had the necessary remedial measures reviewed and addressed compared to a target of 198 and a baseline of none. The project also supported non-structural measures, such as flood routing and reservoir management, pre-release reservoir water based on flood warning, and the preparation and implementation of emergency action plans (EAPs). By project completion 186 dams had improved ability to cater the revised design floods (Outcome Indicator 1) compared to a baseline of 60 dams and a revised target of 198 dams.
- The project also increased the number of dams with acceptable stability and seepage from a baseline of 7 to a total of 191 dams (outcome indicator 2). According to the ICR (paragraph 35) the project identified 80 dams with seepage-related and 169 with structural stability-related deficiencies. Seepage issues were addressed through seepage control measures for masonry/concrete dams included raking and pointing of upstream face with UV resistant high strength mortar; dam body grouting, treatment of contraction joints, upstream face geo-membrane; and for embankment dams include grouting of foundation and provision of cut-off. While structural stability was addressed through stability measures that included: embankment dam re-sectioning or repair of deformed slopes, repair of upstream embankment and downstream slope protection, masonry/concrete dam reaming of porous and foundation drains, masonry/concrete dam backing concrete, and repair of abutments (ICR,

paragraph 35). The ICR (paragraph 35) noted that seven dams had critical stability and seepage issues were not effectively addressed due to the need for more detailed investigation and comprehensive approaches, but these were being addressed under DRIP-II.

- The project improved dam safety facilities for 198 dams compared to a revised baseline of 16 (outcome indicator 3, target fully achieved. The project identified 182 dams as lacking one or more safety facilities for an effective response to the emergency situations. This was achieved through improving access; installing security systems; improving gallery lighting; supplying critical equipment for emergency support; installing central monitoring and control systems; rehabilitating or constructing staff facilities and other buildings were ; and implementing environment protection measures. In addition, various monitoring instruments were installed including: hydro-meteorological instruments, geotechnical instruments, geodetic instruments, and seismic instruments. According to the ICR (paragraph 36) "these facilities met the basic needs of each dam to monitor and record structural behaviors, displacements, seepages, to forewarn dam operators on possible risks, and to ensure proper operations in an emergency."

Summary of Efficacy Assessment. The evidence provided in the ICR point to the success of the project in improving the safety performance of selected existing dams in the Borrower's territory through integrated structural and non-structural measures. One outcome indicator target was fully achieved and two outcome targets were substantially achieved, and one intermediate outcome indicator target was fully achieved, while another was substantially achieved. Based on this, the efficacy with which this objective was achieved is rated Substantial.

Rating
Substantial

OBJECTIVE 2
Objective
To improve the operational performance of selected existing dams in the Borrower's territory.

Rationale
Theory of Change (ToC). To achieve the stated objective, the project would support institutional strengthening through: strengthening of the central and state Dam Safety Organizations (DSOs); provide training and capacity building activities to dam personnel; support further development of the Dam Health and Rehabilitation Monitoring Application (DHARM) program within the Central Water Commission (CWC); and revise and develop guidelines. These activities were expected to strengthen DSO offices to carry out their mandated functions adequately, project dams would have adequately trained staff who could implement the approved operation manuals, grievances would be satisfactorily resolved, and the number of skilled women professional would be increased in dam operations and management. This would collectively result in improved operational performance of project dams in terms of: project dams with need-based O&M plans operationalized; required budget per state for adequate O&M; and project dams where emergency response plans prepared and disseminated to the population. Anticipated long-term outcomes would be enhanced dam safety to ensure water security and strengthening of disaster risk management.

The ToC lacked specific assumptions that underpinned the achievement of this objective. Overall, the causal connection between the stated activities and the expected outcomes was clear. However, it was not clear in the ToC the means that would help states get the required budget for adequate O&M.

Outputs

The following outputs were reported by the ICR (Annex 1) unless referenced otherwise.

- 55% of the required budget per state had adequate O&M (baseline: 50% - ICR stated it should be 33%, original target: 80%, achievement rate: 67%).
- 198 project dams had been registered with the data uploaded in Dam Asset Management System (original target: 180, revised target: 198, target achieved).
- 190 project dams had updated and approved dam operational manuals (original target: 180, revised target: 150, over achieved).
- Over 5,400 personnel have been trained during 185 national training programs with a total of 982 female officials participating in the training (ICR, paragraph 45).
- 9 academic institutions were supported by the project for upgradation of testing laboratories, equipment, and software. In addition, academic institutes conducted 55 training programs in various domains of dam safety, benefitting about 1,100 State Officials from the DRIP IAs (ICR, paragraph 45).
- 58% of grievances had been satisfactorily resolved by the project level GRC (original target: 75, achievement rate: 77%).
- 57% of skilled women professionals worked in dam operations and management - Kerala -WRD (target: 25%, over achieved).
- 5 skilled women professionals worked in dam operations and management under DRIP – Uttarakhand (target: 10, achievement rate: 50%).
- 13 guidelines and manuals were prepared under the project to ensure uniformity and standardization of various procedures across the country (ICR, paragraph 46).

Outcome

- By project completion 190 dams had need-based O&M plans prepared/updated and operationalized (baseline: 50, revised baseline: 0, original target: 150, achievement rate 127%). In India, prior to the project dam safety practices varied among states and organizations. In 2018, with project support, a “Guideline for Preparing Operation and Maintenance Manual for Dams” was published. It provided the basis for preparing the need-based dam O&M plans. The Guideline included procedures to ensure dam safety for finalization of the annual O&M budget based on asset management plans. It also covered various dam details including: description and operation of the dam, inspections and maintenance, instrumentation and monitoring and assigned responsibilities for physical operations and maintenance (ICR, paragraph 40).
- Through project support, 55% of the required budget per state had adequate O&M (baseline: 50%, revised baseline: 33%, original target: 80%, achievement rate: 67%). The project supported policy reforms at the Central and State levels, thereby developing a conducive atmosphere for O&M budget allocation. The project also contributed to creating awareness about the importance of dam safety budgets among policy makers and administrators (ICR, paragraph 41). The ICR (paragraph 41) noted that the project laid the foundation to issue and implement the Dam Safety Act, which stipulated the need for adequate O&M funds for dams. Under the Act, GoI was considering institutionalizing a

national level “Dam Safety Fund” for the O&M and periodic rehabilitation of its large portfolio of dams (ICR, paragraph 41). Support to the implementation of the Dam Safety Act would continue under DRIP-II.

- By project completion, 185 project dams had emergency response plans prepared and approved (original target: 80, revised target: 150, over achieved). However, these were partially disseminated due to the COVID-19 impacts. In 2016, under the guidance of the project, the “Guidelines for Developing Emergency Action Plans for Dams” was published, which included 223 dam break analyses coupled with flood inundation maps. Built on these analyses, the185 Emergency Action Plans (EAPs) were prepared and approved. At project closing, 78 EAPs were disseminated (original target: 60, revised target: 150, achievement rate: 52%). The ICR (paragraph 42) stated that dissemination would continue after project closure once COVID-19 was under control. The ICR also noted that EAPs for the remaining dams in India will be developed following the guideline published under this project.
- Also, 198 dams had asset management plans prepared and implemented (original target: 180, revised target: 198, target achieved). This system provided a tool to register and track the asset information for project dams, and allowed the preparation of maintenance requirements and the O&M budget in a transparent manner (ICR, paragraph 43). The project also supported the CWC to develop the a web-based tool to support the effective collection and management of authentic asset and health data for all large dams in India (DHARMA was launched nationally in January 2018). This tool would help India on a long term basis for management as well as monitoring of safety and health status of dams as envisaged in Dam Safety Act. Details of all 198 dams under DRIP were uploaded in DHARMA (original target: 180, revised target: 198, target achieved). The ICR (paragraph 43) noted that data on 1,500 dams-beyond the scope of the project, were registered in DHARMA.
- The project strengthened the institutional arrangement on dam safety, with eight DSO offices established and/or strengthened to carry out mandated functions on dam safety (original target: 4, revised target: 9, achievement rate: 88%). All dams in any State were under the jurisdiction of the State DSO for safety inspections, analysis of information from inspections, and preparation of reports and recommendations on dam safety and remedial measures. Training was provided to officials of DRIP-states and non-DRIP states included technical topics, topics related to project protocols such as preparation of Project Screening Template (PST), DHARMA application, and utilization and management of dam safety instruments. With the comprehensive training program, 196 dams had adequately trained staff to implement the approved operation manual (baseline: 50, original target: 150, over achieved).
- Finally, climate change impacts were addressed in hydrological assessments, emergency management, O&M, and retrofitting of dams. The hydrological assessments used the latest meteorological and hydrological data, incorporating recent climate change impacts on rainfall and the increasing frequency and intensity of extreme events (ICR, paragraph 47). Therefore it is plausible to conclude that the project interventions enhanced the resilience to climate change.

Summary of Efficacy Assessment. The evidence provided in the ICR and in the above-mentioned discussion revealed that the project supported relevant activities to improve the operational performance of selected existing dams in the Borrower's territory. However, the RF lacked relevant indicators to measure the improvement in the operational performance of selected existing dams compared to the situation prior to the project intervention. Also, the end target on the required O&M budgets was not yet fully achieved. Therefore, the efficacy with which this objective was achieved is rated Modest as it is difficult to assess the impact of the project activities on improving the dam operational performance.

Rating
Modest

OVERALL EFFICACY
Rationale
Overall Efficacy is rated Substantial. The project succeeded in improving the safety performance of selected existing dams in the Borrower's territory (PDO1) through integrated structural and non-structural measures. The project also supported relevant activities to improve the operational performance of selected existing dams in the Borrower's territory (PDO2). However, an accurate assessment of PDO2 was not possible as the Results Framework lacked relevant indicators to comprehensively measure this objective.

Overall Efficacy Rating

Substantial

5. Efficiency
Economic and Financial Analysis (EFA)

ex ante

- The base level of the economic rate of return (ERR), undertaken in 2009 constant prices, was estimated at 37% for a 90% (one order of magnitude) rate of risk reduction, under a 12% discount rate. The analysis for DRIP included only annual net incomes from agricultural production and electricity generated from hydropower dams and replacement costs of houses at the extent of 30%.
- The analysis for DRIP followed the advised practice of making an overall assessment of the probability of failure (POF) based on a risk reduction by 0.1 (i.e. one order of magnitude) between the with/without project alternatives (WIP/WOP).
- Sensitivity analysis was undertaken, assuming other ratios of the POF, cost overrun, and delays and/or reduction in benefits. At the assumed rates of risk reduction at 0.5 and 0.8, the results show that the ERR would reduce to 35 and 32%, respectively. The threshold level of an ERR of 12% was met when the rate of risk reduction is 1.69. ERRs would still be above the level of opportunity cost of capital of 12%t, ranging from 33% when project costs overrun by 20%, and 24% with a combination of 20% cost overrun and 2 years delayed benefits.

ex post

- The EFA at completion estimated the mean Economic Internal Rate of Return (EIRR) at 43% with a Net Present Value (NPV) of US$558 million at 12% discount rate. The mean EIRR excluded 10 dam projects that served large agricultural areas and skewed the mean EIRR higher to 192% when included in the analysis.
- The economic returns were analyzed for each individual dam project, with INR 21,540 million spending across the 198 dam projects in seven states. Beside the benefit estimates at appraisal, the ex post analysis also included benefit estimates for fisheries in the affected reservoirs.
- Sensitivity Analysis. The same sensitivity analysis scenarios at appraisal were used at completion. When all project costs were increased by 20%, the overall EIRR decreased to 35%, close to the estimate at appraisal. When all project benefits were delayed two years, the overall EIRR decreases to 25%.
- Implementation Efficiency. The project experienced a two year delays in effectiveness. The ICR (paragraph 52) attributed this delay to the complexity of the project involving the Central and State participation which required high level government review and approval. This two year delay had a cascading effect as it resulted "in the weakening of capacity of PMUs as most staff moved to other positions and also resulted in delay in procurement of EMC services" (ICR, paragraph 65). There were also delays that stemmed from difficulties in attracting contractors, and the long approval time for de-siltation activities. Also, due to the COVID-19 lockdown, the project lost eight months of implementation time and missed a full construction season (ICR, paragraph 67). The ICR (paragraph 65) also noted that India had "little capacity and experience to prepare and implement such a large number of dam rehabilitation and improvement activities." Worth noting also is that the construction/working period of dam safety interventions in India is relatively short as most structural interventions could only be constructed from January to June during the non-monsoon period. In conclusion, while the project experienced implementation delays, the majority of activities were successfully implemented.

Summary of Efficiency Analysis. The ex post EIRR at 43% exceeded the ex ante estimate at 37%. The project experienced about a four year delay beyond the original closing date. The project was initially implemented in four states, but was scaled up to seven states. The AF (US$137 million) was meant to finance the additional project cost of US$113.5 million associated with new dam rehabilitation and improvement activities as well as the US$87.5 million financing gap that was created by an earlier cancellation. Some delays were beyond the control of the project as in the case of COVID-19 restrictions. Overall, efficiency is rated Substantial.

Efficiency Rating

Substantial

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	✓	37.00	0 ☑ Not Applicable
ICR Estimate	✓	43.00	0 ☑ Not Applicable

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

6. Outcome

Relevance of Objectives was rated High. Overall Efficacy was rated Substantial. The project succeeded in improving the safety performance of selected existing dams in the Borrower's territory (PDO1) through integrated structural and non-structural measures. The project also supported relevant activities to improve the operational performance of selected existing dams in the Borrower's territory (PDO2). However, an accurate assessment of PDO2 was not possible as the Results Framework lacked relevant indicators to comprehensively measure this objective. Efficiency was rated Substantial. The ex post EIRR at 43% exceeded the ex ante estimate at 37%.

Based on the assigned rating for the three criteria (Relevance of Objectives, Overall Efficacy and Efficiency), the Outcome of the project is rated Satisfactory.

a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

The following risks could potentially impact the Development Outcome:

1. The risk related to securing adequate financing for O&M operations. Public funds were not enough to close the financing gap for O&M, which may impact development outcomes (ICR, paragraph 80). This situation was expected to be partially mitigated under DRIP-II which will support the implementation of the Dam Safety Act (2021) that stipulates the adequate funding of O&M and the establishment of a National Dam Safety Fund and further address the challenges of O&M financing gap.

2. Environmental risk. While India is prone to climate change impacts, this risk will be addressed through the non-structural measures, such as the Emergency Action Plans (EAPs) and warning systems supported by the project.

3. Operational risk. The project supported strengthening institutional staff capacity which was expected to improve the capacity to better implement dam safety mandates.

8. Assessment of Bank Performance

a. Quality-at-Entry

- **Strategic Relevance and Approach.** This project would act as a pilot, showing how to return dams to fully operational and safe condition in a technically and financially sustainable manner, in addition to building the needed capacity to monitor the performance of dams. The PDO was in line

with the Government's priorities for the water sector and in line with the Bank's strategies for the country (see section 3 for more details). The Bank has rich global and regional experience which made it well placed to assist India in developing the institutional framework required to support and implement India's existing regulations and procedures in dam safety.

- **Technical Aspects.** The project was complex with the involvement of multiple Implementing Agencies (IAs) at Central and State levels and a large number of dam portfolios. The project was designed to rehabilitate several diverse dams to be fully functional and safe, in a technically sound and financially sustainable manner, and to strengthen institutional capacity for dam safety administration. Design benefitted from embedded flexibilities that enabled the project to deal with changes during implementation, for example: an unallocated fund was agreed upon to include more states and institutes during the implementation stage and to accommodate possible cost overruns; and adequate flexibility was provided to allow fund reallocation across components and agencies to effectively utilize the IDA Credit and IBRD Loan (ICR, paragraph 64). Design also incorporated lessons from the previous dam safety operations, most notable was that the rehabilitation and improvement proposals should be based on thorough assessments of dams. Design also featured a batch based approach that allowed states to implement the dam interventions in batches to address the most urgent dam rehabilitation and improvement needs (ICR, paragraph 64).
- **Implementation Arrangements.** Multi-tiered implementation arrangements were put in place. The Project Management Unit (PMU) at the Central level in the Central Water Commission (CWC) and State-level PMUs for each of the nine State-level IAs were responsible for project coordination and management. A multidisciplinary management and engineering consulting firm was recruited to support the CWC with the overall project implementation (ICR, paragraph 66). All PMUs were gradually staffed with qualified personnel, supplemented with individual consultants to enhance the technical, safeguard, monitoring and evaluation (M&E) and fiduciary capacities. Implementation arrangements also included a National Level Steering Committee (NLSC) to address policy issues and a Technical Committee (TC) to address technical issues. However, the two year delay in effectiveness weakened the capacity of PMUs as most staff moved to other positions and this also resulted in delaying procurement of the Engineering and Management Consulting Firm (EMC) services (ICR, paragraph 65).
- **Fiduciary Aspects.** Initial procurement arrangements represented a bottleneck for the project and procurement strategies had to be adjusted to repack possible works in an appropriate manner to make the contracts more attractive for qualified contractors (ICR, paragraph 65). Financial management (FM) arrangements followed country systems for budgeting, fund flow and payments, accounting and reporting, and auditing for the project for most of the agencies (ICR, paragraph 75). This helped in timely accounting and reporting for such a pan-India project. However, staffing was an major issue because at the CPMU there was no full time FM consultant hired.
- **Risk Assessment.** Six risks were identified at appraisal relating to O&M, institutional, implementation and technical capacity, and cost overruns. The later was rated Moderate, however, this Review finds cost overruns with such a complex project should have been rated High. While the PAD included adequate mitigation measures, the measures to mitigate cost overruns were not enough, and the project sought additional financing during implementation. According to the ICR (paragraph 63) while "proper risk mitigation measures were developed, it took time to mitigate the identified issues." Also, the two year delay in effectiveness was not anticipated.

- **M&E arrangements.** M&E design included a clear Results Framework (RF) with realistic targets. While the RF included a clear set of indicators to measure progress against achievement of the first PDO, it lacked outcome indicators to comprehensively assess the second PDO.

Summary of Quality-at-Entry (**QAE) Assessment.** Overall the project had a sound design and reflected strategic relevance to the national and state development priorities. There were minor shortcomings related to underestimation of the risk related to cost overruns, weakness at the fiduciary level, and M&E design shortcomings. Based on this assessment, QAE is rated Satisfactory.

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision

The Bank conducted 21 implementation support missions over the life of the project. Project implementation benefited from a multidisciplinary team of experienced staff and consultants who supervised the project and provided implementation support on technical quality control, procurement, financial management, safeguards, and project management (ICR, paragraph 78). The Bank also provided proactive, strategic advice on the challenging technical and management issues. The Bank team worked proactively with counterparts to restructure the project eight times to accommodate evolving dam safety needs, implementation delays and unexpected impacts of COVID-19. This enabled the successful completion of project activities and the efficient utilization of the IBRD Loan and IDA Credit (ICR, paragraph 78). However, the Bank could have used the restructurings to address M&E design weaknesses. Also, more attention should have been given to strengthening compliance with safeguards.

Summary of Quality of Supervision Assessment. The Bank successfully guided a multi-state complex project through implementation challenges and risks, and worked proactively to adapt to the changes on the ground. Overall, Quality of Supervision is rated Satisfactory.

Based on the ratings assigned to QAE and Quality of Supervision, Bank Performance is rated Satisfactory.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

- The PAD did not include a Theory of Change (ToC) or results chain. Nevertheless, the ICR included an ex-post ToC that was constructed based on the PDO, the project activities and

the results indicators as reported in the PAD. Overall, the ToC in the ICR reflected the relation between the project inputs, outputs, outcomes and long-term outcomes.

- The two PDOs were assessed through six PDO outcome indicators: PDO1 was assessed through: 1. Number of project dams with the ability (structural or nonstructural) to safely cater for design floods; 2. Number of project dams with acceptable stability and seepage; 3. Number of project dams with basic dam safety facilities in place. It is worth noting that 12 dams needed more detailed assessments and further improvements were deferred to the follow-on project (DRIP-II). These three outcome indicators were directly connected to PDO1, and were measurable, and had reasonable targets. However, initial baselines were inaccurate and were corrected during implementation. PDO2 was assessed through Outcome indicators: 4. Number of project dams with need-based O&M plans operationalized; 5. Percentage of required budget per State for adequate O&M; and 6. Number of project dams where emergency response plans have been prepared and disseminated to the population were connected to PDO2. While these outcome indicators were measurable and had reasonable targets, they did not fully capture improvement in operational performance of the project dams.
- The Results Framework included 9 intermediate results indicators (IRIs). Most IRIs were relevant and linked to the stated activities and helped to track the achievement of the outcomes and test the links in the ToC. The IRIs were measurable, included baselines (where relevant) and had reasonable targets.
- Overall, M&E had a sound design. However, the RF could have benefited from the inclusion of more indicators to comprehensively assess the improvement in dam operational performance.

b. M&E Implementation

- M&E implementation was under the overall coordination and supervision of the Central Project Management Unit (CPMU). M&E data were collected and analyzed with support from the MIS, government agencies, and the M&E consultants. All PMUs had dedicated M&E staff. A Monitoring Information System (MIS) was established and updated weekly to track the project data and monitor progress of activities.
- The MIS ensured that different parties entered and managed information in a standard and accountable manner. It captured physical and financial details, such as the list of selected dams, PSTs, Dam Safety Review Panel (DSRP) inspections, design flood reviews, tender notices published, training materials, minutes of various committee meetings, dam specific EAPs and O&M Manuals, and project rehabilitation reports. According to the ICR (paragraph 70) the MIS was used by the Bank to monitor the project systematically and retrieve any project-related information.
- Third Party Independent Performance Evaluation was carried out by the Indian Institute of Technology (IIT) Roorkee with the scope to review the achievements against the stated objectives, identify and assess the factors which facilitated or impeded the achievements, and suggested suitable measures for improvement.
- Overall, M&E implementation arrangements were adequate with data collected systematically and analyzed.

c. M&E Utilization

- According to the ICR (paragraph 71) "the M&E data collected were used effectively to inform project implementation and project management decisions." The availability of data allowed project management at Central and state level to make adjustments to project implementation. The M&E data also informed a series of project restructurings.
- A dedicated website for the dissemination of information to the public in general was developed for the project (ICR, paragraph 70). The MIS and website provided relevant information in the public domain for dissemination and benefit of the professional community and dam owners.

Summary of M&E Quality. M&E design was clear, but with some minor shortcomings. Implementation arrangements were adequate with data systematically collected and analyzed. Utilization of M&E data was evident in informing management decisions and project restructurings. Therefore, M&E Quality is rated Substantial.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was assigned an Environmental Category B (Partial Assessment). Six safeguard policies were triggered under the project: Environmental Assessment (OP/BP 4.01), Physical Cultural Resources (OP/BP 4.11), Involuntary Resettlement (OP/BP 4.12), Indigenous Peoples (OP/BP 4.10), Safety of Dams (OP/BP 4.37), and Projects on International Waterways (OP/BP 7.50). The project activities were not expected to have significant adverse environmental impacts as physical interventions would be in the nature of rehabilitation and improvement of existing assets. None of the activities at the project dams was expected to result in involuntary resettlement, as dam heightening was not supported. Some land might to be acquired in case of spillway enlargement, but it was not expected that this would involve resettlement of people or acquiring private land. None of the agreements with riparian countries requires notification for the kind of activities planned under the project. It was determined by Bank management that the proposed project falls under the exception to the notification requirement of paragraph 7 (a) and (b) of OP 7.50.

According to the ICR (paragraph 73) "the project complied with all triggered safeguards policies."

Compliance with Environmental Safeguards. An environmental and social management framework (ESMF) assessment was prepared and disclosed according to the World Bank safeguard policies and the GoI regulations. During the AF phase, the ESMF was updated into two separate sections on Environmental Management Framework (EMF) and Social Management Framework (SMF). The project contributed to the improvement of safeguard requirements in dam safety in India. Prior to the project, there were no guidelines available in India to manage environmental impacts of dam rehabilitation works and to guide dam owners explicitly on necessary advanced actions. Therefore, the “Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects” was prepared, approval from line Ministry of Environment, Forest and Climate Change was taken and issued. The ICR (Annex 10) reported that the capacity of IAs and CPMU to fully understand environmental and social impacts was identified as one of the major challenges in implementing in the project. This was evident with environmental, social, health and

safety monitoring absent in the on-going sub-projects. There were very few trainings conducted to augment capacity of staff with respect to provisions laid down in the ESMF and their application, and CPMU failed to to advise SPMUs that there was a need to design and develop monitoring formats to collect E&S data on a monthly basis. Also, project contractors were not submitting the mandatory EMPs for approval. There was little interest in the SPMUs for monitoring the E&S parameters as stipulated in the ESMF, no specific discussion of the SPMUs to the project contractors on submission of EMP for their contracts. State level IAs did not have any specific person designated or appointed to manage E&S aspects, and periodic reporting was absent (ICR, Annex 10).

Compliance with Social Safeguards. The implementing agencies had an established Grievance Redressal Mechanisms (GRM). This enabled timely disposal of complaints. A total of 43 grievances and arbitration cases were received, mostly relating to procurement, contract management, non-payment of bills, contractual claims, change in tax regime and compensation. Almost all aggrieved parties were the project contractors or bidders. By project closing, 25 cases (58% of grievances received) were satisfactorily resolved (ICR, paragraph 74).

b. Fiduciary Compliance

Financial Management (FM). According to the ICR (paragraph 75) "the project met the Financial Management (FM) requirements of the Bank." As a multi-state project, FM followed country systems for budgeting, fund flow and payments, accounting and reporting, and auditing, which helped in timely accounting and reporting. Interim Financial Reports were submitted on a timely basis. Audit reports were submitted for some entities within timelines and for others with delays. However, FM staffing was a major issue at the CPMU as no accounts staff was posted by the government. A full-time consultant was appointed who managed the accounts and reports on behalf of the project and according to the ICR (paragraph 75) "this arrangement worked well for the project."

Procurement. According to the ICR (paragraph 76) "the project met the procurement management requirements of the Bank, and followed its guidelines and requirements." However, the procurement process experienced considerable delays during early implementation. Procurement activities benefited from the Bank support through repackaging the works, modifying the qualification criteria in the bidding documents, workshops and capacity building of the officials, support of the engineering and management consulting firm (EMC) (ICR, paragraph 76). While weak procurement capacity of the IA officials was identified early in the project, it was aggravated due to frequent transfer of officials. This was addressed by the Bank team through organizing frequent training and workshops for the project officials as well as officials from the participating states. Procurement post reviews were carried out on an annual basis and according to the ICR (paragraph 76) there were no considerable procurement issues.

c. Unintended impacts (Positive or Negative)

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d. Other

The ICR (paragraph 61) reported that "dedicated post graduate dam safety programme in few selected apex institutions. The IIT Roorkee and IISC Bangalore started the dedicated post graduate programme in dam safety/dam engineering to strengthen the knowledge base of India as well as ensure trained manpower with requisite technical skill to operate the dams safely and efficiently."

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The ICR included four lessons. The following are emphasized with some adaptation of language:

1. To ensure dam safety, projects need to apply a holistic approach that integrates structural and non-structural interventions. The project changed the mindset of dam management agencies and dam owners who tended to focus on purely structural measures. The project gave a strong emphasis on the integrated structural and non-structural measures. Based on the thorough dam assessments and high quality of design, the structural measures significantly improved the dam safety through spillway rehabilitation and improvement, leakage treatment and seepage reduction, dam drainage improvement, and basic dam safety facility improvement. A series of non-structural measures enhanced emergency preparation and public awareness, improved dam O&M, upgraded asset management, strengthened data monitoring, and ensured that remedial measures were in place. The non-structural measures helped better operate and manage dam infrastructure, as well as complement to the structural measures to mitigate climate risks and enhance the resilience of downstream communities.

2. Complex infra-structure projects need a flexible design that can accommodate possible changes in priorities and cost overruns to ensure effective implementation. This project was complex with a considerable number of large dams and multiple Central and State participants. The project embedded flexibilities in design to adapt to the possible changes in priorities and cost overruns. The project implementation applied an adaptive approach to implement the dam interventions in batches. The batch-based approach allowed the IAs to address the most urgent dam rehabilitation and improvement needs with priorities. It also allowed the government agencies, dam owners, and contractors to gain experience through ‘learning by doing’. The team worked proactively with clients to restructure the project several times to keep the investments relevant and effective. The utilization of a tailored MIS had ensured the consistency and reliability of project data collection and application.

3. Enhancing dam safety is a long-term process that can create significant impacts beyond the project scope. This project created significant impacts in India beyond the project scope from technical, financial, managerial, institutional and legislative perspectives. The GoI recognized these and requested the Bank to continue support on dam safety with the approval of the DRIP-II and possible engagement of DRIP-III. The Bank's long-term engagement provides an opportunity to develop projects that support a country's priorities and potentially achieve significant impacts.

The following lesson is emphasized by IEG:

4. To ensure an accurate assessment of outcomes, M&E design needs to include relevant outcome indicators that fully measure the project achievements. The project supported several activities to improve the operational performance of selected existing dams. However, the lack of relevant indicators to measure the improvement in the operational performance of existing dams made it difficult to fully assess the project achievements in this area.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

Quality of Evidence. The ICR benefited from the data collected by the M&E system, which enabled tracking the progress of activities and assessing the achievement of the PDO. However, the RF lacked indicators to comprehensively assess the improvement in the operational performance of selected existing dam.

Quality of Analysis. The ICR provided clear linking between evidence and findings and used the evidence base to serve the arguments under the different sections, in particular the discussion on outcomes.

Lessons. Lessons reflected the project experience and were based on evidence and analysis.

Results Orientation. The ICR included a comprehensive discussion on the achievement of the PDO. The discussion was adequately balanced between reporting on the achievement of outcome indicators and what the project actually achieved on the ground.

Consistency with guidelines. The ICR used the available data to justify most of the assigned ratings. Discussion of outcomes was adequate. The efficiency analysis provided good justification on the validity of the project investments. However, the discussion on M&E design and on Bank performance was brief and could have benefited from more details.

Conciseness. The ICR provided comprehensive coverage of a complex multi-state project, and candidly reported on shortcomings. Reporting on safeguards included an explicit statement on compliance and detailed information was provided in Annex 10 of the ICR. The ICR also included information rich Annexes that covered different aspects of the project.

Overall, the Quality of the ICR is rated Substantial, but with minor shortcomings.

a. Quality of ICR Rating
Substantial