



1. Project Data

Project ID P112158	Project Name Pumped Storage TA Project	
Country Indonesia	Practice Area(Lead) Energy & Extractives	
L/C/TF Number(s) IBRD-80570	Closing Date (Original) 31-Dec-2018	Total Project Cost (USD) 36,091,438.35
Bank Approval Date 26-May-2011	Closing Date (Actual) 31-Dec-2021	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	640,000,000.00	0.00
Revised Commitment	36,091,438.35	0.00
Actual	36,091,438.35	0.00

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2. Project Objectives and Components

a. Objectives

Original Project Development Objective

The PDO statement reads as follows in the Project Appraisal Document (PAD) dated April 27, 2011: The development objective is to "significantly increase the peaking capacity of the power generation system in Java-Bali in an environmentally and socially sustainable way and strengthen PLN's institutional capacity in



hydropower planning, development and operation.” The statements of the PDO stated in the Loan Agreement and the PAD are virtually identical despite the slight difference in wording.

Revised Project Objective

The December 2018 restructuring significantly modified the objective of the project "to strengthen the institutional capacity of PT Perusahaan Listrik Negara (Persero) for planning and preparation of pumped storage and hydropower projects." (Restated Loan Agreement dated December 28, 2018).

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

Yes

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

No

c. Will a split evaluation be undertaken?

Yes

d. Components

Component 1: Development of the Upper Cisokan Pumped Storage (UCPS) Power Plant (Estimated cost at appraisal – US\$674.79 million, Actual cost – US\$44.97 million).

This component comprised: (i) power generation plant (1040 MW) and appurtenant structures, including dams, reservoirs, waterways, powerhouse, access roads, switchyard and power supply during construction; (ii) two double circuit 500 kV transmission lines to connect the power plant to the Java-Bali power system; (iii) project implementation support, including assistance in pre-construction engineering design, procurement, and construction management and supervision; and (iv) project administrative activities to be conducted by the Project Implementation Unit.

Component 2: Social and Environmental Impact Assessment (Estimated cost at appraisal – US\$76.36 million, Actual cost – US\$57.94 million)

The component included: (i) Land acquisition, resettlement, and livelihoods restoration; and (ii) environmental management.

Component 3: Feasibility Study and Preparation of Basic Design and Bid Documents for Matenggeng Pumped Storage (MPS) Power Plant, and related capacity building (Estimated cost at appraisal – US\$12.00 million, Actual cost – US\$11.09 million).

This component comprised: (i) updating of previous studies to verify engineering and economic feasibility, preparation of basic design and bid documents and of an Environmental and Social Impact Assessment (ESIA), and development of Land Acquisition and Resettlement Action Plans (LARAPs); and (ii) capacity building to PT Perusahaan Listrik Negara (Persero) (PLN) for the planning, development, and operation of hydropower projects, especially pumped storage.



Revised Project components

The project components were revised on December 31, 2018, to delete Components 1 and 2 leaving a single component for the preparation of the prefeasibility and feasibility studies and basic design and bid documents for MPS; (ii) preparation of the ESIA and development of LARAP for the MPS; and (iii) related capacity building assistance to PLN for the planning, development, and operation of hydropower projects. This was to align the project scope with the partial cancellation on May 2, 2017, of US\$596 million corresponding to Component 1. The World Bank's supervision for Component 1 was limited to the activities and milestones set forth in a Safeguards Action Plan that was agreed and confirmed by PLN in a letter dated November 30, 2017, following the partial loan cancellation.

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

Total project cost at completion was US\$114.00 million (ICR, Annex 3, pp. 45 and 46) compared to US\$800.00 million estimated at appraisal (PAD, p. 17), including interest during construction and front-end fees totaling US\$37.5 million. The financing plan at appraisal envisaged that US\$640.00 million of the total cost would be financed by the World Bank Loan with the Borrower's contribution covering the balance of US\$ 160.00 million (PAD, Datasheet, p. ii). However, about 93 percent of the World Bank Loan was canceled due to intractable implementation issues which led to a major revision in the scope of the project during a restructuring on December 30, 2018, as described above. Hence, the substantial reduction in total project costs and in the World Bank's total financing from US\$640.00 million to US\$36.09 million and the Borrower's from US\$160.00 million to US\$77.91 million.

Dates: The project was approved on May 26, 2011, and it became effective on May 1, 2012. The project was restructured twice. On May 2, 2017, the World Bank canceled US\$596 million of the loan amount following major project implementation delays and after suspension of disbursements had not resulted in a resolution of the implementation issues. The purpose of the first restructuring approved on December 30, 2018, was to revise the project objectives and design to align them with the substantial change in project scope that had resulted from the partial cancellation of the IBRD Loan. The design changes included amendments to the scope of the project, project costs, results framework, legal covenants, reallocation of loan proceeds among withdrawal categories, disbursement estimates, implementation schedule, technical and financial analysis; etc. The Loan closing date was extended by 23 months from December 31, 2018, to November 30, 2020, to accommodate the longer time required for completion of the engineering and design studies for Component 3 as well as the Environmental and Social Impact Assessment. The second restructuring that was approved on November 12, 2020, extended the Loan closing date by 13 months to December 31, 2021, to allow enough time for completion of delayed tasks for the MPS - phase 1 preparation review of scope of work for detailed geological investigations and conducting investigations, and preparation of an Environmental and Social Impact Assessment (ESIA) and an Environmental Management Plan (EMP).

3. Relevance of Objectives

Rationale



Alignment with The World Bank strategies

The project was consistent with the World Bank country strategies throughout its life from inception to closure. At inception it was aligned with the Country Partnership Strategy (CPS) for Indonesia (CPS FY09-FY12) which included support for building effective and accountable institutions in the power sector. This meant support for (i) improving the business climate by better meeting the increasing demand for electricity (in line with Core Engagement 1 for supporting private sector development); and (ii) strengthening the technical, managerial and operational capacity of PLN to implement large scale investment projects (in line with Core Engagement 2 for supporting infrastructure development) (PAD, para. 10 and ICR, para. 30). The project was also aligned with the subsequent World Bank strategy for Indonesia - the Country Partnership Framework (CPF FY10-FY20) which highlighted sustainable energy and universal access as a separate engagement area. As a dispatchable resource pumped storage is suitable for facilitating increased penetration of variable renewable energy sources.

The overall objective of the World Bank's country partnership framework for Indonesia at project closure (CPF FY21-FY25) was to promote sustainable and inclusive economic recovery and long-term growth. The CPF was organized around four broad objectives to: (i) strengthen economic competitiveness and resilience; (ii) improve infrastructure; (iii) nurture human capital; and (iv) sustain management of natural assets, natural resource-based livelihoods and disaster resilience (CPF, para. 41). The UCPS project supported objective (ii) on improving infrastructure which encompassed improving infrastructure provision and quality of service and transition to low carbon energy and attainment of universal access to reliable and sustainable energy. The project was expected to support system reliability improvement by providing flexible peaking capacity in a rapidly expanding system that was largely reliant on base load coal power plants. In addition, it would support the low carbon energy transition by enabling development of renewable energy power plants.

Country context

The project was relevant to key issues facing Indonesia, specifically acute peaking and supply reliability risks in the absence of increases in peaking capacity in the mid-term. The commissioning of large coal fired power plants in the near term would worsen the situation (PAD, para. 6). The project was expected to make a substantial contribution to peaking capacity -1040 MW initially with completion of the UCPS and eventually this amount would increase to 1,920 with the completion of the MPS (preparation of the latter was to be financed under the project and its financing was expected later by the Bank or other donors).

The ICR notes a greater shift to renewable energy, including pumped storage in PLN's ten-year electricity supply plan for 2021-2030 (ICR, para. 33). The shift reflects Indonesia's goal of reducing GHG emissions by 29 percent by 2030 and reaching carbon neutrality by 2060. Thus, the pumped storage investments (UCPS under new Bank financing and MPS under preparation) would make a significant contribution towards improved system reliability and increased variable renewable energy penetration in the Java-Bali system.

The PDO is rated High for relevance because the project objectives remained aligned with both the World Bank's strategy for Indonesia (CPF FY21-FY25), PLN's ten-year electricity supply plan, and the Government's GHG emissions reduction targets.



Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

"..to significantly increase the peaking capacity of the power generation system in Java-Bali in an environmentally and socially sustainable way."

Rationale

The ICR (pp. 8 and 9) presents a theory of change (TOC) based on the results matrix in the PAD and conversations with the World Bank's project team members. The TOC describes the chain of activities and outputs that were expected at project completion to lead to a significant increase in peaking capacity in the Java-Bali power generation system in an environmentally and socially sustainable manner and to contribute to decarbonization and improved system reliability of the grid in the longer term. Thus, the main activities for achieving this PDO were the development and construction of the UCPS, management of land acquisition, resettlement and restoration of livelihoods and of the environment. These activities were to result in the commissioning of 1,040 MW of pumped storage hydropower capacity in the Cisokan valley, completion of transmission lines for connecting the power plant to the Java Bali power system, implementation of three land acquisition and resettlement action plans (LARAPs) for the dams and reservoir areas, access road and quarry and transmission lines, and successful mitigation of adverse environmental impacts of the UCPS.

Outputs

The ICR indicates the status of completion of the expected outputs as follows:

1. Commissioning of the 1040 UCPS Power plant: The power plant was not constructed due to a dispute with the main civil works contractor over access to the project site after a major landslide occurred after the contractor had been given notice to proceed but before mobilization. This meant that other contracts which had been procured could not be awarded until this issue was resolved. The World Bank canceled the loan allocation for the UCPS component after the failure by PLN and the contractor to agree on a resolution.
2. Successful implementation of LARAPs, including completion of compensation payments to all project affected households.
3. Mitigation of adverse environmental impacts of the project.

Outcomes

Three indicators and their respective targets were selected at project appraisal for assessing the achievement of this PDO as follows: (i) increased peaking capacity due to the UCPS with a target of 1,040 MW; (ii) the percentage of project affected households that achieved increased /restored incomes or assets with a target



of 100 percent; and (iii) evidence of satisfactory compliance with the UCPS's Environmental and Management Plan (EMP) with the target being no pending cases of non-compliance at project completion.

The actual outcomes achieved by the project were as follows:

1. Increased peaking capacity due to the UCPS was zero compared to the target of 1040 MW because the power plant was not completed as described above.
2. Sixty-five (65 percent) of the project-affected households had achieved increased/restored incomes or assets at the time the UCPS component was dropped from the project (December 30, 2018, restructuring) compared to a target of 100 percent. The ICR notes that progress was slower on livelihoods development with capacity developed in 22 percent of the villages. By early 2021 about 99 percent of the required land had been acquired, compensation payments had been largely completed and the planned livelihoods support had been implemented under all three LARAPs.
3. PLN continued to monitor implementation of the EMP even after the termination of the road access contract as some issues such as erosion and slips, slow revegetation and stabilization slopes, and inadequate drainage management required attention. The World Bank continued to provide supervision support on environmental and social issues based on a Safeguards action plan agreed with PLN.

The PDO indicators were appropriate, and the related targets were mostly measurable (peaking capacity, percent of project affected households who achieved increased/restored livelihoods, no pending cases of non-compliance with the EMP) or assessable.

The ICR rates the efficacy of this PDO as "Modest" based on the assessment that the UCPS will be completed by 2027 with the new financing provided by the Bank and the Asia Infrastructure Investment Bank under a new project (Development of Pumped Storage Hydropower in Java Bali System Project (P172256)). The ICR cites several factors to assert with "virtual certainty" that the project will be completed and become operational including: (i) the completion of the access road which was the main factor that led to the cancellation of the portion of the Bank Loan that was financing the UCPS; (ii) the large investment already made by PLN; (iii) the advanced stage of land acquisition and resettlement processes; and (iv) the continued strategic relevance of the UCPS as an enabler of renewable energy given PLN's ambitious targets for renewable energy capacity additions (6.5 GW by 2025 and 45 GW by 2050).

The PDO was to achieve increased peak generation capacity in Java-Bali in an environmentally and socially sustainable way. The core of the PDO was increasing peak generation capacity while the environmental and social aspects related to the manner in which the objective was to be achieved. The core part of the PDO (the *raison d'être* for the project) was not achieved and is expected to be achieved under another project in about five years (2027). Although the ICR provides strong grounds for concluding that the project will be satisfactorily completed and the World Bank's ICR Guidelines allow ICRs to consider completion of some activities beyond the closing date, for the integrity of an *ex post* evaluation process, these activities have to be finished within a reasonably short time and to be a relatively small part of the overall project. Therefore, the efficacy rating for this objective is Negligible.

Rating
Negligible



OBJECTIVE 2

Objective

"..strengthen the institutional capacity of the project implementing entity (PLN) in hydro power planning, development and operation."

Rationale

The TOC describes the chain of activities and outputs that were expected to lead to improved institutional capacity of PLN for planning, developing and operating hydropower projects by project completion date and increased flexibility of the Java Bali power system for integrating variable renewable energy in the longer term. The institutional capacity improvements were expected to be achieved through the participation of PLN staff in the preparation activities for the UCPS and the MPS and through custom tailored training. PLN's staff participation in procurement, land acquisition resettlement and livelihoods restoration processes for the UCPS was expected to improve its institutional capacity and so were preparation activities for the MPS whose expected key outputs were: (i) completion of a feasibility study, detailed design, bid documents and environmental and social documentation for the MPS; and (ii) delivery of training to PLN personnel on hydropower planning, development and operation. Additional outputs which are not reflected in the TOC were production of a training and capacity building plan by PLN, and preparation of training completion reports.

Outputs

The ICR indicates that the following outputs were produced:

1. Preparation of training and capacity building plan for PLN staff: This was not done until after the World Bank had threatened cancelation of the bulk of the Loan.
2. Procurement of key contracts under UPCS (civil works, turbine generator equipment, hydromechanical works, etc.)
3. Land acquisition, substantial completion of resettlement and livelihoods restoration activities under UCPS
4. Feasibility study for the MPS was completed in July 2018.
5. Preparation of safeguards documents was paused in mid-2018 due to the consultant's non-performance. A new consultant was engaged in September 2021 well after the project restructuring in December 2018 and about three months before the Loan closed on December 31, 2021.
6. No information was provided in the ICR regarding preparation of training completion reports.

Outcomes

The outcome for this objective is rated Modest by the ICR. The outcome indicator was preparation of training completion reports for all training and capacity building activities. The ICR notes that training activities were reported through quarterly progress reports but does not report on the outcomes. The project team provided IEG with a list titled: "Implementing Agency Capacity Building Activities" under the UPCS which provides a better view of the capacity building activities that accompanied implementation of the project although it does not assess the outcomes. The ICR bases its rating on the studies and preparation activities in which PLN staff participated as summarized in the outputs above. In this context the delivery of outputs was only partial, especially under the MPS.



It is reasonable to assume that PLN would have gained significant institutional capacity during the project preparation activities, especially on land acquisition resettlement and restoration activities under the UCPS. Based on this and the nature of the training and other capacity building activities that are described in the list of "Implementing Agency Capacity Building Activities" this PDO is rated Modest for efficacy.

Rating
Modest

OBJECTIVE 2 REVISION 1

Revised Objective

"..to strengthen the institutional capacity of PT Perusahaan Listrik Negara (Persero) for planning and preparation of pumped storage and hydropower and operation."

Revised Rationale

The revised objective is almost identical to the original objective, except that the scope of the capacity strengthening was revised to focus on planning and preparation of pumped storage and hydropower project and to exclude capacity strengthening for operation of such projects.

The PDO indicator target was changed from "training completion reports for all training and capacity building activities" to "improved capability of PLN in planning and preparation of hydropower pumped storage projects in accordance with international practice." The revised target became vague and less amenable to objective assessment. The TOC remained substantially the same as for the original PDO. A small change in the intermediate indicator for the MPS studies was the spilt into two indicators for: (i) a finalized feasibility study by PLN; (ii) design finalized and bid documents for MPS approved by PLN management. In addition, a third indicator required ESMP and LARAP to be prepared for MPS and approved by PLN.

Outputs

The ICR indicates that the following outputs (these are in addition to those accomplished on the UCPS) were achieved:

1. A training and capacity building plan for PLN staff was prepared covering several key areas such as: planning and operation of hydropower /pumped storage projects, design and procurement management, etc.
2. Feasibility study for the MPS was completed in July 2018.
3. Detailed engineering design and procurement strategy were initiated under the project but had to be carried over to the next project because they could not be completed by the revised project closing date of December 31, 2021.
4. ESIA and LARAP were also carried over to the next project due to delays.

Outcomes

The outcome for this component is rated Modest by the ICR. The outcome indicator as revised during project restructuring was improved capability of PLN in planning and preparation of hydropower pumped storage projects in accordance with international practice" which was also incorrectly stated as the indicator target



(ICR, Annex 1). Overall PLN would have gained some significant capacity improvements in carrying out the procurement, land acquisition, resettlement and livelihood activities under the UCPS. However, the indicators and targets for institutional capacity strengthening are not adequate to provide a basis for objective verification of the extent to which this PDO was achieved. Therefore efficacy of this PDO is rated Modest.

Revised Rating
Modest

OVERALL EFFICACY

Rationale

Based on minimal progress made in implementing the UCPS component Objective 1 of significantly increasing peaking capacity of the power generation system in Java-Bali in an environmentally and socially sustainable way was not achieved. Objective 1 is therefore rated Negligible for efficacy. Although there are no verifiable indicators it is reasonable to conclude that PLN achieved significant capacity strengthening (Objective 2) in the course of its staff participation in project preparation activities, principally under the UCPS; however, in the absence of verifiable outcome indicators for both the original and the revised Objective 2, their efficacy ratings are each rated Modest. The overall efficacy rating is Negligible.

Overall Efficacy Rating
Negligible

Primary Reason
Low achievement

5. Efficiency

At appraisal the project was shown to be part of PLN's least cost expansion study for the Java Bali system for the years 2010-2030. A cost benefit analysis confirmed that the project was economically and financially viable with economic and financial rates of return of 19 percent and 16 percent respectively. Sensitivity analysis indicated that the project rates of return were robust against significant changes in the most important variables - fuel prices and investment costs.

During the project restructuring on December 30, 2018, the UCPS component was dropped following the cancelation of the related portion of the Bank Loan in May 2017. Hence, the economic and financial analysis which had been based on this component was no longer relevant as the project became a purely technical assistance operation. Thus, no project economic and financial analysis was carried out for the ICR.

The efficiency rating for the project is, therefore, based only on the administrative efficiency of implementation. Overall administrative efficiency was weighed down by procurement and contract administration issues. Substantial delays occurred in procurement of key consultants and construction contracts and once awarded several contractors and consultants performed poorly (the engineering consultant for UCPS, the original access road contractor and the E&S consultant for the MPS component). Contractual disputes with the main civil works contractor over access to the project sites took more than five years to resolve (2016-2021).



Thus, seven years after Board approval (2011-2018) the UCPS component had to be dropped. The ICR notes frequent changes in PLN personnel involved with the project, a factor that must have contributed to implementation inefficiencies. In addition, PLN was slow in taking decisions and took some key decisions only after the Bank had threatened and implemented suspension of disbursements.

There were, however, some significant efficiencies in the procurement of major contracts through competitive bidding resulting in huge cost savings of up to 25 percent on three awarded contracts. Although not implemented under the project the contracts were transferred to the new Bank financed project, thus ensuring that PLN retains the benefits of savings.

Overall, the efficiency rating for the project is 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	✓	19.00	84.00 <input type="checkbox"/> Not Applicable
ICR Estimate		0	0 <input type="checkbox"/> Not Applicable

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

6. Outcome

Pre 1st Restructuring (Original) Objectives 1 and 2

The relevance of the objectives is rated High as described above. Efficacy is rated Negligible because: (i) while some progress was made in implementing the environmental and social sustainability aspects of the project the power plant could not be completed during the project duration resulting in non-achievement of the peaking generation capacity objective; and (ii) although the completion of substantial project preparation activities by PLN suggests that some significant institutional capacity strengthening was achieved and the list of training and other capacity building activities shows strong alignment with the project requirements, there is no easily verifiable evidence of the achievement of this objective because an assessment of capacity building outcomes in training completion reports, the PDO indicator target, was not prepared.

Based on a High rating for PDO relevance, Negligible for efficacy and Modest for the project's efficiency the outcome is rated Unsatisfactory in line with OPCS guidelines.

Post 1st Restructuring (Revised) Objective 2.



Based on a High rating for PDO relevance, Modest for efficacy and Modest for efficiency as described above the outcome rating is rated Moderately Unsatisfactory.

In accordance with OPCS's ICR Guidelines the project's overall outcome rating is derived by calculating a disbursement weighted average of the outcome ratings for the pre and post restructuring ratings which reflect the rating of objectives for the entire duration of the project and not just for the period for which they were effective (ICR Guidance, Appendix I, para. 4, bullet #3. The resulting overall rating as calculated in the table below was Unsatisfactory.

	Original objectives and targets without restructuring	Revised objectives and/or targets with restructuring
Relevance of PDO		High
Efficacy of PDO	Negligible	Modest
PDO1	Negligible	—
PDO2	Modest	Modest
Efficiency		Modest
1. Outcome ratings	Unsatisfactory	Moderately unsatisfactory
2. Numerical value of the outcome ratings*	2	3
3. Disbursement	US\$35.78 million	US\$0.31 million
4. Share of disbursement	0.99 (or 99%)	0.01 (or 1%)
5. Weighted value of the outcome rating (Row 2xRow4)	1.98	0.03
		Unsatisfactory
6. Final outcome rating	(1.98+.03 = 2.01, rounding it to 2)	

*Note: Highly unsatisfactory (1), Unsatisfactory (2), Moderately unsatisfactory (3), Moderately satisfactory (4), Satisfactory (5), Highly satisfactory (6)

a. Outcome Rating
Unsatisfactory



7. Risk to Development Outcome

The risks to the successful development and operation of flexible peaking capacity at UCPS are considered low in the ICR due to the provision of new financing by the Bank and the Asian Infrastructure Development Bank for UCPS. This low-risk rating is consistent with the priority accorded to renewable energy in PLN's electricity supply plan and the role of pumped storage hydropower in enabling variable renewable energy, the large commitment of resources already made by PLN and the progress already achieved in addressing key issues related access to the project sites and in land acquisition and resettlement processes.

However, concerns about institutional inefficiencies in PLN's management of procurement and contract administration processes, particularly slow decision making worsened by continual changes in organizational and staffing responsibilities may persist in the future unless special efforts are made to manage these risks under the new operation.

PLN's financial performance continued to rely on the PSO subsidy from the Government of Indonesia, but efforts were in progress through analytical and advisory services provided by the Bank to move the sector towards full cost recovery. Strong financial performance will remain an imperative for PLN to successfully mobilize financing for projects such as the MPS whose preparation was supported by the project and the new Bank financing.

8. Assessment of Bank Performance

a. Quality-at-Entry

a. Quality-at-Entry

The project was well conceived to address key issues of adding significant peaking capacity that was needed in the Java Bali system to improve reliability and enable the development of increased variable renewable energy in line with PLN's electricity supply plan. It was firmly grounded in the Bank's country partnership strategies for Indonesia as described earlier.

PLN retained a Project Review Panel (PRP) in 2010 comprising international and national hydropower experts to undertake periodic, comprehensive, independent reviews of the project design, construction and initial filling of the reservoir and emergency preparedness measures. By project appraisal the PRP had already provided comments on the detailed engineering design, and these were to be addressed by the project engineer who was expected to be hired by PLN by mid-2011. The updated designs were to be reviewed again by the PRP and agreed to by PLN and the Bank before bidding of the main contracts (civil works). Similarly, an Environmental and Social Panel comprising reputable international and national environmental and social experts was also retained early in the project preparation stages to provide PLN with advice on environmental and social aspects of project design and construction and on enhancing the project's environmental and social outcomes.

There were some shortcomings, however, which subsequently contributed to protracted implementation delays. For example, while the Project Review Panel (PRP) and the Environmental and Social Panel (ESP)



were retained early in the project preparation stages, the project design and supervision engineer were not retained by PLN until October 2012. To speed up implementation after Board approval the project engineer should be retained sufficiently in advance to complete detailed engineering design and preparation of bidding documents, thereby enabling advance procurement or issuance of bids immediately after confirmation of financing.

The risks derived through the operational risk assessment framework (ORAF) were appropriate. The overall risk was assessed as 'High', and the risk management measures were properly identified. However, with hindsight the risks related to PLN's management inefficiencies, particularly the slow decision-making processes, seem to have been underestimated.

The results framework was properly designed with clear linkages between activities, outputs and outcomes for the Objective 1 (significant increases in peaking power capacity in the Java Bali power system). The indicator for strengthening PLN's institutional capacity (improved capability of PLN in preparation, development and operation of pumped storage hydropower projects in accordance with international best practice) could have been supported more verifiable objective targets. There was no specification of the contents of completion of training reports that were to be used as the target for assessing achievement of this indicator.

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

The project was intensely supervised over a period of about 10 years by a Bank team comprising country and Headquarters based staff. The composition of supervision missions generally mirrored the project's supervision requirements as planned at appraisal to include environmental and social experts, procurement, and financial management specialists.

Missions were undertaken twice a year, but country-based staff engaged in continual project supervision including frequent site visits (sometimes twice a month) at critical stages of the project. The mission's aide memoires were comprehensively prepared and were action oriented. At least two ISRs were prepared each year to inform management of key issues and required actions and decisions.

A mid-term review undertaken by the Bank in 2015 provided a comprehensive status report on the slow implementation progress of the project and slow disbursements. The mission reports outlined the key actions that were needed to advance implementation and laid the basis for the partial loan cancellation in 2017 and the subsequent comprehensive 1st restructuring at the end of 2018 in which the UCPS was dropped.

The chronology of events reveals some large, elapsed times between the mid-term review's (2015) surfacing of significant project implementation issues, the partial cancelation of the Loan in 2017 and the eventual 1st restructuring at the end of 2018. These are indicative of the Bank's substantial support to advance the project under very difficult circumstances such as the access road landslide whose impact



eventually led to the partial loan cancelation and to the restructuring. The Bank remained focused on supporting this project given its significant contributions to Java-Bali's power system reliability and renewable energy development. The Bank's continued engagement was, thus, valuable in helping to shape Indonesia's renewable energy and climate change future. Once the project was restructured the Bank worked with the Gol to develop new financing for the UCPS which was approved in 2021 shortly after the contractual dispute with the civil works contractor had been resolved.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The M&E arrangements including a set of intermediate and final results indicators to measure PDO achievement, baseline values of the indicators, the sources of data, and responsibilities and frequency of data collection were clearly laid out in Annex 1 of the PAD. These included annual, semi-annual, quarterly and one-time reports (Project reports on completion). As described earlier the indicators were relevant to the PDOs and verifiable except for the capacity building which lacked assessable targets. The PDO level indicators were to be verified through specific project reports such as surveys of PAH and Engineer's semi-annual reports for compliance with EMPs. Progress on implementation of the UCPS and capacity building were to be assessed through the PIU's quarterly progress reports.

M&E design was appropriate, except for the weakness in the PDO indicator and target for capacity building (as described above) and the failure to fully reflect in the portal all the results framework changes approved in the restructuring paper.

b. M&E Implementation

Annual, semi-annual and quarterly progress reports prepared by the PIU were generally adequate and so were the resettlement activities and restoration of livelihoods reports prepared by the Independent and Monitoring Evaluation Team (IMET). The reporting on the UCPS related indicators ceased after the component had been removed from the 1st restructuring in 2018.

c. M&E Utilization

The M&E reports provided valuable information and a basis for discussion between PLN and the Bank supervision missions, especially the MTR in 2015 and the 1st restructuring in 2018. They also provided information for decision making such as the second extension of the Loan closing date from November



30, 2020, to December 2021. Preparation of ISRs also benefited from PLN's quarterly progress and other reports.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

At project appraisal 5 safeguards policies were triggered as follows: (i) Environmental Assessment (OP/BP 4.01); (ii) Natural Habitats (OP/BP 4.04); (iii) Physical and Cultural Resources (OP/BP 4.11); (iv) Involuntary Resettlement (OP/BP 4.12); and Safety of Dams (OP/BP 4.37). The project was assigned a Category A for safeguards based on the World Bank's rating system at the time.

The potential issues identified during project preparation were: (i) substantial land acquisition, resettlement and compensation for thousands of project-affected households; (ii) impacts for natural habitats and endangered mammal species in the catchment areas; (iii) slips and erosion damage to private property and possible water quality issues; and (iv) slow revegetation and stabilization of slopes.

Three LARAPs were prepared for dams and reservoirs, roads and quarry, and for transmission lines. Progress was achieved in the implementation of LARAPs such that about 65 percent of the affected households had their incomes increased/restored by the time of the 1st restructuring and there had been substantial delivery of compensation payments. The World Bank continued to monitor implementation of the LARAPs after the UCPS component had been dropped. A review made in the context of the preparation of the new Bank financing for the UCPS revealed some outstanding compensation payments and delivery of infrastructure to local communities in line with local regulations. An action plan to address these issues was agreed with PLN and was made a precedent for disbursement of the new UCPS Loan.

Studies were carried out on natural habitats and a biodiversity management plan was completed in 2015 compliant with OP4.04. A cooperation agreement was signed between PLN and with Perjanjian Kerjasama, PKS, a state-owned forestry company to implement reforestation and forest enrichment in the catchment areas. This agreement was renewed in May 2022 after closure of the project.

The E&S work on the MPS was considerably delayed and the outputs at project closure were limited because of the slow and poor performance of the initial consultant whose contract was subsequently canceled in 2018. A new consultant was engaged in September 2021. Thus, at project closure the outputs of this activity were limited to: (i) an initial screening of three alternatives prepared by the engineer as part of the pre-feasibility and feasibility level studies; (ii) a preliminary ecological assessment carried out by the World Bank in 2017, (iii) stakeholder engagement plan (2017); (iv) public information meetings; and a (v) draft scoping report carried out by the new consultant in 2021. The remaining ESIA and ESMP are part of PLN's Environmental and Social Commitment Plan and will be transferred to the new project

The project's overall safeguards performance rating was Satisfactory at closure according to the ICR (p. 26).



b. Fiduciary Compliance

Procurement

Procurement was seriously delayed for packages 1, 2, 4 and for the design and supervision engineering consultant. The main contracts (package 1, civil works) were signed in September and October 2015 more than 4 years after Board approval of the Bank Loan. The engineering design and construction supervision consultant contract was signed in October 2012 more than a year after the Loan had become effective. International best practice requires engineering design and supervision consultants to be retained early in the project preparation process so that at all the pre-construction engineering work and bid documents are either ready or already issued by the time the financing becomes available.

The ESIA and EMP consultant contract was terminated in 2018 after slow and poor performance. The selection of a replacement consultant took more than two years (April 2019 to September 2021), a long time although some of the delay was due to the impacts of Covid -19.

Overall procurement was rated Moderately Satisfactory at project closure.

Financial Management

PLN submitted Interim Financial Reports (IFRs) to the Bank on a regular basis and in the agreed formats. Only small delays were encountered at times. PLN's unqualified audit reports were submitted on a timely basis and disclosed on the company's website.

Several shortcomings in financial management included: delays in payments to contractors and consultants due to lengthy payment procedures between PLN, Ministry of Finance and the contractors/consultants, and problems with the availability subsidiary loan agreement funding in the Gol budget. Poor documentation of payment requests by contractors and consultants also contributed to delayed payment processing.

Overall financial management was rated Moderately Satisfactory at closure because of the contracts payment issues described above (ICR, p. 29).

c. Unintended impacts (Positive or Negative)

There were no significant unintended impacts.

d. Other

Gender



The project had no specific targets for female participation in project activities as contractors/consultants or as beneficiaries. However, it was expected that males and females would benefit equally from the improved power reliability resulting from the additional peaking capacity in the Java Bali system. About 30 percent of the participants in livelihoods restoration training are reported to have been women.

The ICR noted the following gender related measures: (i) inclusion in LARAPs of special efforts to ensure that women were not disadvantaged in relation to the restoration of livelihoods, (including access to work on hydropower projects), and access to assets, including land; (ii) a monitoring mechanism to track gender disaggregated data for participation in rehabilitation and income recovery programs and for gender equity in the composition of grievance redress mechanism personnel; and (iii) a minimum of 30 percent for new female hires was established in PLN to address existing serious gender imbalances.

Institutional Strengthening

This was an objective of the project and is, therefore, assessed under Efficacy above.

Mobilizing Private Sector Financing

The project did not include private sector financing. It was unlikely to be attractive to private sector participation due to its large environmental and social imprint. The ICR cites (p. 22) a recent International Energy Agency (IEA) report which observes that only 27 percent of hydropower capacity installed during 2011-2020 was privately financed and that for large capacities the percentage is even lower. However, when completed the pumped storage hydropower capacity will potentially enable significant variable renewable energy which will likely be mostly private sector financed.

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Unsatisfactory	Unsatisfactory	The objective of substantially increasing peaking generation capacity in the Java Bali system was not achieved because no capacity was added.
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The ICR details several important lessons that would be useful to inform preparation and implementation of similar projects in Indonesia and in other countries. The ICRR amplifies and adds additional perspectives as follows:



Financing a new operation for a client with no recent experience on similar projects requires careful consideration and planning to ensure the availability of adequate implementation capacity. PLN had no recent experience in implementing a major hydropower power project and this was the first pumped storage hydropower project to be attempted in Indonesia. The retention of technical and environmental and social panels by PLN early in the project process was a critical element for mitigating technical design and E&S risks which were adequately identified. The need to strengthen to PLN's institutional capacity was recognized and made an explicit part of the project development objective. Nonetheless, under these circumstances an implementation schedules of 6 years compared to the average coefficient of 7 years for hydropower projects did not adequately factor PLN's lack of recent experience.

Project readiness is critical to ensure timely implementation as soon as financing effectiveness has been achieved. Best practice requires completion of project preparation activities related to detailed engineering, bid documents, safeguards instruments and project supervision arrangements prior to effectiveness of the financing. In this case while the Project Review Panel had conducted its technical review by appraisal the engineering design and construction supervision consultant was not hired until more than a year after Loan effectiveness. This delayed the update of the detailed designs and the procurement process such that the contracts for UCPS were not ready for award until more than 4 years after Board approval.

Intense World Bank supervision effort can turn around poorly performing projects due to deficiencies on the part of the client, contractors and consultants, Through intense supervision efforts the Bank team, which comprised a significant in-country presence, was able to maintain the interest of both the client and the World Bank management in this important project leading to an eventual new financing solution after the cancelation of the Loan provided under this project. The co-location of the World Bank's Country Director and key members of the project team in the country and the location of the practice managers in a nearby country (for part of the project duration) facilitated frequent high-level discussions with key Gol officials on project issues.

Non-performing projects can be creatively restructured to maintain a level of presence necessary for continued dialogue, thus enhancing prospects of designing improved operations. The Bank's continued support for institutional strengthening of PLN in relation to the MPS after the restructuring and the monitoring of E&S issues on UCPS after the Loan cancelation facilitated the preparation of new financing once the contractual dispute with the civil works contractor had been resolved in 2021.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is very well prepared and argued. There are, however, some shortcomings, related to the verification of outcomes for the institutional capacity strengthening of PLN. In this respect the ICR does not present



verifiable data to support the claim that the revised objective after restructuring was partially achieved. In addition, the indicator and target data in the results framework appears to be incorrect.

Other than these shortcomings the quality of the ICR is rated Substantial.

a. Quality of ICR Rating
Substantial