



**ASIAN INFRASTRUCTURE
INVESTMENT BANK**

PD000292 - IDN
January 28, 2021

**Project Document
of the Asian Infrastructure Investment Bank**

Sovereign-Backed Financing

Republic of Indonesia

PLN East Java and Bali Distribution Strengthening Project

Currency Equivalents

(As on April 19, 2020)

Currency Unit – Indonesian Rupiah (IDR)

IDR1.00 = USD0.000065

USD1.00 = IDR15,500

Borrower's Fiscal year

2020

Abbreviations

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
DCC	distribution control center
ESP	Environmental and Social Policy
E&S	environmental and social
ESMS	Environmental and Social Management System
IBRD	International Bank for Reconstruction and Development
IDR	Indonesian Rupiah
JBTMB	Eastern Java, Madura and Bali Regional Development Division
JMB	Java, Madura and Bali Regional Development Directorate
LV	low voltage
MDB	multilateral development bank
MDU	<i>material distribusi utama</i> (main distribution material)
Non-MDU	non-main distribution material
MV	medium voltage
OM	operations manual
PDS	project delivery strategy
PLN	Perusahaan Listrik Negara
PRK	<i>program rencana kerja</i> (work plan of program)
RKAP	<i>rencana kerja dan anggaran perusahaan</i> (program work plan and budget)
RUKN	<i>Rencana Umum Ketenagalistrikan Nasional</i> (General Plan for National Electricity)
RUPTL	<i>Rencana Usaha Penyediaan Tenaga Listrik</i> (Electricity Business Plan)
SILM	<i>Sistem Informasi Laporan Manajemen</i> (Management Reporting Information System)
SOE	state-owned enterprise
TBD	to be determined

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1. Summary Sheet

Republic of Indonesia Perusahaan Listrik Negara East Java and Bali Distribution Strengthening Project

Project No.	000292
Borrower	PT. Perusahaan Listrik Negara (Persero) (PLN)
Guarantor	Republic of Indonesia
Project Implementation Entity	PLN
Sector	Energy
Subsector	Electricity transmission and distribution
Project Objective	To Improve access to and quality of power services in East Java and Bali.
Project Description	<p>The Project will support the implementation of Indonesia's rolling 10-year Electricity Supply Business Plan (RUPTL) (2019-2028) in East Java and Bali, currently under the management of PLN's Java, Madura and Bali Regional Development Directorate (JMB). In line with the region's objectives and targets outlined in the RUPTL, the Project will support PLN's ongoing program to increase access and improve quality of power distribution through infrastructure development.</p> <p>The planned activities under the Project include:</p> <ol style="list-style-type: none"> (1) Component A: Installation of additional length of medium-voltage (MV) distribution lines. (2) Component B: Installation of additional length of low-voltage (LV) distribution lines. (3) Component C: Installation of additional capacity of distribution transformers.
Implementation Period	Start Date: January 2021 End Date: December 2025
Expected Loan Closing Date	30 June 2026
Cost and Financing Plan	Project cost of USD1,205.23 million to be financed by: <ul style="list-style-type: none"> • Asian Infrastructure Investment Bank (AIIB): USD310 million. • PLN: USD895.23 million.
Size and Terms of AIIB Loan	USD310 million with a final maturity of twenty (20) years, including a grace period of five (5) years, at AIIB's standard interest rate for sovereign-backed variable spread loans.
Co-financing (Size and Terms)	Stand-alone

Environmental and Social Category	B
Risk (Low/Medium/High)	Medium
Conditions for Effectiveness	The Project Operations Manual has been adopted by PLN in form and substance satisfactory to the Bank.
Conditions for First Disbursement	Regional ESMPs for East Java and Bali have been prepared by PLN and approved by AIIB.
Key Covenants	PLN's submission of quarterly project monitoring reports, semiannually project financial reports and annual audited project financial statements.
Retroactive Financing	The Bank may finance realized expenditures of Project activities with the payment date up to twenty-four (24) months ¹ before the loan signing date, provided that the amount is equal or less than 20% of the total loan size of USD310 million and that expenditures are deemed eligible subject to the Bank's verification of compliance with all safeguard and fiduciary aspects.
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that AIIB is in compliance with the policies applicable to the Project.

President	Jin Liqun
Vice President	D.J. Pandian
Acting Director General	Rajat Misra
Team Leader	Ziwei Liao, Senior Private Sector Operations Specialist
Team Members	Amanda Dompas, Young Professional Aditi Khosla, Counsel - Investment Operations Giacomo Ottolini, Procurement Consultant Henri Boullier de Branche, Senior Environment Specialist Irish Fe Aguilar, Social Development Specialist Yi Geng, Senior Financial Management Specialist Haiyan Wang, Senior Finance Officer Sáni Ye Zou, Economist

¹ Per request of PLN, the President has granted a derogation from AIIB Directive on Sovereign-backed and Non-sovereign backed Financings (April 28, 2020) to allow twenty-four (24) months of retroactive financing period on December 11, 2020.

2. Project Description

A. Rationale

1. **Country Priority.** Indonesia is the fourth most populous country in the world and the largest economy in Southeast Asia. Consistent annual economic growth of around five percent over the last five years has been a key driver of electricity demand. Indonesia is the world's largest archipelagic state, with more than 13,000 islands. Major islands include Sumatra, Java, Kalimantan, Sulawesi and Papua. Although its area and population are small, Bali is important due to its tourism profile. Development of establishments and infrastructure in Bali is similar to that of the major islands.

2. **Sector Context.** The National Energy Policy sets a national target of near-universal access by 2020. The electrification rate was 98.5 percent in 2018 according to the World Bank¹. Electricity provision is governed by several laws and regulations, including the 1945 Constitution, Law of Electricity, Energy Policy, General Plan for National Electricity (RUKN) and rolling 10-year Electricity Supply Business Plan (RUPTL). As part of implementing the 2018-2037 RUKN, RUPTL (2019-2028) contains the following key projections and targets for PLN:

- (1) Average electricity demand growth of 6.42 percent per annum;
- (2) Total power generation of 56,395 megawatts (MW);
- (3) Energy mix, starting from the end of 2025, to include 54.5 percent coal, 23 percent new and renewable energy, 22 percent natural gas and 0.4 percent oil;
- (4) Total of 57,293 kilometers (km) of transmission network;
- (5) Total of 124,341 mega-volt ampere (MVA) substations;
- (6) Total distribution network of 472,795 km;
- (7) Total of 33,730 MVA distribution substations.

3. The East Java, Madura and Bali (JBTMB) region² consists of a 47,549 km distribution network and 910,148 MVA distribution substations. Its electric power distribution plan aims to improve service quality while improving access to electricity for 13.48 million customers.

4. **Institutional Context.** PLN is the only state-owned enterprise (SOE) in the power sector. PLN was established as Jawatan Listrik dan Gas under the Department of Public Works and Energy by President Soekarno on Oct. 27, 1945. It is mandated to provide electricity, improve quality of life and foster economic activity while being environmentally sound. PLN holds a monopoly on the distribution of electricity and a dominant share of generation and transmission businesses. As the only vertically integrated electricity utility, it is strategically important in the power sector. The Republic of Indonesia owns 100 percent of PLN's shares.

¹ <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=ID>

² Based on the RUPTL (2019-2028). The region has since been renamed from East Java, Bali and Nusa Tenggara (JB TBN) to East Java, Madura and Bali (JBTMB).

5. PLN is one of the largest SOEs by assets. In 2015, it was ranked 480 among the Fortune 500. PLN has an investment-grade credit rating of Baa2 from Moody's, BBB from Fitch and BBB from Standard & Poor's (S&P). These ratings are equivalent to sovereign credit ratings and reflect strong state support for PLN. In June 2019, S&P upgraded PLN's credit rating to BBB with a stable outlook^{3,4} following the recent upgrade of Indonesia's sovereign rating to BBB. Moody's upgraded PLN's credit rating to Baa2, equivalent to that of the government, with a stable outlook in October 2018.⁵ These upgrades reflect the positive outlook of Indonesia's economic performance, PLN's strategically important position and its close linkage with the government. In September 2020, Fitch affirmed PLN's credit rating at BBB with a stable outlook, demonstrating PLN's resilience against the COVID-19 pandemic⁶. PLN's 2019 selected key financials include revenue of IDR285 trillion (USD18.4 billion); comprehensive income of IDR4.3 trillion (USD276 million); total assets of IDR1.585 trillion (USD102 billion); and earnings before interest, taxes, depreciation and amortization of IDR79.7 trillion (USD5.1 billion)⁷.

6. PLN is a key player in the power sector. At the end of 2018, PLN's generating capacity was 42 gigawatts—74 percent of Indonesia's total. PLN's unique position as an SOE with both commercial and public service obligations is due to the regulated financial footings derived from tariff, subsidy and margin. Decisions on these issues are made by Parliament in discussion with the Ministry of Finance, State Planning Ministry, Ministry of SOEs, and PLN. Following the government's decision to reform the tariff structure by improving the accuracy of tariff and subsidy allocation, public subsidy to PLN fell from over one percent of gross domestic product in 2012 to around 0.3 percent in 2018. The government's subsidy budget has been reallocated to infrastructure development. Today, PLN obtains assurance of a seven percent margin of the actual selling price of power for each tariff group through government subsidy.

7. PLN has financed a number of distribution projects in regions other than East Java and Bali through loans from multilateral development banks (MDBs). In 2016, the World Bank Group's International Bank for Reconstruction and Development (IBRD) approved a USD500 million loan to finance the regional power distribution project in Sumatra. The Asian Development Bank (ADB) provided USD600 million parallel funding to the same project. ADB approved a USD600 million loan to finance the distribution project in Nusa Tenggara and Sulawesi in 2017, and preparations for a similar project in Kalimantan, Maluku, and Papua are under way.

8. In feasibility studies on the above distribution projects, the World Bank⁸ and ADB^{9,10} assessed PLN's corporate systems as adequate. Progress made on these projects is reported to be on schedule. The World Bank restructured the Sumatra project in May 2019 in light of the faster-than-expected implementation.

³ On June 2, 2019.

⁴ S&P raised PLN's rating to BBB- in August 2018.

⁵ [Moody's. 2018. Moody's affirms PLN's Baa2 ratings; Outlook remains stable.](#)

⁶ Fitch Ratings. November 2020. Fitch Affirms Indonesia's PLN at 'BBB'; Outlook Stable.

⁷ S&P Capital IQ. 2020. Perusahaan Perseroan (Persero) PT Perusahaan Listrik Negara Financials.

⁸ World Bank. 2016. Indonesia—Power Distribution Development Program for Results Project.

<http://documents.worldbank.org/curated/en/280711468196174837/Indonesia-Power-Distribution-Development-Program-for-Results-Project>

⁹ [ADB. 2015. Indonesia: Electricity Grid Strengthening—Sumatra Program.](#)

¹⁰ [ADB. 2017. Indonesia: Sustainable Energy Access in Eastern Indonesia-Electricity Grid Development Program.](#)

9. **Governance Structure of PLN.** Once a unit under the Ministry of Public Works and Energy, PLN is now a fully independent and commercially operated entity and one of Indonesia's largest SOEs. In accordance with Law 40/2007 and as a limited liability company, PLN has a board of commissioners and a board of directors. Day-to-day affairs and approval of material undertakings are conducted by the board of directors under the guidance and supervision of the board of commissioners. The two-tiered board structure segregates PLN's duties. PLN is wholly-owned by the Government of Indonesia, which is represented by the Ministry of SOEs. A large institution, PLN is not immune to corporate governance challenges such as alleged improper practices and an extra-cautious—and, therefore, slow—bureaucracy.

10. **Guarantee Agreement.** The Project will be guaranteed by the Republic of Indonesia through the Ministry of Finance.

11. **Strategic Fit for the Asian Infrastructure Investment Bank (AIIB)**

(1) **Relation to AIIB priorities.** The Project aligns well with the thematic priority of Green Infrastructure as it will improve the stability and reliability of the distribution network and reduce the power losses, and hence be considered as climate mitigation finance. It will also align with the AIIB energy strategy's principle to promote energy access and security.

(2) **Relation to country priorities.** The Project is part of the RUPTL (2019-2028), which was developed following the RUKN. The RUKN was presented by the minister of energy and mineral resources to the head of Commission VII of the House of Representatives on May 28, 2018 and approved. The project is, therefore, aligned with the state's direction.

12. **Value Addition by AIIB.** By enforcing AIIB's environmental and social (E&S) and procurement policies and standards, the Project will enhance PLN's institutional capacity. AIIB financing will help close PLN's financing gap.

13. **Value Addition to AIIB.** The stand-alone project is AIIB's first energy project in Indonesia. Engagement with PLN will open access to Indonesia's energy market through high-quality energy infrastructure projects and linkage to power stakeholders.

14. **Lessons Learnt.** The Project has been built on numerous lessons learned from other AIIB projects, both in Indonesia and the energy sector, and previous PLN's MDB-financed projects. Salient lessons incorporated in the Project include: (i) establishing a coordination arrangement involving different departments within PLN throughout the project cycle; (ii) developing a project-level ESMPF following AIIB's environmental and social policy to manage potential E&S risks; (iii) developing an early engagement with various stakeholders including different Ministries given PLN's key role as the largest SOE in Indonesia's power sector; (iv) devising a pragmatic Project Operations Manual following best practices from other PLN's MDB-financed projects; and (v) engaging local consultants to assist AIIB's due diligence and implementation since most of the documents are in the local language.

B. Project Objective and Expected Results

15. **Project Objective.** The Project's objective is to improve access and quality of power services by strengthening the power distribution network in East Java and Bali.

16. **Expected Results.** The Project will help achieve service growth as required in the RUPTL (2019-2028) by reducing interruptions, network loss and network age. AIIB's project team and PLN have identified measures of output and outcome to be used to assess the Project's achievement in the following key areas:

- (1) **Increase of access to electricity.** In East Java, where the electrification ratio was more than 98 percent in 2018, the target is to electrify islands such as Madura and to reach an electrification ratio of 100 percent in 2021. In Bali, where the electrification ratio is 100 percent, the Project will help new consumers, who are expected to increase due to the growth of industry and tourism, access electricity. Key output indicators will be the length of medium-voltage (MV) and low-voltage (LV) lines constructed and the capacity of new MV distribution transformers installed.
- (2) **Improvement of the quality of power services by strengthening the distribution network.** Activities to strengthen the distribution network are relevant to East Java and Bali, and key output indicators are the length of MV and LV lines replaced and the capacity of new MV distribution transformers installed. Reduction of distribution system interruptions will be the result of improved quality of power services, measured by distribution interruptions per 100 circuit km.

17. The COVID-19 pandemic poses a challenge to PLN, with several business targets revised in RKAP for the year 2020. Additional customer and sales targets were revised from 490,826 to 473,983 (3.4 percent drop) and from 44.7 GWh to 40.55 GWh (9.3 percent drop), respectively. In response to the RKAP revisions and COVID-19 impacts, the AIIB project team has made adjustments to the project result indicator for year 2021 (Annex 1). The RUPTL will be issued annually for the next ten years. The Project's Intermediate Result Indicators will be measured periodically during project implementation and revised following an updated RUPTL¹¹ when available.

18. **Expected Beneficiaries.** The Project will benefit East Java and Bali residents not currently connected to the PLN network. The region's population was 46 million in 2014. The Project targets around 920,000 additional customers, of which 863,765 will be households and the rest businesses and public and industrial users. More than 13 million existing PLN customers in East Java and Bali will benefit from reduced frequency and duration of power supply interruptions.

¹¹ *Rencana Umum Penyediaan Tenaga Listrik* or RUPTL is Indonesia's 10-year electricity business plan, which includes demand forecasts, future expansion plans, electricity production forecasts, fuel requirements, etc. The document also indicates the projects that are planned to be developed by PLN, and those that are available for Independent Power Producers. The document is issued annually with an updated 10-year period.

C. Description and Components

19. The Project will support the implementation of the RUPTL (2019-2028) in East Java and Bali, now managed by PLN's Eastern Java, Madura and Bali Regional Development Division (PR JBTMB). The Project will support PLN's ongoing program to strengthen the regional distribution network by building new and rehabilitating old distribution lines and transformers. The Project will include the following activities:

- (i) **Component A: Installation of additional length of medium-voltage (MV) distribution lines.** This component includes construction of about 17,496 kilometers (km) of medium-voltage distribution lines and associated equipment. The distribution line is a 20 kV medium-voltage line. The associated equipment includes automatic meter reading to reduce distribution losses attributable to the theft of electricity.
- (ii) **Component B: Installation of additional length of low-voltage (LV) distribution lines.** This component includes construction of around 14,947 km of low-voltage distribution lines.
- (iii) **Component C: Installation of additional capacity of distribution transformers.** This component includes installation of about 1,504 megavolt amperes of MV distribution transformers.

20. The JBTMB regional distribution system aims to build 32,837 km of MV network, 30,861 km of LV network and 3,198 MVA of distribution transformers by 2028. Achieving these targets is expected to accommodate an additional 2.26 million customers and to maintain the power system's reliability. The Project targets 0.92 million new customer connections and 2.9 million meter replacements.

21. Project activities are those listed in the RUPTL 2019-2028, which is a master plan for system planning and power distribution development design and is issued annually. Because developing a power distribution system is dynamic and driven by external factors beyond PLN's control, such as increasing private and public power demand, power distribution development is planned using an annual program work plan and budget (RKAP).

22. Project implementation will follow an Operations Manual (OM) to be prepared by PLN in consultation with the Project team. The OM will be annexed to the Loan Agreement and adoption of the OM by PLN in form and substance satisfactory to the Bank will be a condition for loan effectiveness.

D. Cost and Financing Plan**Table 1: Project Cost and Financing Plan**

Item	Cost (USD million)	Financing (USD million)	
		PLN	AIIB
Component A: Installation of additional length of medium-voltage (MV) distribution lines	587.08	436.08	151.00
Component B: Installation of additional length of low-voltage (LV) distribution lines	224.24	166.56	57.68
Component C: Installation of additional capacity of distribution transformers	393.92	292.60	101.32
Total Cost	1,205.23	895.23	310.00

23. It is proposed that AIIB extend a loan of USD310 million to PLN for the Project. This loan is expected to have a maturity of twenty (20) years, including a grace period of five (5) years. PLN has opted for Variable Spread Loan.

24. The scope of the Bank's financing will be limited to non-main distribution material ("non-MDU") components only, including other materials, as well as installation and other works and services procured through PLN's existing method outlined in the Project Delivery Strategy.

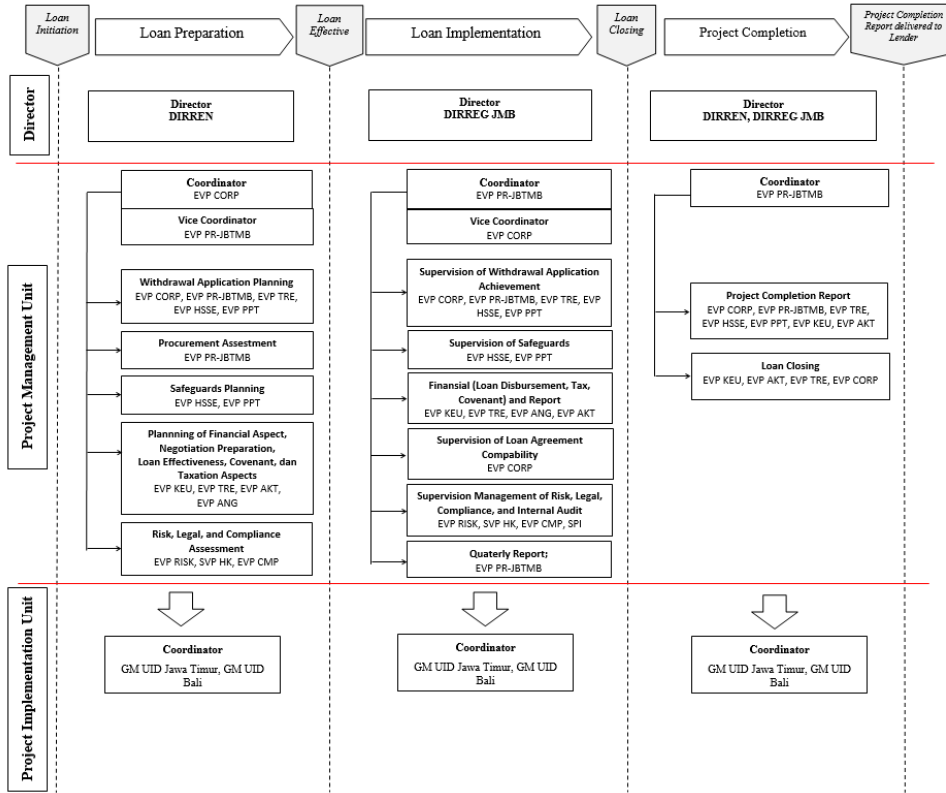
25. The loan will be reviewed three years after loan effectiveness, at which point PLN could request an extension of the closing date of the loan beyond 2026, in case that the cumulative disbursements will then be projected to be below USD310 million.

E. Implementation Arrangements

26. **Implementation Period.** The Project will be implemented in 2021-2025, corresponding to the periodic targets set in the RUPTL (2019-2028) for East Java and Bali. To implement the RUPTL, the RKAP will be prepared annually, outlining the work and budget for the coming year.

27. **Implementation Management.** PLN has more than 54,000 employees across Indonesia, of whom 1,500 are in the headquarters in Jakarta and the rest in regional offices. Figure 1 shows the PLN units with responsibilities related to planning, implementing and monitoring the Project.

Figure 1: PLN Units Responsible for the Project



28. PLN will implement the Project through its functional directorates at its headquarters and two distribution centers in Project areas. The Project will be administered by a central project management office at PLN's headquarters. The Corporate Planning Directorate is the focal point for Project preparation, and the Eastern Java, Madura and Bali Regional Development Division (PR JBTMB) will oversee the Project at the implementation and monitoring stages.

29. The two distribution centers involved in the Project are Distribution-East Java and Distribution-Bali. Distribution centers in the region will carry out the physical implementation activities through project management units. All implementation activities will be carried out by the contract division in each distribution center, under the general manager. PR JBTMB, supported by the distribution centers, will bear overall responsibility for ensuring quality and timeliness of implementation and satisfactory completion of the work plan.

30. The main distribution materials will be procured by the Supply Chain Division of the Strategy Procurement Directorate in headquarters, and non-MDU and construction services of both MDU and non-MDU will be procured by distribution centers in the regions. The Health, Safety, Security and Environment Division under the Human Capital Management Directorate and the Land Acquisition and Permits Division under the Project Management Directorate will be responsible for the Project's E&S management system, while the *Unit Pelaksana Pelayanan*

Pelanggan (UP3) under the *Unit Induk Distribusi* (UID) will be responsible for obtaining land permits.

31. PR JBTMB will prepare disbursement applications and consolidate Project financial reports with support from the finance, administration and human resources divisions in distribution centers. PLN, including its distribution centers, has been carrying out similar MDB-financed projects for decades. Its experience and capacity have recently been assessed as generally acceptable by ADB and IBRD.

32. **Monitoring and Evaluation.** PR JBTMB will be responsible for coordinating the Project's implementation and monitoring. Monitoring and evaluation during implementation will be conducted through the *Management Reporting Information System (SILM)*, PLN's centralized electronic data collection system. Progress on the Project Result Indicators will be reported directly to AIIB semi-annually based on information gathered in the SILM. PLN will regularly report to AIIB on the implementation of the OM.

33. **Supervision and monitoring.** Supervision will be conducted on a semi-annual basis by Bank staff and supported by consultants where needed through site visits and document review and discussion, and will cover environment and social, procurement and financial management aspects. With the travel restrictions during COVID-19 pandemic, AIIB team may conduct virtual supervision missions in lieu of field visits, and actively utilize the local consultants on the ground to monitor the implementation progress of the project. Any gaps in compliance with AIIB policies will be identified and AIIB will engage with PLN on implementing the OM and may deploy its experts to provide technical assistance as required.

34. **Procurement.** The Bank's Procurement Policy (PP) and its associated Interim Directive on Procurement Instructions for Recipients (PIR) for public sector apply to this project. PLN has prepared a Project Delivery Strategy (PDS), which includes an initial procurement and contract management plan. The PDS describes in detail the proposed arrangements to carry out and monitor the procurement of materials and services to implement the Project. The PDS has been found acceptable by the Bank.

35. Procurement for the Project would be carried out in accordance with provisions stipulated in the Loan Agreement.

36. **Financial Management.** This Project will use PLN's existing financial management system and procedures, which has been assessed as generally acceptable. PLN has received financial assistance from various donors and met their fiduciary requirement to submit interim financial reports and audited financial statements on time. Project accounting and financial reporting will be processed through PLN's Systems Applications and Products (SAP) system by distribution centers. PR JBTMB at headquarters will be responsible for overall project coordination, monitoring and report consolidation.

3. Project Assessment

A. Technical

37. **Project Design.** Further to the assessment of the Project's technical and design aspects using information from PLN, a review was conducted by a technical consultant. The review confirmed that PLN's power system development is based on the 10-year RUPTL, which is approved by the Ministry of Energy and Mineral Resources as regulator. Based on the RUPTL, the PLN head office develops a five-year long-term corporate plan (*Rencana Jangka Panjang Perusahaan/RJPP*). All regions then develop an annual RKAP. The RKAP is based on a distribution program strategy policy: marketing and improvement of access to electricity, efficiency and reliability. Each proposed program is arranged in the form of a PRK, which contains the project's background, the project objectives and the targets to be achieved, using a single-line diagram. Project feasibility is reviewed in terms of operations and finances.

38. PLN is currently the major distributor of electricity to customers in Indonesia. The distribution system operates at voltages of 20 kV and below and connects to the transmission grid at 150 kV or 70 kV. PLN's distribution system supplies electricity to almost all of our large customers at 20 kV, 70 kV and 150 kV and to smaller customers at 380 V and 220 V. Several factors that attribute to technical loss of electricity in PLN's distribution network include high loads, low-power factors, remote locations of generating units from load centers, and transformations of electricity to appropriate voltages for consumption. The Project is expected to contribute to reducing the rate of technical loss.

39. Each of PLN's UID for East Java and Bali has a track record in implementing and executing the distribution strengthening project activities. The activities under the distribution strengthening project are planned by the *Unit Induk Distribusi* or UID for each region. The UID will refer to target operational indicators such as SAIDI or SAIFI of permitted outage, which was formulated by the regional offices. The UID will then propose the distribution program to the head office for inclusion in the RKAP. The UID implements the activities following the budget in the approved RKAP. From the RKAP, the UID will estimate the number of MV and LV lines, the transformer capacity, number of new customers, and meter replacements for the year. The UID will procure the non-MDU and installation services, while MDU procurement is carried out centrally by the Supply Chain Management Division.

40. **Operational Sustainability.** Following the execution of project activities, distribution assets will be operated and maintained by the distribution centers in East Java and Bali as part of the JBTMB system. Its operations, including post-loan closing date, along with key performance indicators, are monitored by regional offices and the head office, referring to information provided by PLN's Management Reporting Information System (SILM). SILM provides accurate, real-time, critical data online, not only for distribution but also for electricity generation, sales, transmission and project development status. PLN departments operate other information technology applications, which generate data that feed into SILM and provide additional information on current activities to PLN's management.

B. Economic Analysis

41. **Economic Analysis.** The Project will improve the quality of power supply by reducing the frequency and duration of power interruptions. It will upgrade the system to meet increasing demand from existing and additional customers by replacing LV and MV distribution lines as well as associated equipment and transformers. The Project will connect the remaining two percent of consumers in East Java without access to grid electricity to achieve the government's 100 percent electrification target by 2021 (electrification ratio was 98 percent in 2018). It will also connect new customers arising from new economic activity.

42. The economic analysis was conducted based on data provided by PLN headquarters and regional distribution centers in East Java and in Bali as well as information gathered through in-person interviews and provided by an independent consultant. The Project's net economic benefit was estimated as USD3,689 million with a nine percent discount rate. The Project's economic internal rate of return (EIRR) was 30.7 percent in the baseline scenario. Detailed economic analysis, including sensitivity analysis, is provided in Annex 3.

C. Fiduciary and Governance

43. **Procurement.** PLN, an experienced recipient that has implemented several projects funded by MDB partners, has proposed implementation arrangements in accordance with their procurement procedures (as defined in the PLN Board of Director Decree No 0022.P/DIR/2020 – referred to as “PLN Procurement Guidelines”) , system and regulations. The PDS as agreed with the Bank presents in detail the proposed procurement methods and approach that is fit for the scope, complexity and relatively low amount of the contracts to be procured. This approach is consistent with the provisions of PIR *Use of Country Procurement System*, and the procurement process has been reviewed against the Core Procurement Principles and Procurement Standards. The in-depth due diligence, that has been conducted with the support of an external procurement consultant, has confirmed that the PLN's regulations are materially consistent with the Bank's Core Procurement Principles and Procurement Standards and the result is annexed to the PDS. As part of the due diligence the Bank's procurement specialist verified PLN's capacity assessment and of the Client's staff to ensure that the proposed arrangements are consistent with the Bank's requirements, and with the Project's objectives, fiduciary risk, complexity, and are deemed fit-for-purpose.

44. **Financial Management.** The financial management arrangements are satisfactory and meet the requirements of Operational Policy on Financing (updated on March 20, 2020). An assessment of project financial management arrangements has concluded that adequate financial management arrangements will be in place for the Project to provide reasonable assurance that the proceeds of the financing will be used for the purposes for which they are granted.

45. PLN's financial management system has been assessed as generally acceptable. PLN has clearly defined planning and budgeting procedures, and budget amendments are properly controlled. Most of the accounting and financial staff are capable and receive training periodically.

An effective cash management system and a new asset management system are in place. An internal supervisory unit with offices in all PLN regions, directly reporting to PLN’s president director, functions as the internal auditor.

46. The finance teams in the distribution centers in East Java and Bali will adopt the fully rolled-out SAP system for project accounting and financial management. SAP’s two main modules—material management and financial accounting—automatically process each transaction. The financial accounting module contains accounting, treasury and budget functions to manage funds and keep accounting records. The distribution centers prepare annual RKAPs, which include cash flow for approval by the Directorate for Regional Business (JMB) in headquarters. The Treasury Division in headquarters mobilizes funds, including government subsidies and commercial loans. Project funds are transferred to distribution centers weekly based on approved RKAP, using a centralized imprest mechanism. Payment to contractors strictly complies with internal authorizations, and payment is made by distribution centers or the Treasury Division in headquarters based on requests approved by the Directorate for Regional Business, JBTMB. PLN is integrating an e-budget system with SAP to do budget analysis by comparing the budget with actual expenditures.

47. The Loan Agreement will be signed between AIIB and PLN, with sovereign guarantee from the Ministry of Finance of the Republic of Indonesia. PR JBTMB in headquarters will be responsible for overall coordination and monitoring, including preparing disbursement applications, while the Accounting Division will prepare project financial statements. The statements will be in the format agreed with AIIB to reflect source and usage of project funds and will be audited on an annual basis. Its current appointed auditor, PwC Indonesia, is considered as acceptable to the Bank.

48. **Disbursements Method.** PLN will pre-finance activities under the Project and submit Withdrawal Application on a semi-annual basis for reimbursement of expenditures on non-MDU and installation and other services by the Bank. The withdrawal application will be supported by a Statement of Expenditures following Bank’s format and other documents as required in the Disbursement Letter. The Bank will disburse accordingly and perform post review as required.

49. **Disbursement Plan.** Disbursement plan is as follows:

Table 2: Disbursement Plan (in USD million)

2021*	2022	2023	2024	2025
USD89.49	USD56.62	USD62.56	USD67.37	USD33.96
* Disbursement in year 2021 includes retroactive financing of USD62 million and year 2021 financing of USD27.49 million.				

50. The disbursement plan for each year is indicative, and PLN may disburse a higher amount following the disbursement method above. The year 2021 disbursement target is based on the Project activities to be funded under the retroactive financing and PLN’s Procurement Plan for 2021, while targets for 2022 – 2025 are derived from the RUPTL (2019-2028).

51. **Retroactive financing.** The Bank may finance realized expenditures of Project activities with the payment date up to twenty-four (24) months¹² before the loan signing date, provided that the amount is equal or less than 20% of the total loan size of USD310 million and that expenditures are deemed eligible subject to the Bank's verification of compliance with all safeguard and fiduciary aspects. The rationale for granting the derogation and extending the retroactive financing period is (i) 2019 is the first year of the RUPTL 2019-2028 and some important Project activities have been carried out in 2019; (ii) the loan negotiation and signing has been delayed due to the COVID-19 pandemic; (iii) the revised PLN's Program Work Plan and Budget included less capital investment than expected in 2020. If retroactive financing is only for twelve months, the disbursement of the loan will be slower than the original schedule; (iv) PLN has capital expenditure needs and retroactive financing for 2019 activities would help PLN to optimize the overall financing plan for RUPTL 2019-2028.

52. All eligibility criteria agreed between PLN and the Bank defined in the Project Environmental and Social Management Planning Framework (ESMPF) will be applicable to retroactive financing, e.g. exclusion of PRKs adjacent to critical habitats and protected areas. Activities under retroactive financing shall be included in the Procurement Plan and if required a corrective action plan will be prepared to bring them in compliance with the ESMPF.

53. **Governance and Anticorruption Measures.** AIIB's Policy on Prohibited Practices will guide the Project's governance and anticorruption measures. The policy was discussed with PLN during project preparation. Project implementation will be monitored regularly by AIIB.

54. **Institutional Capacity.** PLN's capacity to plan and implement the Project has been assessed by the Project team as adequate. PLN Distribution-East Java is responsible for the 20-kV distribution system, supervision of 16 customer service implementation units (*Unit Pelaksana Pelayanan Pelanggan* or UP3), one distribution control center and 114 customer service units (*Unit Layanan Pelanggan* or ULP). PLN Distribution-Bali is responsible for the 20-kV distribution system, supervision of three customer service implementation units (UP3), one distribution control center and 14 customer service units (ULP). Both regions have successfully implemented distribution development programs over the years. A review of other MDBs' assessments of PLN's institutional capacity yields similar results. PLN obtained financing from IBRD and ADB to partially finance distribution programs in Sumatra, Sulawesi and Nusa Tenggara, and disbursement for these loans has so far been made on time.

55. **Reporting and Monitoring.** PLN's capacity to monitor and report on the Project's results has been assessed by the Project team as adequate. A review of other MDBs' assessments of PLN's reporting and monitoring systems yielded similar results. PLN's centralized Management Reporting Information System (SILM) provides accurate, real-time, critical data online, such as electricity generation, sales, transmission and distribution and project development status. PLN departments operate other information technology applications, which generate data that feed

¹² Per request of PLN, the President has granted a derogation from AIIB Directive on Sovereign-backed and Non-sovereign backed Financings (April 28, 2020) to allow twenty-four (24) months of retroactive financing period on December 11, 2020.

into SILM and provide additional information on current activities for PLN's management. PLN continues to develop the system control and data acquisition monitoring system at distribution control centers.

D. Environmental and Social

56. **Environmental and Social Policy (including Standards) and Categorization.** AIIB's Environmental and Social Policy (ESP), including the Environmental and Social Exclusion List and Environmental and Social Standard (ESS) 1, are applicable to this Project. The Project will support a programmatic expansion and upgrading of PLN's distribution systems in Bali and East Java, comprising sections of medium- and low-voltage distribution powerlines and medium- and low-voltage distribution transformers. ESS 2 on Involuntary Resettlement and ESS 3 on Indigenous Peoples are not applicable as the Project will neither require land acquisition nor result in physical or economic displacement. While Indigenous Peoples may be present in the provinces of Bali and East Java, Project activities are not likely to adversely affect these groups. Following the site visit by the Bank's Environmental and Social Specialists and extensive engagement with PLN, the Project has been assigned a category B since it has a limited number of potentially adverse environmental and social impacts, none of which are unprecedented or irreversible, and sufficient measures are provided in the Environmental and Social Management Planning Framework (ESMPF) prepared for this Project to successfully manage any potential environment and social risks arising from Project activities, as confirmed by the site visit and review of the environmental and social (E&S) documentation prepared for the Project.

57. **Environmental and Social Management Planning Framework.** As the Project will finance the expansion and upgrading program of PLN's distribution systems in Bali and East Java, an ESMPF has been prepared to ensure that the activities covered in the Project will be assessed and implemented in conformity with the ESP and applicable ESSs. The ESMPF has been prepared by experienced consultants, reviewed by PLN corporate and provincial offices in Bali and East Java and also by AIIB. The ESMPF includes a description of the applicable policies and procedures proposed to be followed to screen, assess and address risks and impacts of all AIIB-financed activities against the applicable E&S requirements. It includes (a) an overview of the E&S baseline conditions in both Bali and East Java; (b) an explanation of the anticipated environmental and social risks and impacts associated with the proposed activities; (c) the corresponding management and mitigation measures; (d) provisions for disclosure and consultation; (e) implementation and monitoring requirements; and (f) roles and responsibilities. For each Project activity, E&S screening forms and a rapid E&S assessment process, including identification and consultation of stakeholders, will take place according to the ESMPF, and an activity and location specific ESMP for both East Java and Bali will be prepared for implementation by PLN and its contractors.

58. PLN has in-house corporate E&S resources familiar with the requirements of other Multilateral Development Banks and has a track record of implementing transmission and distribution (T&D) projects in accordance with the requirements of the World Bank and Asian Development Bank. These corporate resources will retain oversight responsibilities for the Project and provide capacity building and support to the Bali and East Java PLN affiliates for the

implementation of the ESMPF across all Project activities. These affiliates also have environmental and health and safety personnel to supervise contractors and report to PLN corporate on implementation of applicable requirements.

59. **Environmental Aspects.** The ESMPF defines restrictions and provides screening checklists to avoid impacts on critical habitats and protected areas by avoiding such areas for either the right-of-way or temporary lay-down areas. Where presence of avifauna or arboreal fauna is identified during the sub-project rapid E&S assessment, design and engineering measures are applied to minimize impacts on such receptors. Other impacts include limited clearing of vegetation within a five meter-wide right of way; emissions from combustion engines during the transportation and erecting of poles and horizontal drilling; generation of construction waste and domestic waste during construction, and industrial waste such as end-of-life transformers replaced in the scope of the Project, as well as waste transformer oil and vegetation cuttings during the O&M period. Such transformers and waste oil are stored in PLN-owned and operated facilities and waste oil is sent to specialized entities for treatment or sold for disposal through incineration. Waste transformer oil potentially containing PCB is stored in a secure storage on PLN facilities until treatment and/or final disposal is available.

60. **Climate Finance.** AIB adheres to the joint MDB Common Principles for Climate Mitigation Finance Tracking (2015). Specifically, 50% of AIB's loan proceeds or USD155 million is expected to be used to finance the retrofitting or upgrading of PLN's existing distribution systems. It will lead to power loss reduction, hence considered as climate mitigation finance.

61. **Community and Occupational Health and Safety.** PLN has established policies and standard operating procedures (SOPs) to identify and manage transport safety, work in height, electrical safety, and unplanned events such as transformer fire or leakage, etc. The ESMPF identifies potential risks induced by the activities to be conducted in the scope of the Project. A Project activity-specific risk assessment, including for the establishment of safety clearance between the distribution network infrastructure and houses or trees, transport and erection of poles, trenching and directional drilling in urbanized areas, and system electrification and maintenance, will be conducted as per the ESMPF.

62. **Social Aspects.** Project activities will comprise (a) use of no more than 0.2 m² of land for installation of concrete poles and approximately 4m² for installation of transformers (either in cabinet between two concrete poles or on one pole); (b) limited directional drilling (approx. 200-300m) to run cables under major roads and limited trenching (usually less than 500m) in urban environments, and (c) possible removal of non-land assets (primarily trimming or felling of trees) for stringing of conductors.

63. PLN will utilize the existing right of way and public lands for the upgrading and expansion of the distribution line. Should use of private land be needed to connect to new private customers, consent of landowners and persons whose non-land assets may be affected will be secured and documented. The alignments of distribution lines, including the location of utility poles, may be adjusted if such need arises. Measures such as increasing the height of poles and conductors or replacing bare cables with insulated cables may be adopted to allow flexibility and minimize siting

of poles on private land or disturbance of non-land assets. PLN will require its contractors to repair or restore to previous condition or improve any property that is damaged during the installation of cable wires and poles.

64. While BRWA, the Customary Regional Registration Agency in Indonesia, indicates the possible presence of Indigenous Peoples in Bali and East Java, Project activities are not likely to adversely affect them¹³. The screening checklist in the ESMPF includes provisions on the presence of Indigenous Peoples. If it is confirmed that a certain area is inhabited by Indigenous Peoples, installation of distribution lines in these areas will require consultation with village heads from the planning stage and consideration will be given to the options preferred by Indigenous Peoples with respect to the alignment of the distribution lines and siting of poles. This would be documented and adequately reflected in the Project activity work plan map.

65. **Gender Aspects.** The Project will target 0.92 million new customer connections and 2.9 million meter replacements, providing households with improved supply of electricity. It is expected that this will contribute to reducing the drudgery of domestic work and alleviate the time-poverty of women who are often responsible for these tasks.

66. **Stakeholder Engagement, Consultation and Information Disclosure.** Site visits and interviews with communities from Bali and East Java were carried out to inform the ESMPF. The ESMPF, including a translation of the Executive Summary in applicable local languages, are available on PLN's and AIIB's websites¹⁴. PLN distribution units conduct regular socialization activities with communities. This includes project activities, dissemination of grievance redress mechanism, environment and social management information including on community health and safety.

67. A workshop on ESMPF implementation will be organized to build capacity of PLN Distribution Centers in Bali and East Java. This will include (i) ES screening; (ii) ESMP preparation; (iii) implementation, monitoring and reporting; (iv) GRM and public consultation mechanism.

68. **Project Grievance Redress Mechanism (GRM).** The Project will make use of the existing PLN grievance mechanism for distribution lines which is accessible through: (i) the Call Center 123, which can be accessed by anyone anywhere in Indonesia through the company website, email, telephone, or social media; and (ii) online on the company's website by using an integrated complaint-solving application. Information on how to access the GRM will be communicated to Project Affected People in the course of the consultation activities during sub-project preparation and continuously displayed at multiple locations during sub-project implementation.

¹³ <https://brwa.or.id/>

¹⁴ AIIB's website: https://www.aiib.org/en/projects/details/2019/proposed/_download/Indonesia/Disclosed-PLN-ESMPF-AIIB-East-JavaBali-Nov2020.pdf
PLN's website: <https://web.pln.co.id/statics/uploads/2020/11/Disclosed-PLN-ESMPF-AIIB-East-JavaBali-Nov2020.pdf>

69. **Bank's Accountability Mechanism.** The Project-affected People's Mechanism (PPM) will likewise apply to this Project. The PPM has been established by the Bank to provide an opportunity for an independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or the processes of the Bank's Management. Information on AIIB's PPM is available at: <https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>

70. **Implementation Monitoring and Supervision Arrangements.** An Operations Manual has been prepared by PLN under AIIB's guidance as annexed to the loan agreement. The Operations Manual sets out procedural and documentary requirements to support PLN's compliance with the ESMPF; provisions to validate PLN's compliance with the ESMPF; and AIIB's supervision to assess PLN's performance in implementing the ESMPF. AIIB will conduct annual site visits at multiple subproject locations during Project implementation.

E. Risks and Mitigation Measures

71. Major risk categories were identified, confirmed and finalized during project preparation.

Table 3: Summary of Risks and Mitigating Measures

Risk Description	Assessment	Mitigation Measures
Technical risk. Delay in implementation and revision of targets because of the COVID-19 pandemic	High	AIIB team may conduct virtual supervision missions in lieu of field visits, and actively utilize the local consultants on the ground to monitor the implementation progress of the Project.
Technical risk. Delay in construction of upstream power generation and transmission, which may delay PLN's distribution development plan	High	Annual planning through RKAP and regular progress evaluation and monitoring through SILM reports
Environmental and Social Risks. Disturbances induced during the rolling out of the distribution network upgrading and extension may result in temporarily social impacts, which can be significantly impacted in case of unplanned events such as transportation accidents or fall of a pole. Damage to land and assets may occur during the erection of poles and stringing. Workers are exposed to health and safety risks while working in height and conducting electrical work. The management of end-of-life transformers and leakage of transformer oil can induce long-term environmental impacts such as soil and groundwater contamination.	Medium	<p>PLN has experience implementing transmission and distribution projects in accordance with international E&S standards.</p> <p>PLN will implement the ESMPF prepared in accordance with the ESP and applicable ESSs, conduct screening and assessment of subprojects and prepare subproject specific management plans. Relevant E&S information will be disclosed, and Project Affected People will be consulted during subproject preparation. Contractors will be monitored during construction activities. A third-party verification of compliance with the ESMPF requirements will take place. AIIB will conduct annual monitoring as part of Project supervision.</p>
Technical risk. Delay in implementation of PLN's distribution development plan	Low	PLN's success rate in implementing similar projects has been high, with annual budget absorption rate of >93 percent
Fiduciary risk. Inadequate PLN procurement capacity to undertake project activities according to the OM and PDS	Low	PLN is experienced in the implementation of similar projects scope using their corporate procedures that have been found acceptable to AIIB. The OM will set out the monitoring modalities in detail and consistent with the arrangements proposed in the PDS.

Annex 1. Results Monitoring Framework

Project Objective: Improve access and quality of power services in East Java and Bali										
Indicator	Unit of Measurement	Baseline 2020 ¹	Annual Target Values					End Target	Frequency	Responsibility
			2021	2022	2023	2024	2025			
Project Result Indicators (Outcomes)										
1.a. Distribution interruption, East Java	Times/100 circuit km	4.83	4.37	3.57	2.90	2.52	2.18	2.18	Annual	PLN
1.b. Distribution interruption, Bali	Times/100 circuit km	3.87	3.30	2.71	2.26	1.89	1.60	1.60	Annual	PLN
2.a. Losses, East Java	%	6.55	6.08	6.00	5.89	5.75	5.67	5.67	Annual	PLN
2.b. Losses, Bali	%	5.53	5.51	5.45	5.35	5.23	5.17	5.17	Annual	PLN
3. Primary energy consumption saved, East Java and Bali combined	GWh	n/a	192.06	239.69	307.76	397.58	461.48	461.48	Annual	PLN
4. GHG emission reduced, East Java and Bali combined ²³	tonnes CO ₂	n/a	169,014.49	210,922.96	270,829.20	349,873.11	406,098.29	406,098.29	Annual	PLN
Intermediate Result Indicators (Outputs)										
1. Installation of MV distribution lines	Km	48,985	1,436	3,650	4,162	3,941	4,305	66,481	Semiannual	PLN
2. Installation of LV distribution lines	Km	91,296	2,115	2,923	3,325	3,176	3,408	106,243	Semiannual	PLN
3. Capacity of distribution transformers installed	MVA	10,577	269.25	271.51	322.61	293.46	347.16	12,081	Semiannual	PLN
4. Total customer connections	Connection	13,861,263	148,500	191,124	199,724	189,561	191,092	14,781,263	Semiannual	PLN
5. Meter replacement	Imot	1,472,783	738,699	605,288	597,382	466,323	492,310	4,372,783	Semiannual	PLN

¹ 2020 Baseline is derived based upon the 2019 results and realized indicators as of October 2020.

² The 2020 losses are an anomaly because of the impact of the pandemic. The Project team applied 2019 losses for each East Java and Bali of 6.55% and 5.53%, respectively, as a baseline to calculate the GHG reduction.

³ The emission factor applied is the 2018 value of Java Bali grid, or 0.88 tonnes CO₂ per MWh (Source: https://gatrik.esdm.go.id/assets/uploads/download_index/files/acb83-nilai-faktor-emisi-grk-sistem-ketenagalistrikan-2018_new.pdf)

Annex 2. Detailed Project Description

A. East Java, Madura, Bali Distribution Network and System

1. PLN provides most of the public electricity and electricity infrastructure in Indonesia, from construction of power plants, power generation, transmission, distribution, to retail sales of electricity. PLN operates eight main grids in Java-Bali, North Sumatra, South Sumatra, West Kalimantan, Central Kalimantan, East Kalimantan, North Sulawesi and South Sulawesi, which are the most populated regions in Indonesia (see Figure A2.1). As of September 30, 2019, PLN controlled approximately 56,889 kilometers-circuits of transmission lines and approximately 970,620 kilometers-circuits of distribution lines¹.

Figure A2.1 PLN's Generation Network²

Sumatra ①		Kalimantan ②		Sulawesi ③	
Hydro	867 MW	Hydro	32 MW	Hydro	227 MW
Geothermal	110 MW	Steam-turbine	772 MW	Geothermal	80 MW
Steam-turbine	3,072 MW	Combined Cycle	60 MW	Steam-turbine	533 MW
Combined Cycle	1,008 MW	Gas-turbine	307 MW	Gas-turbine	223 MW
Gas-turbine	919 MW	Diesel	1,217 MW	Diesel	821 MW
Diesel	2,407 MW	Others	1 MW	Others	3 MW
Others	1 MW	IPP	1,157 MW	IPP	1,736 MW
IPP	4,245 MW	Total	3,546 MW	Total	3,623 MW
Total	12,629 MW				
Maluku ④		Java-Bali ⑤		NTB ⑥	
Diesel	454 MW	Hydro	2,421 MW	Diesel	480 MW
Steam-turbine	14 MW	Geothermal	377 MW	Steam-turbine	107 MW
Others	2 MW	Steam-turbine	16,145 MW	Hydro	2 MW
IPP	60 MW	Combined Cycle	10,132 MW	Others	1 MW
Total	530 MW	Gas turbine	1,709 MW	IPP	134 MW
		Diesel	415 MW	Total	724 MW
		Others	1 MW		
		IPP	9,707 MW		
		Total	40,907 MW		
NTT ⑦		Papua ⑧		Total Capacity	
Diesel	283 MW	Diesel	473 MW	Hydro	3,584 MW
Steam-turbine	47 MW	Hydro	30 MW	Geothermal	580 MW
Geothermal	13 MW	Steam-turbine	24 MW	Steam-turbine	20,714 MW
Hydro	5 MW	Others	5 MW	Combined Cycle	11,200 MW
Others	4 MW	IPP	204 MW	Gas-turbine	3,158 MW
IPP	101 MW	Total	736 MW	Diesel	6,550 MW
Total	463 MW			Others	18 MW
				Total PLN	45,804 MW
				IPP	17,344 MW
				Grand Total	63,148 MW

2. PLN is currently the major distributor of electricity to customers in Indonesia. PLN's distribution system operates at voltages of 20 kV and below and connects to the transmission grid at 150 kV or 70 kV. Our distribution system supplies electricity to almost all of PLN's large customers at 20 kV, 70 kV and 150 kV and to smaller customers at 380 V and 220 V. As of March 31, 2019, PLN supplied electricity to approximately 279,352 large industrial and

¹ As of September 30, 2019. <https://web.pln.co.id/statics/uploads/2020/01/20200130-ULUMBU-Intam-Ringkas-Final-rev.pdf>

² Source: PLN's Investor Presentation as of March 31, 2020

business customers with capacity of 200 kVA to 20,000 kVA. In addition, PLN had approximately 98 large (more than 30,000 kVA) industrial customers connected directly to PLN's grid at 70 kV and 150 kV.

3. PLN divided the operating segments into four regional segments: (i) Java, Madura, and Bali; (ii) Sumatra; (iii) Sulawesi and Kalimantan; and (iv) Maluku, Papua, and Nusa Tenggara. Approximately 58.2% of the total population of Indonesia reside in Java and Bali, and the region accounted for approximately 63.34% of PLN's total customers' power consumption.

4. The distribution activities under the Java, Madura, and Bali regional segment will be managed under PLN's Eastern Java, Madura and Bali Regional Development Division (PR JBTMB). The Eastern Java, Madura and Bali (JBTMB) region consists of a 47,549 km distribution network and 10,148 MVA distribution substations. PLN intends to continue reducing the rate of technical loss by installing more distribution equipment, including reactive power compensation equipment in substations to improve the overall power factor, and by progressively phasing out intermediate voltages to reduce the number of transformations required.

B. Detailed Project Components

5. The Project targets 0.92 million new customer connections and 2.9 million meter replacements. The Project will include the following activities:

- (i) **Component A: Installation of additional length of medium-voltage (MV) distribution lines.** This component includes construction of about 17,496 kilometers (km) of medium-voltage distribution lines and associated equipment. The distribution line is a 20 kV medium-voltage line. The associated equipment includes automatic meter reading to reduce distribution losses attributable to the theft of electricity.
- (ii) **Component B: Installation of additional length of low-voltage (LV) distribution lines.** This component includes construction of around 14,947 km of low-voltage distribution lines.
- (iii) **Component C: Installation of additional capacity of distribution transformers.** This component includes installation of about 1,504 megavolt amperes of MV distribution transformers.

Annex 3. Economic Analysis

1. The Project will improve the quality of power supply by reducing the frequency and duration of power interruptions. It will upgrade the system to meet increasing demand from existing and additional customers by replacing LV and MV distribution lines as well as associated equipment and transformers. The Project will connect the remaining two percent of consumers in East Java without access to grid electricity to achieve the government's 100 percent electrification target by 2021 (electrification ratio was 98 percent in 2018)³. It will also connect new customers arising from new economic activity. Distribution system loss was low in both regions—5.8 percent in East Java and 6.4 percent in Bali—in 2018.

2. In 2018, 12.9 million users were connected to the grid in East Java (11.5 million) and Bali (1.4 million). According to the RUPTL for 2019-2028, the number of customers is projected to increase to 14.7 million by 2028, representing a 1-2 percent increase per year. The increase is due to connecting existing users to the grid who are currently generating electricity from off-grid diesel generators ("non-incremental"), and new consumers due to economic growth ("incremental").

3. The number of additional customers as well as breakdown of connections by consumer type was taken from the RUPTL 2019-2028 and projected afterwards using the average rate of increase between 2020-2028. The number of beneficiaries used in the central scenario was reduced by 20% compared to forecasts in the latest RUPTL as a proxy to adjust for the optimistic nature of such estimates and for the negative impacts of COVID-19 on economic activities in the region, such as tourism. On top of this, a 10% decrease in benefits has been included in the sensitivity analysis.

4. Industrial users are the largest consumer group in East Java, accounting for over 52 percent of total revenues, while 59 percent of revenues in Bali was collected from business users. In 2019, the number of industrial users in East Java increased in the food and drink, plastic and paper industries, but decreased in the textile, iron and steel, cement and automotive industries largely due to shutdowns. Bali's business users are largely in tourism, where consumption is projected to increase, reflecting average economic growth of six percent over the next 10 years.

5. The economic analysis was conducted based on data provided by PLN headquarters and regional distribution centers in East Java and in Bali as well as information gathered through in-person interviews and provided by an independent consultant. A 30-year timeframe

³ Bali has already achieved full electrification.

was used in line with the literature on the economic lifetime of distribution infrastructure facilities. The exchange rate used was USD1.00 = IDR15,500.

6. Benefits estimated include non-incremental and incremental. To capture the consumer surplus, both types of benefits were estimated using the willingness to pay (WTP) of non-incremental consumers in the industry and business sectors which was calculated as follows. Captive power in the region was generated using diesel. The cost of captive generation was stated as IDR3,000 IDR per kWh in the interviews, and IDR2,695 per kWh when calculated using the price of “bio solar” diesel (IDR9,800 per liter) and specific fuel consumption (SFC) (0.275 liter per kWh) provided by the independent consultant. To yield a conservative estimate, the average of the cost of captive power generation using diesel fuel (USD17 cents per kWh) and the realized electricity tariff (USD8 cents per kWh), USD12.5 cents per kWh, was taken as a proxy to estimate industrial and business users’ WTP. By applying the “rule of half” to both incremental and non-incremental beneficiaries, the results are an underestimate of the benefits of non-incremental consumers and are therefore conservative. Also, the lower one of the two estimated costs of self-generation was used (IDR2,695 per kWh as opposed to IDR3,000 per kWh)⁴.

7. Capital expenditure (CAPEX) was taken as the total investment cost by PLN and by AIIB. Operation and maintenance (O&M) costs were reported by the client to be around five percent of capital expenditure. The cost of supply to end users was calculated as the average of the cost of distribution realized by the PLN distribution centers in East Java and in Bali in 2019, adjusted by the subsidy paid by the government to PLN to compensate for the company’s inability to recover costs through the consumer tariff set by the government. According to PLN’s 2019 financial statement, the subsidy was equal to 25% of the electricity generation cost including a public service obligation (PSO) and a compensation subsidy.

Investment cost	1,205 USD million
O&M cost	5% of investment cost
NPV	3,689 USD million
EIRR	30.7%

8. The Project’s net economic benefit was estimated as USD3,689 million with a nine percent discount rate. The Project’s economic internal rate of return (EIRR) was 30.7 percent

⁴ Social sector including schools and hospitals, as well as government offices and street lighting were other customer groups, each amounting to 1-3 percent of total connections.

in the baseline scenario. Sensitivity analysis was conducted for the Project resulting in the EIRRs summarized in the table below.

Costs (CAPEX and OPEX)	100%	110%	100%	100%	110%
Benefits	100%	100%	90%	100%	90%
Delay of benefits	On time	On time	On time	Delayed by one year	Delayed by one year
EIRR	30.7%	28.6%	28.4%	25.8%	22.5%

9. The sensitivity of the EIRR was tested by individually increasing the Project's costs by 10%, decreasing benefits by 10% over the Project's lifetime, and delaying project execution and subsequently benefits by one year. Out of the three scenarios, the EIRR is the most sensitive to a one-year delay. In the combined scenario analysis, the EIRR would decrease to 22.5 percent, which is above the 9 percent hurdle rate.

10. Further benefits have not been accounted for, especially to residential users. For example, a rural village in Madura Island, East Java reported that because of PLN's ongoing program to upgrade electricity supply from LV (80V) to MV (220V) they can use household electric appliances such as refrigerators and air conditioners and have set up a mechanical workshop for repairing cars, improving their sources of livelihood and quality of life. The welfare benefit from the reduced cost per unit of power consumption is significant, as the cost of diesel power generation is over two times that of PLN's tariff. Also, further benefits of GHG emission reduction from switching from diesel to grid electricity as well as from loss reduction have not been captured in the analysis.

Annex 4. Sovereign Credit Fact Sheet

A. Recent Economic Development

1. Indonesia is an upper middle-income country with a GDP per capita at around USD 4,136 and a population of 270.6 million.⁵ The economy grew robustly by over 5.0 percent per annum between 2017 and 2019. In light of the ongoing COVID-19 pandemic, continued weaknesses in exports and investments as well as demand-side shocks (lower consumer spending) led to a slowdown in GDP growth to 3.0 percent in Q1 2020, compared with 5.1 percent in Q1 2019. As the pandemic intensified globally, Indonesia's GDP contracted significantly by 5.3 percent in Q2 2020, for the first time since the Asian Financial Crisis.

2. Inflation is on a declining trend since a recent high of 3.8 percent in 2017, reflecting subdued food prices, contained electricity and fuel prices and tighter macroeconomic policies. Inflation averaged 2.8 percent in 2019, low by historical standards and below the government's 2019 target of 3.5 percent. This was due to lower inflationary pressure from government-regulated food and fuel prices. Inflation has been continuously declining since the beginning of 2020. In July, it fell to 1.5 percent, well below the lower bank of Bank Indonesia's inflation target 2-4 percent for 2020.⁶ To bolster economic activity, Bank Indonesia reduced the policy rate cumulatively by 100 basis points in 2020 and announced various measures to ease liquidity conditions.

3. Fiscal deficit increased from 1.8 percent of GDP in 2018 to 2.2 percent of GDP in 2019 due to shortfall in tax revenues (which were expected to come from the manufacturing and mining sectors) and higher central and regional government expenditures. Nevertheless, fiscal deficits in recent years have remained below the government cap of 3 percent. Meanwhile, public debt remained low, at around 30 percent of GDP in 2018 and 2019. To address the fallout from the COVID-19 pandemic, the government initially announced two fiscal packages totaling IDR 33.2 trillion (about 0.2 percent of GDP). The government subsequently announced an additional package of IDR 405 trillion (2.6 percent of GDP) on March 31, 2020, which was further expanded to IDR 677.2 trillion (4.2 percent of GDP) on June 4, 2020, as part of a national economic recovery program. These packages provide support to the health sector, additional social assistance to vulnerable population, unemployment benefits, reductions of corporate income tax rate and financial support to state-owned enterprises. In April 2020, the Government had temporarily relaxed the 3 percent of GDP budget deficit cap for 2020-22, for the first time since the provision was issued in 2003, in order to expand room for fiscal measures.

⁵ The income group classification for 2019 is based on World Bank criteria, details seen: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>; Population and GDP per capita data use World Bank World Development Indicators 2019 data.

⁶ Bank Indonesia: <https://www.bi.go.id/en/moneter/inflasi/bi-dan-inflasi/Contents/Penetapan.aspx>

4. The slight moderation of current account deficit in 2019 reflected faster contraction in imports than in exports, such as in oil (due to import controls) and capital goods (due to lukewarm domestic investment). The current account deficit has become smaller in 2020. In the first 10 months of 2020, exports decreased by 5.58 percent whereas imports declined by 19.07 percent. The increase in the trade surplus has been quite stark from July to October as exports fell at an average of 5.6 percent per month while imports contracted by 26 percent. Declines in imports were driven by a 33 percent reduction in oil and gas bill whereas the relatively small decline in export was supported by increase in animal/vegetable oil and precious metal exports. Similarly, a decrease in payments to foreign investors also supported the current account shrinkage. A greater fall in imports, compared with exports, reversed Indonesia's trade deficit to surplus.

B. Economic Indicators

Selected Macroeconomic Economic indicators (2017-2021)

Economic Indicators	2017	2018	2019	2020*	2021*
Real GDP Growth	5.1	5.2	5.0	-1.5	6.1
CPI inflation (% change, average)	3.8	3.3	2.8	2.1	1.6
Current account balance (% of GDP)	-1.6	-2.9	-2.7	-1.3	-2.4
General government balance (% of GDP)	-2.5	-1.8	-2.2	-6.3	-5.5
Nominal gross public debt (% of GDP)	29.4	30.1	30.5	38.5	41.8
Public gross financing needs (% of GDP) 1/	4.7	4.0	4.3	10.6	9.4
External debt (% of GDP) 1/	34.7	36.9	37.7	37.3	38.5
Gross external financing need (% of GDP) 1/	7.0	8.4	8.3	6.8	8.6
Gross official reserves (USD billion)	130.2	120.7	129.2	--	--
Exchange rate (rupiah/USD, EOP) 2/	13,565	14,375	13,880	14,130	--

Note: * denotes projected figures.

1/ Data in 2020 and 2021 come from AIB staff projection, based on IMF assumption

2/ FX rate is sourced from Bank Indonesia.

Data source: IMF World Economic Outlook October 2020

C. Economic Outlook and Risks

5. Looking ahead, the economy is expected to contract by 1.5 percent in 2020, reflecting weaker domestic and global demand, supply disruptions from lockdown measures to combat the COVID-19 pandemic, and tighter external financing. Fiscal spending in terms of household social assistance programs may help raise incomes but would not be able to completely offset the decline in consumption. Similarly, poor business sentiment and uncertain local and global economic environment are expected to delay investments.

6. Current account deficit is expected to narrow to 1.3 percent of GDP in 2020 due to imports contracting more than exports and weak commodity prices. However, the current account deficit is expected to widen in 2021 as demand for imports rebounds in line with the expected economic recovery. Although export growth will likely see an improvement, growing

exports combined with low tourism revenues might not be enough to offset the growth in imports.

7. Inflation is expected to remain at 2.1 percent, lower than the previous year, and within the target band. Low domestic demand and business spending are expected to remain the drivers of low inflation.

8. The main economic risk emanates from a longer-than-expected COVID-19 pandemic, which can further exacerbate shortfalls in domestic consumption and investment thereby delaying recovery in 2021 (when growth is projected to recover to 6.1 percent). Other risks include uncertainties in global trade (including a rise in pandemic-related protectionist measures), persistently low commodity prices, reversals in capital flows, and financing challenges. Internal risks will also affect the country's growth prospects, particularly the government's ability to contain the spread of COVID-19 and keep the country on track by boosting productivity of sectors and workers.

9. Indonesia's public debt as well as external debt, remain sustainable. At 30.5 percent of GDP in 2019, public debt is projected to gradually increase to 38.5 percent in 2020 and 41.8 percent in 2021 due to higher government borrowing to cushion COVID-19 impacts.