
INDONESIA ELECTRICITY NETWORK TRANSFORMATION PROGRAM (P180992)

PT Perusahaan Listrik Negara (Persero)

PROGRAM-FOR-RESULTS

ENVIRONMENT AND SOCIAL SYSTEM ASSESSMENT

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Draft



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The Environmental and Social Systems Assessment (ESSA) of the Indonesia-Electricity Network Transformation (I-ENET) Program-for-Results was prepared by a World Bank team composed of Suryaputrianita Satyanugraha (Environmental Specialist), Arief Nuryadi (Environmental Consultant), Satoshi Ishihara (Senior Social Development Specialist), Sulistiowati (Social Development Consultant), Agni Primitasari (Social Development Consultant), and Kevin Dobson (Social Development Consultant).

ABBREVIATIONS AND GLOSSARY

Term	Expanded Term/Definition
ADB	Asian Development Bank
RBL	Results-Based Loan
ADMS	Advanced Distribution Management System
AiIB	Asian Infrastructure Investment Bank
AMDAL	National Environmental Impact Assessment (<i>Analisis Mengenai Dampak Lingkungan</i>)
AMI	Advance Metering Infrastructure
ASET MPA	Accelerating Sustainable Energy Transition Multiphase Programmatic Approach
BESS	Battery Energy Storage System
BKSDA	Natural Resource Conservation Center (<i>Balai Konservasi Sumber Daya Alam</i>)
CIF	Climate Investment Funds
CIS	Customer Information System
DELH	National Document for Environmental Evaluation (<i>Dokumen Evaluasi Lingkungan Hidup</i>)
DER	Distributed Energy Resources
DIV ANG	Budget Division
DIV HTD	Human Capital Management Division
DIV K4L	Health, Safety, Security, and Environment Division
DIV KEU	Finance Division
DIV PPR	Retail and Commercial Division
DIV RKO	Planning Division
DIV RSD	Distribution Planning Division
DIV TEK	Energy Transition and Sustainability Division
DIY	Yogyakarta Special Region (<i>Daerah Istimewa Yogyakarta</i>)
DLI	Disbursement-Linked Indicator
DLR	Disbursement-Linked Result
DMS	Distribution Management System
DPLH	National Document for Environmental Management (<i>Dokumen Pengelolaan Lingkungan Hidup</i>)
DPPT	Land Acquisition Planning Document (<i>Dokumen Perencanaan Pengadaan Tanah</i>)
EA	Executing Agency
EIA	Environmental Impact Assessment
EPRP	Emergency Preparedness and Response Plan
ES COP	Environmental and Social Code of Practices
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESSA	Environmental and Social Systems Assessment
EV	Electric Vehicle
EVCS	Electric Vehicle Charging Station
FGRM	Feedback and Grievance Redress Mechanism

GBV	Gender-Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GIS	Geographical Information System
GOI	Government of Indonesia
GRM	Grievance Redress Mechanism
HES	Head-End System
IBRD	World Bank International Bank for Reconstruction and Development
I-ENET	Indonesia Electricity Network Transformation
IFI	International Finance Institution
ILO	International Labour Organization
IMS	Integrated Management System
IPP	Independent Power Producer
IP	Indigenous Peoples (<i>masyarakat adat</i>)
ISLE-1	World Bank's Indonesia Sustainable Least Cost Electricity-1
IVA	Independent Verification Agency
Jabar	West Java (Jawa Barat)
JAMALI	Java-Madura-Bali
Jateng	Central Java (Jawa Tengah)
Jatim	East Java (Jawa Timur)
K3L	<i>Biro Pengendali</i>
KA ANDAL	Term of Reference/Scoping Report for the Environmental Impact Assessment (<i>Kerangka Acuan Analisis Dampak Lingkungan</i>)
KBA	Key Biodiversity Area
KepDir	PLN Director Decision
KfW	German Credit Institute for Reconstruction (<i>Kreditanstalt für Wiederaufbau</i>)
LARAP	Land Acquisition and Resettlement Action Plan
LAR-MG	Land Acquisition and Resettlement Management Guideline
LOTO	Lock-Out and Tag-Out
M&E	Monitoring and Evaluation
MAPPI	Land Appraiser Profession (<i>Masyarakat Profesi Penilai Indonesia</i>)
MDB	Multilateral Development Bank
MDMS	Meter Data Management System
MEMR	Ministry of Energy and Mineral Resources
MG	Management Guideline
MIGA	Multilateral Investment Guarantee Agency
MoEC	Ministry of Education and Culture
MOEF	Ministry of Environment and Forestry
MOM	Ministry of Manpower
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
OHSMS	Occupational Health and Safety Management System
OMS	Outage Management System
OSS	One Single Submission
PAP	Program Action Plan

PDO	Program Development Objective
<i>Perdir</i>	Board of Directors Regulation
PforR	Program-for-Results
PKS	Cooperation Agreement (<i>Perjanjian Kerja Sama</i>)
PKUK	Electricity Business License Holder (<i>Pemegang Kuasa Usaha Ketenagalistrikan</i>)
PLN	Perusahaan Listrik Negara
PPE	Personal Protective Equipment
PR	Presidential Regulation (<i>Peraturan Presiden</i>)
PROPER	Indonesia's Performance Rating Program in Environmental Management (<i>Program Penilaian Peringkat Kinerja Perusahaan dalam Pengelolaan Lingkungan</i>)
RA	Results Area
RE	Renewable Energy
RETF	Recipient-Executed Trust Fund
RKL/RPL	Environmental Management and Monitoring Plan (<i>Rencana Pengelolaan Lingkungan Hidup/Rencana Pemantauan Lingkungan Hidup</i>)
ROW	Right-of-Way
RSPV	Rooftop Solar Photovoltaic
RUPTL	Electricity Supply Business Plan (<i>Rencana Usaha Penyediaan Tenaga Listrik</i>)
SAIDI	System Average Interruption Duration Index
SCADA	Supervisory Control and Data Acquisition
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SE-MG	Stakeholder Engagement Management Guideline
SMK3	OHS Management System (<i>Sistem Management Kesehatan dan Keselamatan Kerja</i>)
SOP	Standard Operating Procedure
SPI	Indonesia Valuation Standards (<i>Standar Penilaian Indonesia</i>)
SPPL	Written Statement of Assurance of the Implementation of Environmental Management and Monitoring (<i>Surat Pernyataan Pengelolaan Lingkungan</i>)
TA	Technical Assistance
TOR	Terms of Reference
TRANS Directorate	Directorate of Transmission and System Planning (<i>Transmisi dan Perencanaan Sistem</i>)
UCPS	Upper Cisokan Pumped Storage
UID	PLN Regional Unit (<i>Unit Induk Distribusi</i>)
UIP2B	Central Java Load Control Unit
UKL-UPL	Environmental Management and Monitoring Plan (<i>Upaya Pengelolaan Lingkungan Hidup dan Upaya Pemantauan Lingkungan Hidup</i>)
ULP	Customer Service Unit
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UP2K	Electricity Project Implementation Unit (<i>Unit Pelaksana Proyek Kelistrikan</i>)
UP3	Customer Service Implementation Unit
VLD	Voluntary Land Donation

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EXECUTIVE SUMMARY

E1. There is a need for a significant increase in investments in Indonesia's electricity network infrastructure to support the energy transition. Indonesia's transition to low emissions and decarbonized economy will be characterized by a significant increase in demand for electricity from non-carbon emitting electricity generation options. To deliver the additional electricity, Indonesia's electricity networks will need to grow bigger, stronger, and smarter and will have to manage the complexity arising from the growth of distributed energy resources, interlinkages with other sectors and climate change. It is estimated that there will need to be a two-to-three-fold increase in electricity network investments from current levels of investments of about US\$2-3 billion per year.

E2. The government and PLN prepared the National Electricity Supply Business Plan 2021-30, also known as the "Green RUPTL" (Rencana Usaha Penyediaan Tenaga Listrik, RUPTL) to initiate the shift to a more sustainable electricity sector. The government program on which this PforR is based is the distribution and smart grid component of the Green RUPTL comprising of US\$12.4 billion of investments over 2021-2030 in electricity distribution network and smart grid technologies. The main objective of the government program is to strengthen and expand the distribution network to (i) meet the increased demand for electricity from customers; (ii) improve the quality, reliability, and efficiency of electricity supply; and (iii) enhance the capability of the distribution network to integrate distributed energy resources such as Rooftop Solar PV (RSPV) and Electrical Vehicle Charging Station (EVCS).

E3. The proposed Program for Results (PforR) operation (Program) will support the implementation of the government program in the Java, Madura, and Bali region during 2024-29. The proposed Program Development Objective (PDO) of this operation is to increase the delivery and reliability of electricity supply and integrate distributed energy resources (DER) in the Java, Bali, and Madura region. The Program supports three results areas (RAs): Increased network capacity and reliability of distribution grid (RA1), Increased digital transformation and efficiency of distribution grid (RA2), and Increased integration of distributed energy resources (RA3). The Program will support the implementation of the government program in the Java-Madura-Bali region during 2024–2029.

E4. The Program will be implemented by the state-owned utility Perusahaan Listrik Negara (PLN). The Program will use PLN systems for Program implementation, oversight, financial management, procurement, safeguards, monitoring and evaluation, and reporting arrangements. UIDs in the Java-Madura-Bali region (UID Jaya, UID Banten, UID Jabar, UID Jateng and Yogyakarta Special Region [*Daerah Istimewa Yogyakarta*, DIY], UID Jatim, and UID Bali) will be responsible for implementing the Program in coordination with PLN headquarter units such as the corporate Finance Division (DIV KEU), Distribution Planning Division (DIV RSD), Retail and Commercial Division (DIV PPR and DIV NPS), Corporate Planning Division (DIV RKO), Budget Division (DIV ANG), Human Capital Management Division (DIV HTD), and Energy Transition and Sustainability Division (DIV TEK). A Program management team established at PLN, with the team lead nominated by PLN, will monitor and report on implementation progress.

E5. The Program Environmental and Social Systems Assessment (ESSA) examines the environmental and social management systems that are applicable to the proposed PforR to assess their compliance with the World Bank Policy on PforR Financing. It aims to ensure that the program's environmental and social risks will be managed adequately and that it complies with the PforR core principles. The scope of the ESSA includes an assessment of:

- (a) Potential environmental and social risks and benefits.

- (b) Environmental and social systems that apply to the program.
- (c) Implementation experience and capacity.
- (d) Whether system and performance are consistent with core principles of the World Bank PforR Policy; and
- (e) Steps required to improve scope of system or capacity.

E6. The preparation of this ESSA report is based on a desktop information review and consultations undertaken with PLN Corporate and implementing regional units. Most of the consultations were conducted virtually between October 2023 and February 2024. Site visits were carried out in January–February 2024 in Bali and West Java. Stakeholder groups consulted included PLN Corporate units, PLN regional units (*Unit Induk Distribusi*, UIDs), and rooftop solar photovoltaic (RSPV) and electric vehicle charging station (EVCS) vendors.

E7. PLN is currently finalizing an ESMS Manual that is aligned with the World Bank Core Principles and will apply this ESMS to the Program. PLN already has considerable experience in executing World Bank-funded projects Asian Development Bank (ADB)-funded resultsbased programs that focused on distribution network expansion and upgrades. As part of the efforts to establish its corporate ESMS, PLN developed the Environmental and Social Management Guidelines (MGs), based on, but further expanding, the existing guidelines that were developed with the support of the ADB for the implementation of its RBLs. PLN has experience in risk assessments and mitigation required when applying the MGs, especially considering the scale and scope of risks associated with activities implemented under the I-ENET.

E8. Activities that are likely to have significant adverse impacts on the environment and/or affected people will be excluded from the I-ENET Program. The Program will apply the following exclusion criteria:

Exclusion Criteria	
Overall	Activities that are anticipated to cause significant conversion or degradation of critical natural habitat, including national parks, protected forests, and other types of conservation areas, for example, new distribution lines passing through important nature habitat
Biodiversity	A project that (a) is in or adjacent to conservation areas, and/or key biodiversity areas (KBAs) of international significance and (b) has significant transboundary impacts or relevance about international treaties (such as Conventions on Marine Conservation or Agreements on the Protection of Biodiversity)
Land	A project that would cause physical displacement affecting 200 people or more or a loss of 10% or more of productive income or assets for 200 people or more
Cultural heritage	Activities that are anticipated to cause significant impacts on cultural heritage sites that are registered in the government data or recognized by local communities as their ancestral heritage
Forced labor	Activities that do not comply with Indonesian national laws or standards prohibiting forced and anti-child labor.

E9. The overall environmental and social risk rating of the Program is Moderate. The Program will support small- to medium-scale investments ranging from (a) investments with low environmental and social impacts, such as Advanced Metering Infrastructure (AMI), enabling infrastructure for Supervisory Control and Data Acquisition (SCADA)/Advanced Distribution Management System (ADMS) to support remote control and automation in networks to (b) investments with moderate environmental and social impacts such as construction and upgrade of low to medium voltage (20 kv and below) distribution lines and transformers and integration of DER such as RSPV, and EVCSs in electricity networks. Activities with

potential significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or local communities, including large-scale land acquisition and resettlement, are not eligible for financing under the World Bank PforR instrument and will be excluded from I-ENET Program.

E10. The expected adverse environmental impacts of the Program are of low to moderate significance and can be mitigated. Some environmental risks that are identified in particular include (a) potential temporary and site-specific adverse environmental risks and impacts associated with the construction of small- to medium-scale infrastructure (low to medium voltage distribution lines and transformers); (b) potential impacts from operation of investments, including hazardous waste generation, use of water resources, and risks of fire and explosion from faulty wiring and battery storage systems and malfunction of the electrical vehicle charging; and (c) low probability, adverse effects on community and OHS from the transport of equipment and installation of RSPV, EVCSs, and AMI. The impacts are predictable with low to moderate significance, reversible, and site specific. The impact can be avoided, minimized, or mitigated by alternative site location assessment, adoption of state-of-the-art technologies, good engineering design, and with proper handling of used solar panels in collaboration with primary suppliers.

E11. No cumulative impacts are expected. Construction and upgrade of distribution lines will take place within the existing road or distribution/transmission's right of way and is not anticipated to require land acquisition. Even if land acquisition is required for new distribution line poles, the scale of land clearance and acquisition is considered minimal, as individual poles are between 5-6 m of height and occupy less than 0.2 m² of land. PLN also avoids directly affecting roadside economic activities by installing poles where there are no physical structures affixed to the land and/or allowing economic entities to move a few meters away from where poles would be built. As with distribution lines, land acquisition is not anticipated for distribution transformers. Again, even if hypothetically land acquisition is required, the cumulative impacts would be minor considering the size (< 6x8m²) of each transformer. Additionally, the Rooftop Solar PV installations are small-scale and scattered across the region without need for land acquisition as they are installed on top of existing building structures. Based on PLN records, average RSPV capacities are very low, with the largest RSPV capacity to date at 7.9 KW, consisting of approximately 15 panels (total area about 30 m²).

E12. Adequate institutional and regulatory measures are in place to mitigate social risks including those that may potentially arise from use of forced labour in supply chains. There is risk associated with engagement of labour force to construct new/upgrade distribution lines and transformer and install AMI, RSPV, and EVCS. These workers will be employed by contractors; the labour and working conditions under which they will perform these services will be dependent on the PLN Contractor Management Systems. The main risks include forced labour and discriminatory practices. Indonesia has a comprehensive legislative framework regarding labour and working conditions, including the ratification of ILO's Convention concerning the abolition of forced labour, anti-child labour and minimum age for work admission.

E13. Enhanced measures for preventing the use of forced labour in Solar PV supply chains will be adopted. Considering PLN's limited direct role in the overall RSPV business, the enhanced measures to prevent allegations of forced labour in the supply chain will be built into the guidelines from PLN to RSPV customers, which will require the RSPV facilities to adhere to the Indonesian law, which includes the prohibition of forced labour. A specific declaration will also be required from PLN's direct contractors if PLN is implementing or procuring RSPV.

E14. Risks arising of from any hazardous activity under the Program will be mitigated through the application of codes of conduct, appropriate operating procedures, appropriate training, and capacity building. The installation of RSPV and EVCS can be a hazardous activity, since building codes in Indonesia are inconsistently applied, which means that workers may be exposed to (a) unsafe or unstable work areas because of poor structural conditions, (b) poorly maintained structures that might lead to unstable conditions, (c) improvised electrical installations in many houses that can present hazards, and (d) the use of older asbestos materials in the past. Many of these risks can be a danger for the residents in the poorer communities, where building codes are often ignored. These risks are avoidable through the application of codes of conduct, appropriate operating procedures, appropriate training and capacity building, and the ability of PLN to enforce contractual compliance.

E15. The potential adverse impact of the Program from land acquisition and on cultural heritage is considered minor. No indigenous people (IP) are expected to be present where the I-ENET Program will be implemented. The low and medium voltage distribution line networks are all expected to be built within road right-of-way (ROW) owned by the regency or city or provincial government, and the siting of concrete poles on private lands will mainly be avoided. Only less than 0.2 m² of land is typically needed per pole, and the poles are between 5 and 6 m in height. The I-ENET Program is not expected to cause any significant effect on built or intangible cultural heritages or in areas with biodiversity. The I-ENET Program will exclude activities that potentially affect biodiverse areas or cultural heritages by identifying alternative locations where such activities can be conducted.

E16. The installation and deployment of EVCS under the Program is not expected to present any social risks. EVCS installations will be built at existing gas stations, government buildings, or business entities that want to use part of the space to install EVCS, most of which are in urban areas but can also be in semi-urban or rural areas. PLN will ensure that the EVCS will be built at the existing business partners' locations. If it is necessary to purchase additional land for the installation of EVCS, then the contract between PLN and the EVCS owner will clarify that the land purchase will follow the ESMS principle, namely willing-seller willing-buyer principles.

Recommendations and Actions

E17. The ESSA recommends addressing institutional capacity constraints and gaps in several environmental and social areas. These measures for improvement of the environmental and social management system have been discussed with the implementing agency, PLN. The summary of recommended actions is listed below:

- **PAP 1.** PLN shall maintain, allocate sufficient resources to, and apply to all activities throughout the Program, an ESMS with a Steering Committee with technical experts.
- **PAP 2.** PLN shall develop and disseminate guidance on (i) construction, labor and waste management for RSPV, including damaged panels and batteries (ii) SOPs for installation of RSPV; and (iii) prevention of forced labor in the solar supply chain.
- **PAP 3.** PLN to develop and disseminate guidelines or ESCOP to guide construction, installation, and operation of EVCS in accordance with PLN ESMS, national regulations, and World Bank environmental and social Core Principles, all in form and substance satisfactory to the World Bank. The ESCOP includes, but is not limited to, the following aspects:
 - Environmental and social measures for limited civil work activities.

- Safety measures for location selection of the EVCS (screening for EVCS location based on safety issue).
- OHS measures for installation processes (including skills and experience required).
- OHS measures for operation of EVCS.
- Emergency preparedness and response in anticipation of fire and explosion risks during EV charging.

A BACKGROUND AND SCOPE

A.1 Program Description

1. The proposed Program Development Objective (PDO) of the Indonesia Electricity Network Transformation (I-ENET) Program-for-Results (PforR) (hereafter referred to as ‘the Program’) is to increase the delivery and reliability of electricity supply and integrate distributed energy resources. The disbursement under the proposed Program will be governed by a set of eight DLIs across the three results areas (RAs). The summary of disbursement-linked indicators (DLIs) and RAs for the I-ENET PforR are presented in Annex 1. The following indicators will measure the achievement of outcomes under the proposed Program:

- Delivery of electricity increased (GWh)
- Reduction in System Average Interruption Duration Index (SAIDI)
- People provided with new or improved electricity service (including Female) (CRI, Number)
- Integration of Rooftop Solar PV capacity (MW).

2. The proposed operation will be part of the second phase of the Accelerating Sustainable Energy Transition Multiphase Programmatic Approach (ASET MPA, P181555), which is expected to be approved in Q4 FY24. The I-ENET Program fully aligns with the development objectives of the ASET MPA. ASET’s development objective is to accelerate renewable energy (RE) scale-up and grid integration in participating countries across the East Asia and Pacific region. The Program will help achieve these objectives by supporting Perusahaan Listrik Negara (PLN) to increase the integration of distributed RE capacity. The Program will help PLN reinforce the electricity grid through construction and upgrade of distribution lines and transformers and increase the flexibility and resilience of the grid by supporting the deployment of the Supervisory Control and Data Acquisition (SCADA) system and Advanced Distribution Management System (ADMS) and Advanced Metering Infrastructure (AMI) operability through new SCADA systems for transmission and distribution, thereby enabling the Java-Madura-Bali system to integrate additional RE sources.

3. PLN is the lead implementing agency for the Program. The Program will use PLN systems for Program implementation, oversight, financial management, procurement, safeguards, monitoring and evaluation, and reporting arrangements. The six regional operating units (*Unit Induk Distribusi*, UIIDs) in the Java-Madura-Bali region (UID Jaya, UID Banten, UID Jabar, UID Jateng and Yogyakarta Special Region [*Daerah Istimewa Yogyakarta*, DIY], UID Jatim, and UID Bali) will be responsible for implementing the Program in coordination with PLN headquarter units such as the corporate Finance Division (DIV KEU), Distribution Planning Division (DIV RSD), Retail and Commercial Division (DIV PPR, DIV NPS), Corporate Planning Division (DIV RKO), Budget Division (DIV ANG), Human Capital Management Division (DIV HTD), and Energy Transition and Sustainability Division (DIV TEK). A Program management team established at the PLN, with the team lead nominated by the PLN, will monitor and report on implementation progress.

A.2 Program Boundaries and Activities

4. The proposed Program will support a geographic slice of the distribution component of PLN’s AMI 2021–2030 (Electricity Supply Business Plan [*Rencana Usaha Penyediaan Tenaga Listrik*, RUPTL]) program. It will only cover the Java, Madura, and Bali region out of the national distribution plan in the RUPTL. It will also only cover the 2024–2029 time slice of the RUPTL program. The Program will support network

strengthening, expansion, and rehabilitation to ease existing constraints and meet the rapidly growing demand in the Program area. These network investments will be undertaken alongside efforts to increase the deployment of SCADA, ADMS, and AMI and integrate distributed energy resources (DER) such as rooftop solar photovoltaic (RSPV) and electric vehicle charging station (EVCS) infrastructure. A capacity-building and training program will be implemented for PLN staff on network digitalization, DER, and other associated power sector topics. Given the need to time the scale and sequencing of the smart grid investments with the buildup of variable RE capacity, the PLN is planning a gradual rollout of SCADA, ADMS, and AMI technologies, with deployment across PLN’s entire network expected to extend beyond the current Program timeline.

5. Alignment between the PforR Program and the Government program is shown in Table 1.

Table 1: Proposed Scope of the Program

	Government Program	World Bank PforR
Title	Electricity distribution and smart grid investments in RUPTL (2021–2030)	Indonesia Electricity Network Transformation Program (I-ENET)
Objective	To provide reliable, secure, efficient, and economic electricity to new and existing consumers and fulfil the energy policies and targets of the government.	To increase the delivery and reliability of the electricity supply and integrate distributed energy resources
Duration	2021–2030	2024–2029
Geographic coverage	Entire country	Java – Madura – Bali
RAs	<ul style="list-style-type: none"> Increased network capacity, reliability, and efficiency of distribution grid Increased integration of distributed renewable energy and EVCS Implementation of the smart grid roadmap Increased diesel to renewable energy conversion 	<ul style="list-style-type: none"> Increased network capacity and reliability of distribution grid Increased digital transformation and efficiency of distribution grid. Increased integration of distributed energy resources
Overall financing	<p><i>RUPTL 2021–2030 (including generation, transmission, and distribution):</i> US\$90 billion</p> <p><i>Electricity distribution and smart grid investments in RUPTL 2021–2030:</i> US\$12.4 billion, of which PLN: approximately US\$5–6 billion. Private investors: approximately US\$0.5–1 billion; and development partners: approximately US\$5–6 billion</p>	<p>US\$1.3 billion, of which IBRD: US\$500 million. PLN: US\$491 million. Private Capital Mobilization: US\$342 million</p>

6. **The Program supports three RAs that contribute to the PDO:**

Results Area 1: Increased capacity, resilience, and reliability of electricity grid

- Results Area 1 will support the (a) expansion of PLN's distribution network by 40,000 km and 3600 MVA in the Java, Madura, and Bali Region, and (b) implementation of PLN's Climate Resilience Guidelines to the development and maintenance of its distribution network.
- The expansion of the distribution network aims to increase the delivery and reliability of modern electricity services to 51,000,000 customers, allowing them to increase their adoption of RSPV and EVCS and better adapt to climate change and face increased heat waves.

Results Area 2: Increased digital transformation and efficiency of the electricity grid

- Results Area 2 will support the (a) preparation and adoption of PLN's SCADA ADMS roadmap and implementation plans, (b) upgrade of the Master SCADA systems in two of PLN's distribution control centers, and (c) installation of 3,750,000 advanced meters in the Java, Madura, and Bali Region.
- The preparation and adoption of a SCADA ADMS roadmap and their implementation plans, and the upgrading of the Master SCADA will accelerate the digital transformation of PLN's electricity distribution network operations and improve the efficiency and resilience of electricity supply and increase the integration of renewable energy. The installation of 3,750,000 advanced meters will facilitate the two-way flow of electricity and information with customers, improve efficiency of utility operations and customer experience with the electricity services, and increase the integration of RSPV and EVCS.

Results Area 3: Increased integration of distributed energy resources

- Results Area 3 will support the (a) preparation and adoption of PLN's Distribution Energy Resource roadmap, (b) training for PLN staff on clean energy topics, including Distribution Energy Resources and gender dimensions, c) deployment and instalment of EVCS and (d) facilitation of the integration of 300 MV RSPV capacities and 16,150 Public EVCS and Home EVCS to PLN's distribution network in the Java, Madura, and Bali Region.
- In facilitating the integration of 300 MW RSPV capacity and 16150 public and home EVCS to PLN's distribution network, PLN will review and take measures to ensure that standard technical requirements for grid connection are always complied with.

7. The scope of Program activities includes the construction, upgrade, and digitalization of the distribution network infrastructure to ensure that rapidly growing electricity demand can be met reliably and prepare the grid for the challenges and opportunities presented by energy transition. While the Java-Madura-Bali system has a relatively mature transmission grid, distribution grid of 20 kV and lower voltages are aged and need replacement, as most of them were constructed in the last century. While the overall electrification rate for the Java-Madura-Bali system has reached almost 100 percent, electricity demand

continues to grow rapidly to accommodate new customers and economic growth. The distribution network also needs to be digitalized and modernized to address the challenge of integrating a growing number of distributed energy resources such as RSPV and EVCS to the grid.

8. Program activities will be undertaken in six UIDs—Bali, Jawa Barat, Banten, Jawa Timur, Jakarta Raya, and Jawa Tengah and DIY—in the Java, Madura, and Bali region. The PLN main distribution unit manages the distribution networks, customers, and small-scale and isolated generators. Additionally, the transmission network and substations are managed by the PLN Central Java Load Control Unit (UIP2B) and transmission main units for each region.

9. The proposed activities are expected to be small to medium scale. Activities that are likely to have significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or affected people are not eligible for financing under the World Bank PforR instrument and will be excluded from the I-ENET Program.

10. The Program financing should not be used to support activities within the Program that involve the exclusion criteria shown in Table 2.

Table 2: Program Exclusion Criteria

Exclusion Criteria	
Overall	Activities that are anticipated to cause significant conversion or degradation of critical natural habitat, including national parks, protected forests, and other types of conservation areas, for example, new distribution lines passing through important nature habitat
Biodiversity	A project that (a) is located in or adjacent to conservation areas, and/or key biodiversity areas (KBAs) of international significance and (b) has significant transboundary impacts or relevance with regard to international treaties (such as Conventions on Marine Conservation or Agreements on the Protection of Biodiversity)
Land	A project that would cause physical displacement affecting 200 people or more or a loss of 10% or more of productive income or assets for 200 people or more
Cultural heritage	Activities that are anticipated to cause significant impacts on cultural heritage sites that are registered in the government data or recognized by local communities as their ancestral heritage
Forced labor	Activities that do not comply with Indonesian national standards prohibiting forced and anti-child labor.

A.3 Scope and Approach of the ESSA

11. The Environmental and Social Systems Assessment (ESSA) is carried out in accordance with the World Bank Policy and Bank Directive on PforR and the World Bank Guidance on PforR Environmental and Social System Assessment (September 18, 2020). The guidance sets out core principles and planning elements used to ensure that PforR operations are designed and implemented in a manner that maximizes potential environmental and social benefits while avoiding, minimizing, or mitigating environmental and social harm.

12. The scope of the ESSA focuses on the current system capacities within the PLN in managing environmental and social risks associated with the Program. The ESSA process includes (a) analyzing the environmental and social effects, including indirect and cumulative effects, of activities associated with the defined Program; (b) analyzing the borrower's systems for managing the identified environmental and social effects, including reviewing practices and the performance track record; (c) comparing the borrower's systems—laws, regulations, standards, procedures, and implementation performance—against the core principles and key planning elements to identify any significant differences between them that could affect Program performance; and (d) formulating recommended measures to address capacity for and performance on policy issues and specific operational aspects relevant to managing the Program risks.

13. An initial environmental and social risk screening was undertaken at the concept stage (see Annex 2). The purpose of the screening is two-pronged. First, the screening is to confirm that there are no activities that meet the defined exclusion criteria included in the PforR in line with the World Bank Guidelines for the ESSA. Second, the screening established the initial scope of the ESSA. The initial environmental and social risk screening concluded that potential high-risk environmental and social impacts are not expected from Program implementation, such as impacts to sensitive biodiversity and critical habitat, pollutions, physical or economic displacement, cultural heritage impacts, and impacts to indigenous and traditional communities.

14. Following the initial screening, the PLN systems' review was conducted using a two-step approach:

- (a) Identification of PLN systems that are relevant to the management of the identified risks, which will be addressed in Section D on Review of Policy, Regulatory, and Institutional Frameworks
- (b) Analysis of the implementation of the systems, including capacity to plan and implement effective measures for the environmental and social risk management, which will be addressed in Section D. The analysis is conducted by comparing PLN systems with the PforR's core principles and key planning elements.

15. The review of policy, regulatory, and institutional framework will focus on the potential significant environmental and social risks, as identified during the initial screening and further risks assessment based on discussions with PLN throughout Program preparation. The relevant risks within the proposed RAs under the Program include the following:

- Environmental risks and impacts associated with the construction and operation of small- to medium-scale infrastructure (low to medium voltage distribution lines and transformers) and EVCS
- Adverse effects on occupational health and safety (OHS) from construction of new/upgrade of distribution lines and transformers, installation of RSPV, EVCs, and AMI
- Impacts related to hazardous waste generation from operations of the investments related to the Program
- Adverse effects on community health and safety from operation of RSPV, fire and explosion risk from faulty wiring and battery storage systems, and malfunction of ECVSs
- Impacts related to hazardous waste generation from operations of the investments related to the Program, particularly RSPV
- Risks associated with the management of third-party workforces and within the supply chain, including forced labor issues and discriminatory practices at the workplace
- Risks related to potential land acquisition for the construction and upgrade of low and medium voltage distribution lines and transformers (majority of which will be built on roadsides or within PLN's existing premises) and EVCS (which will be installed inside the existing gas station, government buildings, or other business entities that want to use part of the space to install EVCS. These entities will enter into agreements with PLN on the installation of EVCS)
- Risks to cultural heritage where the proposed construction of distribution lines across Java and Bali may have minor effects on local communities (potential acquisition of small lands for the construction of distribution polls and potential disturbance to their cultural heritage).

16. The six core principles and key planning elements of the PforR ESSA are as follows:

- (a) Promoting environmental and social sustainability in the Program design; avoiding, minimizing, or mitigating adverse impacts; and promoting informed decision-making relating to the Program's environmental and social impacts

- (b) Avoiding, minimizing, or mitigating adverse impacts on natural habitats and physical cultural resources due to the Program
- (c) Ensuring public and worker safety against potential risks associated with (i) the construction and/or operation of facilities or other operational practices under the Program; (ii) exposure to toxic chemicals, hazardous waste, and other dangerous materials under the Program; and (iii) the reconstruction or rehabilitation of infrastructure in natural hazard-prone areas
- (d) Managing land acquisition and loss of access to natural resources in a manner that avoids or minimizes displacement and assisting the affected individuals in improving—or at the minimum, restoring—their livelihoods and living standards
- (e) Giving due consideration to the cultural appropriateness of, and equitable access to, Program benefits, paying special attention to the rights and interests of the Indigenous Peoples (IP) and to the needs or concerns of vulnerable groups
- (f) Avoiding exacerbating social conflict, especially in fragile states, post-conflict areas, or areas subject to territorial disputes.

17. Regarding environmental aspects, the following are the core principles and planning elements that are relevant to the RAs under the proposed Program:

- **Core Principle #1:** The proposed Program system operates within appropriate environmental protection laws and regulations allowing to avoid, minimize, or mitigate adverse impacts from the Program activities through implementation of national environmental and social assessment requirements. The scale and nature of the works are considered small and below the threshold set by the Government of Indonesia (GOI) for a full National Environmental Impact Assessment (*Analisis Mengenai Dampak Lingkungan*, AMDAL). The proposed Program will also apply the PLN integrated Environmental and Social Management System (ESMS) that currently being finalized.
- **Core Principle #2:** The proposed Program system is designed to avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program through implementation of PLN ESMS. Program activities that involve the significant conversion or degradation of critical natural habitats or critical physical cultural heritage are excluded from the Program.
- **Core Principle #3:** The proposed Program system promotes adequate worker health and safety measures through the implementation of OHS standards at construction sites. The system also promotes the safe handling and disposal of hazardous material, and capacity building will be part of it.

18. Regarding social aspects, the following are the core principles and planning elements that are relevant to the RAs under the proposed Program (Core Principle #6 is not relevant, as the I-ENET Program activities are not expected to be developed in the fragile or post-conflict areas):

- **Core Principle #4:** The proposed Program system is unlikely to require significant land acquisition. The proposed distribution line may result in minor acquisition of private or community-owned land in exceptional cases where poles cannot be built on existing roads, which will be handled through PLN's ESMS.

- **Core Principle #5:** The proposed Program system will give due consideration to the cultural appropriateness of, and equitable access to, Program benefits, paying special attention to the rights and interests of IP, and to the needs or concerns of vulnerable groups. The core principle is relevant to the I-ENET PforR, even though IP presence is not expected. The proposed distribution lines will be developed in Java and Bali, where local communities such as the Badui Luar Tribe in Lebak Regency, Banten Province; the Osing Tribe in Banyuwangi Regency, East Java Province; and the Tengger Tribe in the Bromo Mountains, located in three regencies (Pasuruan, Probolinggo, and Malang, East Java Province), are known for their cultural heritage.

19. As part of the ESSA process, a performance assessment was undertaken to understand the existing practices and challenges. The assessment evaluates the current capacity (including financial and staffing), authority, future outreach strategy, consultation, and potential risk plan of the implementing agencies by looking at present regulations, reference materials, track records, and online discussions with the related implementing units under PLN. The assessment was conducted using the available secondary data such as government documents and regulations, data from PLN Corporate and units, and relevant documents of assessments conducted by other parties. A series of in-person and virtual consultations were conducted with relevant units within the implementing agencies. Consultations and field visits to PLN UIDs Bali and West Java were conducted by the program task team at the early project preparation stage in January–February 2024. Additionally, the ESSA team conducted virtual consultations with RSPV and EVCS vendors. A summary of these in-person and virtual meetings and workshops is provided in Section B.

20. Capacity assessment of the implementing agencies for the management of environmental and social aspects considers relevant elements within the existing broader systems and selection was based on the level of potential environmental risks and impacts as well as social considerations. The assessment focuses on the adequacy of the relevant systems, including implementation, capacity to provide technical guidance, monitoring, and enforcement.

21. The ESSA process enabled the identification of gaps in the documented systems and their implementation, enabling the development of specific actions for improving environmental and social performance (Section E) under the Program. The actions outline measures to address environmental and social risks and impacts, along with the completion criteria, as well as the time frame, responsibility, and resource requirements. Most of the actions are focused on environmental and social risks that have been identified at the concept stage.

B STAKEHOLDER ENGAGEMENT

22. This section summarizes the engagement activities undertaken for the Program-for-Results (PforR) and specifically for the Environmental and Social Systems Assessment (ESSA), as well as future engagement activities for ESSA disclosure.

Table 3: Stakeholders consulted in the preparation of the Program

Stakeholder Engagement Activities	Time Frame	Stakeholders	Summary of Key Inputs for the Project
Discussion on the updates of distribution network status in Java and Bali Islands	October – December 2023	PLN	<ul style="list-style-type: none"> Geographic scope of the Program Contents and progress of smart grid roadmap Results indicators, disbursement linked indicators, Program Action Plan Distribution system masterplans of UIDs
Discussion on the updates of RSPV and EVCS development in Indonesia	October 2023 – February 2024	PLN, Vendor partners	<ul style="list-style-type: none"> ECVS development in Indonesia is following the existing roadmap. RSPV development will be implemented by private entities a
Site visit to Denpasar, Bali and Bandung, West Java	January – February 2024	PLN Corporate, UID Bali, UID West Java	<ul style="list-style-type: none"> Existing plans for activities within Program scope Confirmation of DLIs and targets Confirmation of implementation status Discussion on technical assistance component including ADMS roadmap
Follow up discussions with PLN	March 2024	PLN Corporate	<ul style="list-style-type: none"> Confirmation of DLIs and targets Confirmation of private capital mobilization Commencement of technical assistance

23. **ESSA consultations will continue as part of the PforR implementation.** These consultations will be building on the consultations undertaken during the preparation stage. The draft ESSA will be disclosed prior to appraisal and the final version will be disclosed prior to the Board approval.

C ENVIRONMENTAL AND SOCIAL EFFECTS AND RISK RATING

24. **The overall environmental and social risk rating is assessed as Moderate.** The Program will support small- to medium-scale investments ranging from (a) investments with low environmental and social impacts, such as AMI, enabling infrastructure for SCADA/ADMS to support remote control and automation in networks to (b) investments with moderate environmental and social impacts such as construction and upgrade of distribution lines and transformers and integration of DER such as RSPV and EVCS in electricity networks. Activities with potential significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or local communities, including large-scale land acquisition and resettlement, are not eligible for financing under the World Bank PforR instrument and will be excluded from I-ENET Program. Cumulative impacts are assessed as negligible.

25. **The overall environmental and social outcome is expected to be positive.** The Program is expected to lead to substantial and long-term environmental benefits by supporting Indonesia in transitioning to RE and with regard to reduction of greenhouse gas (GHG) emissions and air and water pollution and use of water resources, especially for the Java-Madura-Bali region. In particular, the Program has positive environmental impacts by supporting Indonesia's energy transition by promoting the development of renewable and clean energy; reducing air and water pollution by increasing the deployment of RE, which means less impact on community health; reducing dependency on fossil fuels; increasing national resilience to climate change with increased access to electricity and enabling the population to recuperate faster from an economic perspective; and promoting good environmental and social management practices within PLN. The Program's potential social benefits are substantial and long term. The Program aims to build and upgrade low and medium voltage distribution lines, and RSPV, thereby expanding electricity capacity to meet growing demand in a sustainable manner. Experience shows that AMI will improve efficiencies in electricity consumption and overall reduce household expenditure on electricity. Construction and operation and maintenance (O&M) activities of the Program likely generate a large number of short-term workers and a smaller number of long-term employees. Employment opportunities for females would also be promoted through training and incentives under the Program's components. The local community in the Program area will likely benefit from the upgrade of infrastructure (for example, renovation of the existing inter-village roads and the Program's internal and access roads).

26. **The environmental risk is considered Moderate.** Some environmental risks that are identified in particular include (a) potential temporary and site-specific adverse environmental risks and impacts associated with the construction of small- to medium-scale infrastructure (low to medium voltage distribution lines and transformers); (b) potential impacts from operations of investments, including hazardous waste generation, use of water resources, and risks of fire and explosion from faulty wiring and battery storage systems and malfunction of the electrical vehicle charging; and (c) although low probability, adverse effects on community and OHS from the transport of equipment and installation of RSPV, EVCSs, and AMI. The impacts are predictable with low to moderate significance, reversible, and site specific. They can be avoided, minimized, or mitigated by alternative site location assessment, adoption of state-of-the-art technologies, good engineering design, and with proper handling of used solar panels in collaboration with primary suppliers.

27. **The distribution line networks are usually situated on right-of-way (ROW) of existing roads owned by the local government, with pole heights between 5 and 6 m from the road surface.** Direct impacts to natural habitats are not anticipated, as there will be minimum land clearance required for construction of distribution poles and the ROW of the distribution lines. However, construction of the distribution poles and installation of the distribution lines may potentially generate temporary and site-specific adverse

environmental risks and impacts associated with the construction of small- to medium-scale infrastructure. Considering the scale of development, the potential impacts are considered low to moderate, depending on the location of the project. However, the operation of the distribution lines may result in negligible to moderate impacts to biodiversity and considering the height of the pole, the overhead risks to birds and bats are considered negligible.

28. The distribution lines generally will not pass through forestry areas; however, since the route connects the existing settlements with the nearest distribution substation, it is unavoidable that some routes stretch along the road, passing through different types of forestry areas: production forest, protected forest, conservation forest, and national parks. The distribution lines located in forest areas with high biodiversity, particularly those inhabited by endemic primates (such as long-tailed macaque), may result in primates' deaths due to electrocution. Therefore, the segment of distribution lines located in forestry areas will be excluded from the Program.

29. **The upgrade of old transformers potentially resulted PCB contamination to the environment from the oil used in old transformers.** PCB was used for transformer's oil in old transformers. PLN has committed to prohibit the use of PCB in transformers of distribution lines and transmission lines, however, PCB might still be found in old transformers that will be upgraded as part of Program activities. PLN has been implementing procedures for managing used PCB as part of its hazardous waste management as well as to prevent potential cross-contamination from the PCB found in old transformer's oil. Considering that the Program will not involve the use of PCB in new transformers, and small number of existing transformers that still using PCB, the potential impacts of soil and water contamination from PCB is considered as minimum.

30. **RSPV will be installed on the top of existing buildings; thus, there will be no land clearing.** RSPV mainly targets commercial and industrial customers with a smaller number of household customers. Construction of new buildings is not anticipated. OHS risk related to construction activities is assessed as Moderate. The construction activities involve inherent hazards mainly related to civil works activities, transport of materials and equipment, and risk of electrocution during installation. The activities are not expected to involve local non-skilled workforce, who may have limited experience and lack proper knowledge of appropriate OHS measures. There is low risk of construction-related incidents; however, the number of workers for each individual project is considerably insignificant. The impacts of the RSPV operations are low, mainly related to generation of hazardous waste from the damaged/used panels and/or battery. The management of hazardous waste generated by the RSPV operation will be the responsibility of RSPV customers, and this can easily be mitigated by proper handling of used solar panels in collaboration with the RSPV vendors/primary suppliers. The panels are also expected to have long lifespan (about 20 years) before being damaged. RSPV may also result in a low risk of glare/reflection from solar PV modules, leading to polarizing effects, which in turn may lead to fatalities of birds and bats, as they attempt to land mistaking it for water of the so-called 'Lake Effect' phenomenon. However, based on PLN records, the largest RSPV capacity to date is only 7.9 MW, consisting of approximately 15 panels (total area about 30 m²), and therefore the impact is considered negligible to low.

31. **The EVCS equipment will require about 12–21 m² and will be located in the premises of existing built facilities owned by PLN or its partners.** Each station is expected to have the capacity of 60–200 W, depending on the charging technology and speed. Construction of new buildings is not anticipated. The potential impacts from construction and installation of EVCS facilities are assessed as Low, mainly due to risk of electrocution of personnel during installation. All personnel involved in the installation of EVCS equipment shall be certified and trained, with the training including appropriate OHS measures. The

activities are not expected to involve local non-skilled workforce, who may have limited experience and lack proper knowledge of appropriate OHS measures. The operation of EVCS may include low probability of fire and explosion risks due to human error and/or equipment malfunction during the electric vehicle (EV) charging process. This will require the implementation of adequate mitigation measures through the provision of fire extinguishers with the correct specifications and application of emergency response plans.

32. **The installation of the AMI will follow existing practices** for the replacement of metering devices at PLN existing customers, which may include households, private sectors, and industries.

33. **OHS risks include low electrocution risks when AMI installation is done by un-skilled personnel.** AMI installation will be done only by trained personnel and will follow standardized procedures for replacement of metering devices. All personnel involved in AMI installation shall be certified and trained, with the training including appropriate OHS measures. The activities are not expected to involve local non-skilled workforce, who may have limited experience and lack proper knowledge of appropriate OHS measures. The OHS risks are considered negligible.

34. **The social risk rating is Moderate due to the engagement of labor force for the construction of new/upgrade of distribution lines and transformer as well as installation of AMI, RSPV, and EVCS.** These workers will be employed by contractors, and the labor and working conditions under which they will perform these services will be dependent on the PLN Contractor Management Systems. The main risks include forced labor and discriminatory practices. Indonesia has a comprehensive legislative framework regarding labor and working conditions, including the ratification of ILO's Convention concerning the abolition of forced labor, anti-child labor and minimum age for work admission. Considering PLN's limited direct role in the overall RSPV business, the enhanced measures to prevent allegations of forced labor in the supply chain will be built into the relevant document from PLN to RSPV customers, which will require the RSPV facilities to adhere to the Indonesian law, which includes the prohibition of forced labor. A specific declaration will also be required from PLN's direct contractors if PLN is implementing or procuring RSPV. Additionally, the installation of RSPV and EVCS can be a hazardous activity, since building codes in Indonesia are inconsistently applied, which means that workers may be exposed to (a) unsafe or unstable work areas because of poor structural conditions, (b) poorly maintained structures that might lead to unstable conditions, (c) improvised electrical installations in many houses that can present hazards, and (d) the use of older asbestos materials in the past. Many of these risks can be a danger for the residents in the poorer communities, where building codes are often ignored. These risks are avoidable through the application of codes of conduct, appropriate operating procedures, appropriate training and capacity building, and the ability of PLN to enforce contractual compliance.

35. **Potential adverse impacts from land acquisition and cultural heritage are considered minor.** No IP are expected to be present where the I-ENET Program will be implemented. The low and medium voltage distribution line networks are normally built within road ROW owned by the regency or city or provincial government, and the siting of concrete poles on private lands is avoided to the extent possible. Only less than 0.2 m² of land is typically needed per pole, and the poles are between 5 and 6 m in height. Where poles need to be built on private lands, the owners' agreement is normally secured in advance during the planning stage including if any impact or disturbance that may be caused on private assets, such as cutting of trees. The remaining issues include ensuring that the voluntary land donation (VLD) process is conducted and documented properly, and that consent is obtained appropriately. While many cultural heritages are present, particularly in Bali, which are important to local communities, the I-ENET Program is not expected to cause any significant effect on built or intangible cultural heritages. The I-ENET

Program will exclude activities that potentially affect cultural heritages by identifying alternative locations where such activities can be conducted.

36. **There are only minor social risks in EVCS.** EVCS installations will be set up in existing gas stations, government buildings, or business entities' free space, most of which are in urban areas but can also be in semi-urban or rural areas. PLN will ensure that the EVCS will be built at the existing business partners' locations. If it is necessary to purchase additional land for the installation of EVCS, then the contract between PLN and the EVCS owner will clarify that the land purchase will follow the ESMS principles for willing-seller and willing-buyer. Risks related to labor and community health and safety will also be managed with reference to the ESMS. Additionally, it is understood that PLN plans to prepare guidelines or an Environmental and Social Code of Practices (ESCAP) to guide the construction, installation, and operation of EVCS, for both PLN-owned and third-party-owned EVCS.

37. **Potential high-risk environmental and social impacts are not expected from Program implementation,** such as impacts to sensitive biodiversity and critical habitats, pollutions, physical or economic displacements, cultural heritage impacts, and impacts to indigenous and traditional communities. Additionally, all Program activities are not expected to result cumulative impacts. A scoping of potential cumulative impacts of the Program is available in **Annex 4**.

38. **The Program's contextual risk is also considered as Moderate.** The Java-Bali-Madura region is the most suitable region in Indonesia for initiating investments to transform distribution networks. The region accounts for 61.5 percent of Indonesia's population; 59 percent of national gross domestic product (GDP), including a corresponding portion of the country's micro and small enterprises; and several manufacturing zones. The region also hosts 61 percent of the country's poor, and 0.6 percent of the population—mostly on remote islands—do not have access to electricity. The Java-Bali-Madura region is the largest of PLN's seven electricity systems, generating 70 percent of electricity demand nationally, with a total generation capacity of 46 GW in 2022. Between 2023 and 2030, it will account for more than half the growth in electricity demand in the country. However, the system is still largely operated manually, and lacks technologies needed for flexible and efficient operation of the grid. The size and density make the Java-Bali-Madura region a suitable candidate for rolling out grid enhancements for integrating electric mobility; piloting demand response programs; and scaling up business models for RSPV, which are in high demand by the manufacturing sector in Java. **The location of the Program's activities expands to the Java, Madura, and Bali region, which is considered a more developed part of Indonesia.** Based on the screening conducted by the World Bank, no IP are expected to be present where the I-ENET Program will be implemented. Even though the exact location of project siting of the investments is unknown at this stage, it will likely be located in urbanized areas with a small possibility of being located in or near sensitive habitats. The construction of low and medium voltage distribution lines will be along existing road infrastructure, with the pole height between 5 and 6 m from the road surface, while distribution transformers and substations are usually situated on PLN's land or public-owned land with existing infrastructure. This may involve limited land clearing; however, considering the typical location of investments, disturbance to biodiversity and natural habitats due to construction activities is considered negligible. The installation of RSPV and EVCS will be done on existing infrastructure. The region is known to have some natural, modified, and critical habitats, with high biodiversity values, protected by national laws as conservation sites, or providing ecosystem services for the community (for example, water catchments and water sources, cattle grazing areas, medicinal herb sources, and so on). However, considering that the activities will be situated in or along existing infrastructures, no disturbance to natural habitats is anticipated from the construction/upgrade of investments included in the Program.

39. **The Program’s institutional capacity and complexity risk is also rated Moderate** because PLN has relatively well-established systems and capacity to manage the types and scale of investments expected under the Program. PLN also has considerable experience in executing World Bank projects, with demonstrated capacity in managing environmental and social risks for similar activities. Additionally, PLN has successfully implemented the Asian Development Bank (ADB)-funded results-based loan (RBL) programs that focused on distribution network construction, while the scale and scope of environmental and social impacts under small-scale solar PV will be within the range that PLN is able to manage overall. PLN is currently finalizing an ESMS that is aligned with the World Bank Core Principles. As part of the efforts to establish its corporate ESMS, PLN developed the Environmental and Social Management Guidelines (MGs), based on further expanding the existing guidelines that were developed with the support of the ADB for implementation of its RBLs. PLN has experience in risk assessments and mitigation required for applying the MGs, especially for the scale and scope of risks associated with activities implemented under the I-ENET Program. Upon adoption, PLN will use the ESMS to manage the environmental and social impacts of the Program. Capacity development support will be provided through the ongoing ISLE-1 PforR and prospective Grid and Renewable Energy Financing (GreFi) Project, both of which have significant Recipient-Executed Trust Funds (RETFs) that support the environmental and social capacity development of PLN. This will be further elaborated in Section E.

D POLICY, REGULATORY AND INSTITUTIONAL FRAMEWORKS

40. **The review of PLN systems covers the current existing system to manage environmental and social risks associated with the Program.** This section covers the review of the relevant national policy, legal, and regulatory frameworks as well as ESMSs, which apply to PLN. A summary of the institutional responsibilities is provided in this section, as they relate to environmental and social performance as part of the Program activity implementation.

41. **The national policy and regulatory framework described in the following subsections** consists of the applicable ESMSs applicable to the I-ENET Program where in doing business, PLN is required to adhere to national laws and regulations at the minimum. The Indonesian ESMSs conform, in general, to the policy elements, as defined in the World Bank's PforR Policy, when the system is effectively implemented. There are, however, a number of gaps in the laws and regulations, including a lack of guidelines and regulations for consultation with IP, insufficient attention to livelihood restoration in resettlement laws and regulations, insufficient attention to the risk of critical habitat, and a screening process for environmental assessment that relies mostly on quantitative thresholds rather than risks.

42. **The analysis of the national laws and regulations** should be read in conjunction with the analysis of the PLN's ESMS and other PLN's internal policies, guidelines, and procedures, which in many aspects go beyond and fill gaps in the national legal and regulatory framework. The PLN is finalizing the ESMS and intends to apply the ESMS starting with the World Bank's Indonesia Sustainable Least-cost Electrification-1 (ISLE-1) PforR, then to I-ENET Program and other foreign-funded projects, while it is continuously evaluated and modified based on the implementation experiences, until the ESMS becomes fully functional and applicable to all foreign-funded projects without further adjustments. The Program will apply the PLN ESMS throughout Program implementation.

43. **A summary of the review of pertinent policies, laws, and regulations is presented in this subsection.** Further analysis on enforcement, capacity, and challenges will be elaborated in this section.

D.1 Electricity Provision Business Management Framework

44. **The electricity provision business for public in Indonesia is regulated** under Government Regulation No. 14 of 2012, regarding 'Electric Power Provision Business Activity', amended by Government Regulation No. 23 of 2014, regarding 'Amendment upon Government Regulation No. 14 of 2012'. The provision of electric power for the public is to be conducted by a business entity that covers the activities of electric power generation, transmission, distribution, and selling in an integrated manner. This regulation(s) mandates that any business involved in the provision of electricity for the public must comply with the Electric Supply General Plan (*Rencana Umum Ketenagalistrikan*, prepared by the Ministry of Energy and Mineral Resources [MEMR] for the national level and respective province/city/regency for regional levels) and RUPTL. The RUPTL is prepared by the permit holder and approved by the relevant Minister, Governor, or Mayor/city subject to their respective jurisdictions.

45. **The business entity should secure an 'Electric Power Provision Permit'**, with a validity period of 30 years (extendable), issued by the appropriate authority depending on the scope of the business:

- **Businesses with interprovince scope**, conducted by state-owned enterprises or businesses that sell electricity or rent network to other parties holding the same permit issued by the Minister, the permit is issued by the Minister of Energy and Mineral Resources.

- **Businesses with inter-city/regency businesses**, or businesses that sell electricity or rent network to other parties holding the same permit issued by the Governor, the permit is issued by the Provincial Governor
- **For businesses within a city/regency**, or businesses that sell electricity or rent network to other parties holding the same permit issued by the Mayor/Regent, the permit is issued by the Mayor/Regent.

46. **To secure the abovementioned permits**, the business entity should demonstrate its capacity from administrative, technical, and environmental aspects, which includes conducting feasibility studies and any environmental-related requirements mandated by the Indonesian regulations (mainly regulated under Government Regulation No. 22 of 2021 regarding ‘Implementation of Environmental Protection and Management’).

47. **Since 1972, PLN was determined by the GOI to be a ‘Perusahaan Umum’** (a company that is fully owned by the nation), giving it the authority to conduct all businesses related to electricity power (*Pemegang Kuasa Usaha Ketenagalistrikan*, PKUK) under Government Regulation No. 18 of 1972, regarding ‘*Perusahaan Umum for National Electricity*’ (amended by Government Regulation No. 17 of 1990, with a same title). However, in alignment with the government policy to increase the participation of private parties, through Government Regulation No. 23 of 1994, regarding *Transformation of PLN from Perusahaan Umum to Perseroan*, the GOI transformed PLN into a ‘*Perseroan*’, a corporation, where 51 percent of its capital is owned by the nation, while the remaining shares can be owned by public/private parties. This regulation did not change the right of PLN as the holder of PKUK.

48. As the authorized company, PLN develops the RUPTL for a 10-year period. Currently, PLN has developed RUPTL from 2021 to 2030 (called the ‘Green RUPTL’), which has been approved by the GOI through the Minister of Energy and Mineral Resources’ Decree No. 188.K/HK.02/MEM.L/2021 regarding Approval of PLN’s RUPTL for the period of 2021 to 2030. This version of the RUPTL facilitates development of sustainable electricity sector and consists of US\$90 billion of investment across electricity generation, transmission, and distribution.

49. The government program, on which this Program is based, is the distribution and smart grid component of the current RUPTL. This entails US\$12.4 billion of investments over 2021–2030 in electricity distribution and smart grid technologies. The Program will support PLN programs in the RUPTL operating within the 2024-to-2029-time frame. The Program will support activities in the Java, Madura, and Bali region out of the nation-wide distribution plan outlined in the RUPTL.

50. PLN is also receiving financing from the World Bank’s Indonesia Sustainable Least Cost Electricity-1 (ISLE-1) Program and other development partners such as the ADB and Asian Infrastructure Investment Bank (AIIB) to implement the RUPTL programs. About half of the required Program investments are expected to come from PLN and the government. PLN will work with the private sector to connect to RSPV and EVCS and ensure that these investments are integrated efficiently in the distribution network.

D.2 Environmental and Social Management Systems Assessment

D.2.1 Management of the environmental and social risks and impacts associated with the construction and operation of investments relevant to the Program

51. **The environmental and social risks and impacts** associated with the construction and operation of investments relevant to the Program will mainly be managed by national laws and regulations on environmental and social assessments and PLN's ESMSs, which are currently being finalized.

52. **With the issuance of Law No. 4 of 1982**, regarding the Principles on Environmental Protection, the Environmental Impact Assessment (EIA) became a legal requirement in Indonesia. Since then, environmental legislation has evolved, and now there are more than 50 laws and regulations applicable to the environmental management of the Program, and together they define an environmental management system that generally conforms to international standards, for instance, on environmental impact assessment, protection of forests and endangered species, control of water pollution, protection of health and safety at work sites, and management of hazardous wastes.

53. **Law No. 32 of 2009**, regarding Environmental Protection and Management (amended by several regulations, the latest being Law No. 6 of 2023) is the original 'umbrella' legislation that, among other things, mandates the EIA. According to the provisions of Regulation No. 4 of 2021, issued by the Ministry of Environmental and Forestry (MOEF), any business/activity will have to anticipate what type of EIA (the 'Environmental Document') that it has to prepare based on the type, scale, and risk. As a common practice, the business/activity will have to consult with an authorized environmental agency (MOEF, Provincial Environmental Agency, or City/Regency Environmental Agency) to determine the type of EIA that should be prepared.

54. **The MOEF's Regulation No. 4 of 2021**, describes the type of Environmental Document that is required for the activities anticipated to be conducted as part of the Program, as shown in Table 3. The Program is not envisaged to support major physical infrastructure activities. Considering the small scale of physical infrastructure, the nature of the potential environmental impacts, and the limited geographic footprint of physical works, the Program-supported activities fall below the AMDAL threshold.

55. **Currently, the national regulations only cover the Program's activities** of construction of distribution networks and investments in EVCS. The remaining Program activities have not yet been regulated to prepare a certain type of Environmental Document.¹

¹ RSPV has recently been regulated in the MEMR's Regulation No. 2 of 2024, regarding Rooftop Solar Panel that Connected to Power Network and Permit Holder for Public Needs. This regulation does not mention the type of Environmental and Social Document needed to establish the system.

Table 4: Type of National Environmental Document Required for the I-ENET Program Activities

Project Type	Project Infrastructure/Equipment	Scale of Project to Determine the Required National Environmental Document			AMDAL/UKL-UPL Category
		AMDAL	UKL-UPL	SPPL	
Distribution network	Low/medium voltage overhead power line	n.a.	1 kV ≤ voltage ≤ 35 kV (in protected areas)	100 V ≤ voltage ≤ 35 kV	B
	Medium voltage marine cable line	n.a.	1 kV ≤ Voltage ≤ 35 kV	n.a.	B
	Low/medium voltage cable line	n.a.	n.a.	100 V ≤ voltage ≤ 35 kV	B
	Low voltage marine cable line	n.a.	n.a.	100 V ≤ voltage ≤ 1 kV	B
	Medium voltage connecting substation	n.a.	1 kV ≤ Voltage ≤ 35 kV	n.a.	B
EVCS	EVCS/public EV battery swapping station	n.a.	All scale	n.a.	Not identified
RSPV	Not required	n.a.	n.a.	n.a.	—

Note: SPPL = Written Statement of Assurance of the Implementation of Environmental Management and Monitoring (*Surat Pernyataan Pengelolaan Lingkungan*); UKL-UPL = Environmental Management and Monitoring Plan (*Upaya Pengelolaan Lingkungan Hidup dan Upaya Pemantauan Lingkungan Hidup*).

56. **Government Regulation No. 5 of 2021**, regarding Implementation of Risk-Based Business Licenses mandates a double screening method, that is, environment-related risk screening and environmental impact screening. The screening process differentiates between risk screening and impact screening. It applies to both high-risk projects and medium-risk business/activities that may require an AMDAL if impact screening shows the potential environment and/or social risks or impacts are likely to be significant. The mandatory screening is integrated under the risk-based licensing mechanism. The screening and categorization of risks are to be assessed on the aspects of health, safety, environment, and/or utilization and management of resources. The risk category will also consider other aspects depending on the nature of the activity and probability of impact occurrence. The risk category of the proposed business and/or activities are classified as follows: High risk, Moderate High risk, Moderate Low risk, and Low risk. All activities classified as Moderate and Low risks will be given a Standard Certificate upon submission of business application in the One Single Submission (OSS)—an electronic system for integrated business licensing. The holder of a Standard Certificate can directly continue all preparation for business development but cannot start business operations before fulfilling the requirements stated in the Standard Certificate, including completion of an UKL-UPL. Activities classified as High risk will need to fulfil permitting requirements, including completion of an AMDAL before commencing any construction activities.

57. **The MOEF's Regulation No. 26 of 2018**, provides guidelines for the preparation and assessment and examination of Environmental Documents in the implementation of OSS. The scoping process in preparation of a UKL-UPL is described in Appendix III of the MOEF's Regulation No. 26 of 2018. In general, the process specified in the regulation is consistent with international standards. However, Indonesian scoping practices need to be improved to ensure that all significant potential impacts are thoroughly assessed.

58. **A common issue in the EIA preparation process in Indonesia** is that the assessment is carried out with excessive focus on formal requirements and document consistency at the expense of the depth of

risk and impact assessment and definition of a sound environmental management and monitoring plan. Additionally, based on previous discussions with PLN units that are involved in the preparation of distribution lines and EVCS, the quality of UKL-UPL commonly depends on the quality of consultants assigned by PLN for preparation of the EIA. Some EIAs provide robust baseline information and great detail on significant impacts, while the others do not go to the same level of depth of analysis. The Safeguard Division of PLN has facilitated sharing of knowledge between PLN units as part of routine HSE events, including on the topic of preparation of an EIA. PLN units also report that there are difficulties in identifying the quality of consultant candidates and include potential benefit from having a template for EIA terms of reference (TOR).

59. The construction or installation of EVCS will require certain permits and preparation of a UKL-UPL. There is two regulations govern EVCS: (1) the requirements for EVCS unit (Minister of Energy and Mineral Resources Regulations No. 1/2023 on Provision of EVCS infrastructures); and (2) the requirement to prepare UKL-UPL for each EVCS unit (Minister of Environment and Forestry Regulation No. 4/2021 on list of business activities that requires AMDAL, UKL-UPL, and SPPL). The MEMR Regulations 1/2023 stipulates administrative and permitting requirements for EVCS business entities, recommended locations for EVCS, and safety assurance by obtaining a certificate of worthiness for operation of EVCS. This regulation also mandated PLN to initiate the provision of EVCS. However, the OHS aspect as well as emergency response and preparedness in the event of fire or explosion is not yet included in the requirements. Additionally, the demand for EVCS in Indonesia suddenly experienced a rapid increase in 2022 in connection with Indonesia's mandates to host the G20 Summit in November 2022. As part of the G20 Summit preparation, PLN was mandated to accelerate provision of EVCS in Bali, and the MOEF permitted PLN to prepare one UKL-UPL for the overall EVCS construction in one province. PLN is required to provide updates of EVCS locations as part of the UKL-UPL biannual progress report. However, when the location of EVCS is relocated, a new UKL-UPL will need to be prepared.

60. The current legal framework is also weak on social risk management. With a relatively long history of environmental law implementation and the application of an AMDAL and UKL-UPL, with respect to a project, administrative institutions tend to focus on environmental issues. The emphasis on the social dimensions of investment projects is insufficient in Law No. 6 of 2023, regarding Work Creation, and its implementing regulations. There is the need to strengthen PLN's internal regulations to integrate social risks management for an investment project, with sufficient detail to allow the administration to implement them. In addition, stakeholder engagement is also limited to consultation of AMDAL, UKL-UPL, or SPPL documents. Coordination between different regulatory agencies, both at the central and regional levels, poses significant challenges in proper implementation of relevant laws and regulations, especially under the new regulatory regimes, which changed institutional arrangements on environmental and social permitting and management.

61. Following the World Bank's approval of the ISLE-1 PforR funding, a range of improvements are being conducted to address the identified gaps in the existing PLN internal ESMSs against the World Bank requirements. An integrated ESMS is currently being finalized and PLN intends to apply it for IFI-funded projects, starting with the ISLE-1 PforR, while it is continuously evaluated and modified based on the ISLE-1 implementation experiences, until the ESMS becomes fully functional and eventually applies to all foreign-funded projects/programs, including I-ENET. At the time this ESSA is being prepared, the ESMS is being finalized and subject to World Bank approval. The core element of the ESMS (the ESMS Manual) has been approved by the PLN Director of Transmission and System Planning and adopted on December 14, 2023, while the rest of the components (the MGs and IPP Environmental and Social Guideline for Solar PV) are undergoing finalization. Once the complete package of the ESMS has been finalized, PLN will

submit it for World Bank review and approval before applying it to the ISLE-1 PforR and this Program. The ESMS is developed to provide a framework to identify, assess, prevent, or mitigate, evaluate, and communicate environmental and social risks and impacts that may result from PLN's operational activities, in accordance with national laws and regulations, good international industry practices (GIIP), and international standards including the World Bank's Environmental and Social Framework (ESF) and environmental and social core principles. It incorporates PLN's improved policy and commitments for environmental and social management, as well as integrated organizational arrangement and capacity-building program plan to enable appropriate implementation of the ESMS. It also provides guidelines to undertake impact assessment, planning, implementing, and monitoring of risk and impacts mitigation.

62. **The ESMS development has considered a range of** existing policies, technical guidelines, and procedures that apply to environmental and social management, including the adopted PLN existing guidelines and procedures for determining the transmission corridor with a scoring system/assessment (November 2020). It describes the initial screening and field surveys considering both technical and non-technical aspects for transmission line corridor selection, including the social aspects such as land use and tenure and cultural heritage. The previously developed environmental and social technical guidelines for other international finance institution (IFI)-funded projects (such as PLN's Environmental Safeguards Technical Guidelines, Draft Edition 3, September 2021 and Technical Guidelines for Land Acquisition and Resettlement, Draft Final, November 2019, prepared for the ADB's and KfW's² result-based lending) were also used, expanded, and adopted as part of the ESMS, as they include risk screening and identification of mitigation measures based on international good practices.

63. **The ESMS also consists of a set of detailed MGs that incorporate more detailed directions** to identify, assess, and develop environmental and social mitigation and monitoring measures. The MGs also provide key requirements that are needed should a management plan (either individual management plan or a compiled full Environmental and Social Management Plan [ESMP]) be prepared. The comprehensive list of MGs, which will be applicable to all foreign-financed projects by PLN, include:

- Labor and Working Condition Management Guideline
- Air Quality Management Guideline
- Biodiversity Management Guideline
- Community Health, Safety and Security Management Guideline
- Cultural Heritage Management Guideline (CH-MG)
- Erosion and Sediment Control Management Guideline
- Indigenous People Management Guideline
- Non-Hazardous Waste Management Guideline
- Stakeholder Engagement Management Guideline (SE-MG)
- Water Efficiency Management Guideline
- Land Acquisition and Resettlement Management Guideline (LAR-MG)
- Noise and Vibration Control Management Guideline

² KfW = German Credit Institute for Reconstruction (*Kreditanstalt für Wiederaufbau*).

- Hazardous Materials Management Guideline
- Hazardous Waste Management Guideline
- Wastewater and Water Quality Management Guideline
- Energy Efficiency Management Guideline.

64. **PLN will apply the ESMS for I-ENET Program implementation**, particularly for investments that involve construction and/or upgrade of infrastructure, such as distribution lines and transformers, and the construction and/or installation of PLN-owned EVCS. As an existing good practice, PLN also has standards for construction of distribution networks that need to be applied by all PLN UIDs (Decree of PLN President Director No. 475.K/DIR/2010, dated August 11, 2010). The standard focuses on the engineering aspect of construction of the distribution networks, which will ensure the construction quality, including the aspect of resilience to natural disasters. The PLN regional units will adopt this standard and issue construction standards for their areas of operation to ensure that the standard is fit for the local context. All PLN regional units involved in Program implementation have already issued regional standards for the construction of distribution networks.

65. **National laws and regulations do not require preparation of any type of Environmental and Social Impact Assessment (ESIA) document for installation of the RSPV** and currently there is also no corporate-level standard nor guidelines on environmental and social assessment on construction and installation of the RSPV since PLN is not involved in installation of RSPV. Regulation of PLN Director No. 049 Year 2019 stipulates that all RSPV customers (both who connected to the PLN network system [on-grid] and not connected to PLN network system [off-grid]) will need to apply for approval from UIDs in their area for the construction and installation of RSPV. The customer can operate the RSPV system in parallel to the PLN system (on-grid) by installing an export-import metering on their building. PLN does not have corporate-level guidance on the construction and installation of RSPV and does not require the 'RSPV customer' to undergo any environmental and social screening or impact assessment before the issuance of construction and installation approval. The RSPV construction, installation, and operation (and maintenance) will be the responsibility of the RSPV customer. The customers are not subject to capacity charges and emergency energy charges, which are part of parallel operating costs, including customers in the industrial electricity tariff group who are not connected (off-grid) to the PLN network system, except for customers in the industrial electricity tariff category who are connected (on-grid) to the PLN network system.

D.2.2 Management of OHS risks for workers from construction of investments relevant to the Program

66. The GOI laws and regulations mandate the protection of worker's well-being, safety, and physical and mental health. Law No. 1 of 1970, regarding Safety at Work provides a basic regulatory framework for a workplace to provide adequate measures to prevent OHS incidents and work-related illness and maintain healthy conditions for the workers. It also mandates provision of preparedness trainings for workers, establishment of emergency response systems, regular medical check-ups for workers, provision of personal protective equipment (PPE), and coordination and reporting to the government should any incident occur. The regulation is supported by Government Regulation No. 50 of 2012, regarding Implementation of OHS Management System for any business/activity that uses 100 workers or more or is identified as high risk in terms of OHS. Additionally, Law No. 6 of 2023, regarding Enactment of Government Regulation instead of Law No. 22 of 2022, regarding Work Creation, mandates fulfillment of all OHS instruments (for example, risk assessment, competency certification, safety equipment, and so on). It also emphasizes sanctions for any responsible parties whose actions cause harm for OHS.

67. Some implementing regulations have also established by the GOI to address certain work-specific OHS risks that are potentially relevant to the program's scope, such as (a) Ministry of Manpower (MOM) Regulation No. 9 of 2016, regarding OHS for Work at Height; (b) MOM Regulation No. 8 of 2020, regarding OHS for Lifting and Rigging; (c) MOM Regulation No. 33 of 2015, amending MOM's Regulation No. 12 of 2015, regarding OHS for Working with Electricity; and (c) Ministry of Health Regulation No. 48 of 2016, on OHS for Office Work (covering ergonomical risk). All the abovementioned regulations require provision of OHS safeguards for workers interacting with those risks, among others, including provision of training/certification, safety equipment and inspection, permit to work, adequate space to work, safety procedures, supervision (for example, buddy system), and so on.

68. The national environmental impact assessment system does not recognize the provision of OHS since the enforcement of this aspect is often considered as MOM's responsibility while the environmental impact assessment system is overseen by the MOEF. The identification and assessment of OHS risks is not required in preparation of national ESIA document (both in AMDAL and UKL-UPL preparation). The existing laws and regulations also do not mandate project contractors, subcontractors, and primary suppliers to establish an OHS management system; appoint a person in charge for OHS as part of the overall contractor management system; and allocate a budget for implementation of an OHS program. Additionally, the main regulations on RSPV and EVCS, that is, MEMR Regulation No. 2 of 2024, regarding RSPV that is Connected to PLN's Network, and MEMR Regulation No. 13 of 2020, regarding Provision of Electric Vehicle's Batteries Charging Station, do not include any OHS requirements.

69. PLN will also implement the Labor and Working Conditions MG, which is an integrated part of the ESMS, for investments relevant to the I-ENET Program, to ensure implementation of all OHS management measures in accordance with regulatory requirements as well as IFI standards, including the World Bank PforR Policies and ESF. As part of its ESIA process, the ESMS also requires identification and assessment of OHS risks of construction and operation of the proposed activity. PLN will also apply its existing PLN's Occupational Health and Safety Management System (OHSMS) Manual and Procedures for any other activity that falls beyond the coverage of ESMS at this stage, to the extent that it is managed by PLN and its contractor/supplier.

70. **The installation of AMI is part of PLN's current services** to customers and is not treated as 'a proposed project'. PLN has a guidance for installation of new/replacement metering equipment that include OHS measures, and this guidance is also applicable for AMI installations. Additionally, PLN regional units have issued their own work instructions, which also include the OHS aspect.

71. **During site visit for ESSA preparation**, the ESSA team found that one of the PLN regional units (UID Bali) already issues a guidance on installation of PLN-owned EVCS; however, this guideline does not include the OHS aspect. And since PLN is not involved in the construction, installation, and operation of RSPV and EVCS that partnered with third parties (third party-owned EVCS), PLN does not have existing guidelines that govern the OHS requirements during construction and installation of the RSPV and third party-owned EVCS. However, considering PLN roles to issue approval for the construction and installation of RSPV, as well as PLN's involvement in third-party agreements for operation of EVCS, it is necessary for PLN to anticipate how the RSPV customers and EVCS third parties will meet the prescribed OHS requirements based on Indonesian regulations and PLN standards.

D.2.3 Management of the Impacts related to hazardous waste generation from operations of RSPV

72. **The country's approach in hazardous waste management is built upon 'cradle to grave' principle,** with a rigid manifest system to track the flow of waste from the generator to the disposal facility. The requirements prescribed in the key regulations are harmonized with the GIIP, including the provisions on waste identification, reduction, segregation, storage, transport, disposal, and OHS for waste handlers—with all activities to manage hazardous waste, including to store, transport, treat, or dispose, require valid permits/licenses from the relevant agencies.

73. Government Regulation No. 22 of 2021 regulates used batteries as hazardous waste from specific source, while used/damaged solar panel is not directly categorized as hazardous waste; instead, it is part of the waste that will need to be further assessed due to its content (hazardous waste from non-specific source). The MEMR Guideline for Hazardous Waste Management of Solar Photovoltaic (2022) identified that solar panels contain elements such as tin and lead while the thin film of the solar panels can contain zinc and copper, indium, gallium, selenium, and cadmium tellurium. These are included as hazardous substances based on government regulations; thus, the used/damaged solar panels will need to be properly recycled so that the hazardous materials can be separated from the rest of the panel and treated accordingly. This regulation also requires that the entity generating hazardous waste be responsible for appropriate handling, storage, and treatment of waste generated.

74. PLN ESMS includes the Hazardous Waste Management Guideline to ensure that implementation of all PLN activities will include adequate hazardous waste management in accordance with regulatory requirements and IFI standards, including the World Bank PforR Policies and ESF. Since operation of RSPV is solely the responsibility of the RSPV customers, the management of used/damaged solar panels generated from the RSPV is beyond PLN's control and beyond the scope of the PLN ESMS. However, considering PLN roles to issue approval for construction and installation of RSPV, it is necessary for PLN to anticipate how the RSPV customers will meet the prescribed hazardous waste management requirements based on Indonesian regulations and PLN standards.

D.2.4 Management of the Community health and safety from construction and operation of investments relevant to the Program

75. Law No. 32/2009, regarding Environmental Protection and Management, which was amended in the Job Creation Law (Law No. 6 of 2023), requires that potential risks and impacts of the project on community health, and relevant mitigation measures, be covered in the environmental impact assessments, including UKL-UPL, which are required for all construction/upgrade of distribution networks and EVCS.

76. MEMR's Regulation No. 13 of 2020, regarding Provision of Electric Vehicle's Batteries Charging Station, includes safety measures for EVCS facilities. It outlines the site selection criteria to ensure public safety and the requirements for protection and safety system that allows automatic power cut/stop charging when an anomaly during charging is detected by the system.

77. Other relevant laws and regulations include the following:

- Law No. 22/2009, on Road Traffic, and Government Regulation No. 32 of 2011, on Management and Engineering, Impacts Analysis, and Traffic Management.

- Law No. 28/2002, on Buildings, regulates the requirements for fully functional buildings applicable to both public and private facilities. It mandates the consideration of technical aspects of buildings such as functionality, reliability, safety, health, comfort, ease of use, balance, and harmonization with surroundings.
- Law No. 24/2007, on Disaster Management. The existing legal framework for Regulatory EIA also covers the aspects of impact assessment on community health, with further detailed guidelines for health impact assessment regulated under the Ministry of Health, while the Traffic Impact Assessment (guided by the Ministry of Transportation regulations) focuses on ensuring proper traffic management resulting from an improved road network and managing safety risks for public road users. Both become integrated processes within the Regulatory EIA.

78. These laws and regulations and the PLN system address some of the Community Health and Safety aspects of the World Bank's Core Principle #3, yet gaps remain. For example, there is no requirement for the project to establish an emergency preparedness and response plan (EPRP) that covers neighboring communities, except in relation to impacts due to hazardous waste pollution and traffic. Also, health and safety issues are typically outside the coverage of required grievance mechanisms. The existing laws and regulations also do not regulate mechanisms for the community to file grievance on project impact on community health, safety, and security aspects.

79. PLN will implement the Community Health, Safety and Security Management Guideline, which is an integrated part of the ESMS, for the proposed investments under the I-ENET Program, to ensure that all PLN activities will apply community health, safety, and security management measures) in accordance with regulatory requirements as well as IFI standards, including the World Bank PforR Policies and ESF. As part of its ESIA process, the ESMS also requires the identification and assessment of community health and safety risks of construction and operation of the proposed activity. Based on that, the ESMS requires a management and monitoring plan to cover the health and safety aspect of potentially affected communities. It also mandates a security arrangement that considers human rights when dealing with security issues, particularly related to affected communities or sensitive receptors.

80. During site visit for ESSA preparation, the ESSA team found that one of the PLN regional units (UID Bali) already issues a guidance on installation of PLN-owned EVCS that includes safety measures for the EVCS units such as site selection and fire extinguisher requirements. Implementation of this guideline will contribute to ensuring community health and safety aspect during EVCS operation. However, since PLN is not involved in the construction, installation, and operation of RSPV and EVCS that partnered with third parties (third party-owned EVCS), PLN does not have existing guidelines that govern the OHS requirements during construction and installation of the RSPV and third party-owned EVCS. Nevertheless, considering PLN roles to issue approval for the construction and installation of RSPV as well as PLN involvement in third-party agreement for operation of EVCS, it is necessary for PLN to anticipate how the RSPV customers and EVCS third parties will meet the prescribed safety requirements based on Indonesian regulations and PLN standards.

D.2.5 Management of Labor

81. Indonesia has a comprehensive legislative framework regarding labor and working conditions. The legislation dates to the pre-independence period and was then supplemented by national legislation and ratification of international conventions introduced by the International Labour Organization (ILO). The ratified ILO conventions including Declaration on Fundamental Principles and Rights at Work, Convention

concerning the abolition of forced labor, anti-child labor and minimum age for work admission, elimination of all forms of discrimination against women, promotional framework for OHS, and discrimination with respect to employment and occupation have been ratified by the Indonesian government as part of the national law.

82. The current legislative framework is based on this wealth of regulations and reinforced by the recently passed laws and regulations. The principal legislation governing employment is Law 13/2003 (Employment Law), which has been modified several times by decisions of the Constitutional Court and was last amended by the Job Creation Law (Law No. 6 Year 2023). The Employment Law provides guidance on workforce management including wages, social security, dismissal, severance pay, use of temporary employment and outsourcing contracts, and labor union.

83. Although the legislative framework is quite comprehensive, the assessment identified gaps in the World Bank framework, and enhancements should be introduced. There is a need to enhance the regulations on labor inspection and implementation of third-party employee grievance mechanisms. Provisions for gender equity in the workplace, workplace harassment, and vulnerable workers, particularly those with disabilities, and migrant workers also need to be addressed. The existing laws and regulations have not defined practical mechanisms to avoid involvement of forced and child labor, particularly in supply chain or by third parties (for example, contractor, subcontractor, and primary supplier). Thus, there is a need for capacity enhancement and awareness at the provincial government level, particularly the regency and city government levels, as in the end these institutions are directly in charge of implementing the laws and regulations.

84. The Labor and Working Conditions MG, which is an integrated part of the ESMS, will also be applied for the proposed investments under I-ENET, to ensure that all PLN activities will apply appropriate labor management measures in accordance with regulatory requirements as well as IFI standards, including the World Bank PforR Policies and ESF. As part of its ESIA process, the ESMS requires the identification and assessment of labor and working conditions of construction and operation of the proposed activity. In relation to the I-ENET PforR, the MG includes provisions to (a) identify potential forced labor and child labor issue, (b) monitor the contractor's management plan to incorporate strategies to meet the project requirements regarding minimum age of workers and prohibition of child and forced labor, (c) prohibit utilization of child or forced labor within the supply chain (production lines of material/equipment that will support the Program), and (d) conduct periodic monitoring to ensure compliance throughout all project phases.

D.2.6 Management of Land Acquisition Activities

85. Law No. 2 Year 2012 specifies principles for land acquisition; types of public purpose development; implementation stages and arrangements for land acquisition; requirements, process, and institutional arrangements during the planning, preparation, and implementation of land acquisition processes; eligible affected persons; affected assets; land/asset valuation; compensation options; consultation; disclosure; complaints; financing; and release of the compensated land/assets. As a result of the Omnibus Law, Law No. 6 Year 2023 came into force, and implementing regulations include the following:

- Government Regulation No. 39/2023, amends the previous Government Regulation No. 19/2021, which regulates the implementation provisions of Law No. 6/2023, Chapter 8 on Land Acquisition for Development for Public Interest.

- Minister of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 19/2021, which provides technical procedure/provisions to implement Government Regulation No. 19/2021, regarding Land Acquisition for Public Interest.
- Presidential Regulation No. 78/2023, amends Presidential Regulation No. 62/2018, on the management of social impacts in the context of land acquisition stipulating that those informal occupants of government-owned or state land are eligible for compensation for 'non-physical assets' if they meet the following criteria: (a) possess valid IDs or civil documentation issued by the local government where the land to be acquired is located; (b) have occupied the land in question, with goodwill, over 10 years consecutively; and (c) receive recognition from the heads of villages/wards and landowners. Those who meet the criteria are entitled to compensation for (a) the value of structures and things attached to the land, (b) the cost of house/structure demolition, (c) moving costs, (d) 12 months' rent, (e) value of residual land/structures, (f) income support (equivalent to three months income), and (g) other values that are lost as a direct result of land loss that can be calculated. This indicates the additional allowance/support as part of the management of social impacts resulting from land acquisition to consider loss of income.
- Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 6/2020 provides technical procedure/provisions to implement the management of social impacts in the context of land acquisition.
- For compensation appraisal, the valuation will be carried out based on the Land Appraiser Profession (*Masyarakat Profesi Penilai Indonesia*, MAPPI) Standards, as specified in the MAPPI Guidelines on Land Acquisition Assessment for Development of Land for Public Interest, defined in the Indonesia Valuation Standards (SPI) 204 (MAPPI 2018). According to the standard, the determination of the compensation amount is based on the "fair replacement value," which considers the principles of humanity, fairness, usefulness, certainty, transparency, agreement, participation, welfare, harmony, and sustainability. The appraisal approach will be conducted for (a) physical objects (including land, space above ground and underground, building/structures, plants and crops, and other objects attached to the land such as utilities and facilities support building), and (b) non-physical components (including compensation for disposal rights of landowners such as loss of a job or loss of business/profession and emotional loss (*solatium*), compensation for waiting/transition period, and loss of remaining land accounting for the decline in the value of land as a result of partial plot land acquisition).

86. These current Land Acquisition Law and the implementing regulations set out in detail a land acquisition procedure that is meant to be, among other things, fair, transparent, certain, and participatory. The focus is on the preparation stage, the land acquisition planning document (*Dokumen Perencanaan Pengadaan Tanah/DPPT*) being the basis for location determination, the latter being the key document allowing public land acquisition. The Land Acquisition Law also outlines the process to raise objections to the plan, relating to land ownership or value of the land, and specifies procedures to address these within a limited stated period.

87. Hence, gaps in the World Bank's Core Principle #4 and challenges in the implementation of regulations are identified. Performance on the ground varies significantly between projects, depending on the capacity of government officials in charge and consultants who assist them, including the preparation of the inventory of assets for which even informal land occupants are entitled to be

compensated. There are also gaps in the legal framework relating to compensation, livelihood restoration implementation, and monitoring and recognition of informal land use and ownership.

88. The existing laws and regulations state that a Land Acquisition Planning Document (*Dokumen Perencanaan Pengadaan Tanah*, DPPT) is only required for involuntary land acquisition with an area over 5 ha, where the compensation will be at “fair replacement value.” Social baseline and social impact assessments are not compulsory when a DPPT is developed. Additionally, the existing laws and regulations do not regulate the concept and mechanism related to VLD by the community, which could possibly occur in the land acquisition process. Livelihood restoration, particularly for vulnerable groups, is not clearly addressed in these regulations. The law and its implementing regulations are also not sufficiently detailed on assistance for displaced persons in improving or restoring their livelihoods to pre-displacement levels. Similarly, relocation and the improvement or restoration of affected persons’ livelihoods would deserve greater detail, including non-tangible compensation, compensation for temporary loss of wages, and alternative income earning opportunities. Few project owners or implementors, private or public, have experience in livelihood restoration after land acquisition, outside projects funded by international development banks. While livelihood restoration is essential to mitigate impacts on livelihoods from land acquisition and potentially physical relocation, Indonesian Regulations do not mandate the conducting of a livelihood restoration plan as part of or as a stand-alone project activity.

89. Additionally, PLN will implement the LAR-MG, which is an integrated part of the ESMS, for the investments relevant to the I-ENET Program. This will ensure that all PLN activities will apply appropriate land acquisition and resettlement management measures) in accordance with regulatory requirements and IFI standards, including the World Bank PforR Policies and ESF. As part of its ESIA process, the LAR-MG requires the identification and assessment of potential land acquisition and resettlement impacts of the proposed activity on livelihood. Provisions are also made for undertaking regulatory land acquisition for public interest, negotiated land acquisition, and VLD (which is common practice found in installation of electricity distribution lines).

D.2.7 Management of impacts to Cultural Heritage

90. Overall, the existing Indonesia legal and regulatory frameworks on cultural heritage are quite comprehensive, and the Omnibus Law introduced limited changes to cultural heritage. Gaps exist regarding cultural heritage aspects of the World Bank’s Core Principle #2. Specifically, the concept of mitigation hierarchy is not addressed, and intangible heritage is often not recognized or formally registered. Cultural heritage tends to be perceived as a minor subject matter in the environmental impact assessment. The Ministry of Education and Cultural (MoEC) and/or other regional cultural agencies have a legal mandate to participate in the EIA/AMDAL process, but in practice, application remains inconsistent. Registration of cultural heritage sites or physical resources and as intangible heritage is conducted under the MoEC by regional agencies. The existing laws and regulations only perceive and implement protection of cultural heritage sites that have been registered officially. Unfortunately, regional-level government agencies’ awareness and implementation capacity are inconsistent across provinces.

91. In the context of investment projects in Indonesia, cultural heritage has become a consideration in environmental law in Indonesia but is limited to registered/preserved cultural heritage areas (*Kawasan Konservasi Budaya*). There are also gaps in the level or detail of cultural heritage impact assessments required in the Regulatory EIA under the Environmental Permitting Agency (including local consultation requirements for mapping and identification of unregistered cultural heritage, undocumented intangible cultural practices, and link to the presence and how the disturbance of cultural heritage may impact on IP

community). The lack of technical capacity in cultural heritage in the Environmental Permitting Agencies, combined with weak interagency coordination, is an important limitation to properly assess and manage projects' impacts and risks of impact on cultural heritage. Although Law No. 11 of 2010, on Cultural Heritage, stipulates that communities can participate in protecting cultural heritage, there is no obligation to conduct meaningful consultations with affected parties and other interested parties. At the same time, weak law enforcement has allowed illegal smuggling of valuable cultural artifacts to flourish, while the existing regulations are often left unenforced, creating a culture of impunity.

92. The followings are laws and regulations pertaining to the protection and preservation of cultural heritage in Indonesia:

- Law No. 5 of 2017, on the Advancement of Culture, mandates that the government (at the national and subnational levels) protect cultural heritage. Article 23 of the law stipulates that anyone who finds an object, building, or site suspected to be of cultural value must report such a finding to an authorized cultural institution or related institution within 30 days.
- Law No. 11 of 2010, on Cultural Conservation, stipulates the establishment of a national registry of cultural heritage objects and their protection and prohibits their illicit trafficking and export unless for research, promotional, or exhibition purposes. Article 59 requires that physical cultural resources at risk of being destroyed, eliminated, or damaged should be relocated to a safer location under the supervision of conservation experts.
- Law No. 5 of 1992, on Cultural Property, governs the overall management of physical cultural resources, including criteria, protection measures in the event of discovery or ownership, use of cultural heritage, and legal penalties for infringement.
- Presidential Decree No. 78 of 2007, on ratification the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Convention for Safeguarding of the Intangible Cultural Heritage (2003).

93. For investments relevant to the I-ENET Program, PLN will implement the CH-MG, which is an integrated part of the ESMS, to ensure that all PLN activities will apply appropriate management measures in accordance with regulatory requirements and IFI standards, including the World Bank PforR Policies and ESF. As part of its ESIA process, the CH-MG requires the identification of cultural heritage presence and assessment of potential impacts of the proposed activity on cultural heritage. Furthermore, it mandates the implementation of management measures if any impact on intangible cultural practices is identified.

D.2.8 Management of Stakeholder Engagement

94. Law No. 32 of 2009, which is amended by Law No. 6 of 2023, on Environmental Protection and Management states that “environmental protection and management shall be executed on the basis of participation.” Other relevant laws and regulations include the following:

- Law No. 14 of 2008, on Public Information Transparency, which guarantees the rights of citizens on public policy decisions and fosters public participation in such decision-making.
- Law No. 6 of 2023, on Environmental Protection and Management also covers communities' right to raise objections to proposed projects and the government's obligation to develop

and implement policies on the management of public complaints related to protecting and managing the environment.

- Government Regulation No. 22 of 2021, regarding the Implementation of Environmental Protection and Management.

95. Overall, the existing laws and regulations with regard to stakeholder engagement and information disclosure during the AMDAL process mostly concern engagement, with people directly affected by the project in terms of land acquisition and resettlement, but do not fully address engagement with broader stakeholders. When broader consultation occurs, it is normally limited to consultation meetings of safeguards instruments such as AMDAL or for LAR planning/DPPT process. Such engagement does not require process differentiation for specific stakeholder groups with distinctive needs and concerns. The existing laws and regulations do not require engagement for projects with simpler forms of EIA, that is, UKL-UPL, and SPPL. Thus, the regulatory requirement for stakeholder engagement is limited to the early stage in an investment project, instead of taking place throughout the project's life cycle. Grievance mechanisms are required to be established only to handle land acquisition-related issues. More operational details need to be provided on engagement with vulnerable groups.

96. PLN will implement the SE-MG, which is an integrated part of the ESMS, for the investment activities under the I-ENET Program. This will ensure that all PLN activities will apply appropriate stakeholder engagement (including grievance management) in accordance with regulatory requirements and IFI standards, including the World Bank PforR Policies and ESF. The SE-MG requires implementation of stakeholder engagement throughout the life cycle of a project, to be tailored for specific stakeholder groups with distinctive needs and concerns, while grievance mechanisms need to be accessible for severely affected and vulnerable groups.

D.3 Institutional Responsibilities

97. PLN is the lead implementing agency for the Program and a Program management team will be established at the PLN corporate level, with the team lead nominated by the PLN, to monitor and report on implementation progress.

98. The implementation of expansion and improvement of distribution networks (including distribution lines and transformers); development of EVCS (both PLN-owned and third party-owned); and development of RSVP business in the Java, Madura and Bali region are under the scope of work of six UIDs, that is, UID Jaya, UID Banten, UID Jabar, UID Jateng and DIY, UID Jatim, and UID Bali. The UIDs' scope of responsibility includes environmental and social management of the investments. These UIDs will be responsible for implementing the Program in coordination with PLN headquarter units. In field operations for distribution line activities, UID is assisted by the Electricity Project Implementation Unit (*Unit Pelaksana Proyek Kelistrikan*, UP2K). UP2K actively engages with relevant stakeholders, including land requirements and permits if the distribution network passes through forest areas.

99. Under PLN's current corporate organization structure, environmental and social management is mainly undertaken by DIV TEK and the Health, Safety, Security, and Environment Division (DIV K4L). DIV TEK manages the entire environmental and social management related to funding programs, including alignment between PLN standards with IFI standards, such as developing and implementing ESMS for foreign-funded projects, while DIV K4L manages entire environmental and social management required by regulatory requirements (for example, permits, environmental documents, Indonesia's Performance Rating Program in Environmental Management [*Program Penilaian Peringkat Kinerja Perusahaan dalam*

Pengelolaan Lingkungan, PROPER], and so on). DIV K4L's subdivisions are responsible for overseeing environmental performance, monitoring, and evaluation; advising on the suitability of environmental permits for project operations; advising on implementation of UKL and Environmental Management and Monitoring Plan (*Rencana Pengelolaan Lingkungan Hidup/Rencana Pemantauan Lingkungan Hidup*, RKL); advising on PROPER; and overseeing hazardous waste management and water and air quality management of PLN activities. DIV K4L's subdivisions are responsible for the development and implementation of OHS and security requirements for PLN operations.

100. Similarly, at the regional unit's organization level, there is a unit which is responsible for OHS and environment, called '*Biro Pengendali K3L*'. The unit (Biro K3L) is responsible for planning, monitoring implementation, and control of LB3 (hazardous wastes management) and environmental and OHS issues for activities under the regional units' jurisdictions.

101. For the development of RSVP business, PLN UIDs have the responsibility of issuing approval for construction and installation based on requests from RSPV customers. The customers will engage with their selected third-party vendor for the construction, installation, and operation of RSPV. .

102. To develop EVCSs, PLN UIDs may also partner with third-party entities to develop EVCS (third party owned EVCS). The UIDs may use four public-private partnership schemes with the private sector. In scheme 1, the partner provides the land while PLN provides the charger set and connections through PLN's mobile app. In scheme 2, the partner provides both the land and the charger set while PLN only provides connection through the PLN app. In scheme 3, two different partners provide land and charger sets while PLN provides connections through its app. In the final scheme, PLN provides geotagging and app links to EVCS developed by private sector partners in collaboration with another electricity providers. As mentioned above, PLN also develops EVCSs entirely on its own under its self-owned model.

103. PLN's AMI deployment consists of three key components: (a) smart meters - installed at the customer's premise to collect electricity consumption data; (b) communication network - to transmit the large volume of interval load data from the meters to the utility back offices; and (c) Meter Data Management System (MDMS) - to store and process the interval load data and integrate meter data with one or more key information, including head-end systems (HESs), billing systems, customer information systems (CIS), geographic information systems (GIS), outage management systems (OMSs), and distribution management systems (DMSs). . With its AMI implementation, PLN is clustering the implementation in one substation location, meter reading route (RBM), feeder, customer service unit (ULP), or a particular customer service implementation Unit (UP3).

104. Environmental and social responsibility for this PforR at the corporate level will be managed under the DIV TEK, supported by K3L Division and oversight by the ESMS Steering Committee. PLN has assigned team(s) or personnel under its internal organization to ensure that the ESMS can be fully implemented, and the Environmental and Social Policy is fully achieved for IFI-funded projects (starting with ISLE-1 while it is continuously evaluated and modified based on the ISLE-1 implementation experiences, until the ESMS becomes fully functional and eventually applies to all foreign-funded projects/programs, including I-ENET). The provision and assignment of PLN teams or personnel to serve such purposes has been formalized through the Directors' Decree No. 0417.K/DIR/2022, on 'Formation of Committee for Establishment and Implementation of the ESMS of PT PLN (Persero)' ("KepDir 417/2022"). It will be complemented by other Director's Decrees/Regulations that will be issued specifically to ensure ESMS implementation in individual projects.

105. The ESMS Steering Committee, which was established by the KepDir 417/2022, is led by the Directorate of Transmission and System Planning (*Transmisi dan Perencanaan Sistem*, or internally referred to as ‘TRANS Directorate’), represented by the DIV TEK as the Steering Committee Chair. The Steering Committee consists of several PLN divisions and subdivisions that are assigned to supervise, execute, and support ESMS preparation and implementation. The components of the Steering Committee include the Governing Board, Steering Committee Chair, Steering Committee Vice Chair, Secretary, coordinator, environment team, social team, and non-technical team as support.

106. Meanwhile, at the project level, environmental and social management is carried out by each of the PLN’s UID. A summary of roles and responsibilities relevant to the I-ENET PforR is presented in Table 4, while the assessment of PLN’s environmental and social capacity and performance with respect to the environmental and social management and implementation of the proposed PAP is further discussed in the Section E.

Table 5: Institutional Responsibilities for Program’s Environmental and Social Performance

PLN Division/Unit	Function	Roles and Responsibilities on Environmental and Social Management
DIV TEK, with support from K3L Division	Corporate-level environment and social team	<ul style="list-style-type: none"> Identifies or confirms roles, responsibilities, and required capacities of other divisions and units in PLN that considered relevant in the environmental and social management process of specific foreign-funded projects Arranges disclosure of the environmental and social documents and holds environmental and social trainings to ensure standardized understanding by all relevant divisions and units Coordinates with related divisions or units to ensure that environmental and social management is being followed accordingly Reviews and provides feedback on documents, reports, records, or any other deliverables produced by PLN or external resources in relation with environmental and social management implementation Works with regional units to prepare/finalize environmental and social documents, reports, records, and deliverables Coordinates reporting on environmental and social implementation done by all teams Monitoring and reviewing ESMPs’ implementation Leads the management review process of environmental and social implementation (and ESMPs’ implementation, specifically for project construction and operation)
ESMS Steering Committee	Supervise, execute, and support ESMS preparation and implementation	<ul style="list-style-type: none"> Provide strategies to ensure that the ESMS will be implemented by the entire line of PLN structure, including by adjusting ESMS based on implementation experience Ensure that tasks associated with ESMS implementation are properly distributed according to the day-to-day work scope and expertise of each related PLN division and subdivision Ensure that the ESMS implementation is well coordinated and supported with necessary resources, information, and budget Manage proper communications between PLN and other stakeholders in the ESMS implementation Evaluate the ESMS against international environmental and social standards, PLN environmental and social policy and commitment, and

PLN Division/Unit	Function	Roles and Responsibilities on Environmental and Social Management
		stakeholder expectations and requiring the ESMS to be reviewed at least annually and updated as needed.
Project-level Unit <ul style="list-style-type: none"> • UID • P2K • RSPV vendors 	Project-level unit responsible for the electricity distribution network, EVCS, and RSVP projects	<ul style="list-style-type: none"> • Prepare environmental and social documents for distribution network and EVCS projects, including permits, impact assessments, and ESMPs applicable for construction and operation stage • Support coordination with the corporate environmental and social teams, individual project teams, and contractors • Supervise and monitor environmental and social aspects during the construction and operation phase of the distribution network project, in coordination with the corporate environmental and social team.

D.4 Assessment of Policy and Regulatory Framework Against PforR Core Principles

107. Overall, the applicable national E&S management systems as well as PLN ESMS are considered appropriate and relatively robust, although with some gaps in relation to ESSA’s core principles. The scope of the legal and regulatory systems is adequate to address underlying E&S risks, although the assessment noted several recommended actions, which will improve the effectiveness and performance of the Program’s implementation. The results of the comparative analysis are presented below, and its details are presented in Annex 3.

108. The legal and regulatory framework to guide E&S assessment, and mitigate, manage, and monitor E&S risks at the Program level is found to be adequate and consistent with core principles 1, 3, 4, and 5 of the ESSA.

Core Principle 1: Program E&S management systems are designed to (a) promote E&S sustainability in the Program design; (b) avoid, minimize, or mitigate adverse impacts; and (c) promote informed decision-making relating to a Program’s E&S effects.

The Government of Indonesia (GoI) has established a comprehensive system for managing E&S issues at the national and subnational levels. The system encompasses laws, regulations, guidelines, specifications, and standards that are principally consistent with the World Bank’s PforR Policy and Directive and provides a reasonable basis for addressing the E&S issues related to the activities supported under the Program.

Indonesia has a robust EIA process, nuanced for different types, locations, sizes, and circumstances, including provision for an abbreviated EIA (UKL-UPL) for lower risk activities (likely to be associated with I-ENET PforR). Additionally, PLN is progressing to adopt an ESMS that is developed in alignment with the national regulations, PLN existing standards, and IFI environmental and social standards. The ESMS suggests that any activity on environmental and social, including what are required by IFI, be conducted within the framework of regulatory EIA process as much as possible.

The Program incorporates the following elements of good practice in E&S assessment and management:

- i. **Early screening of potential significant environmental impacts.** The government regulatory system mandates activity screening as part of environmental permitting systems, with proponents assuming responsibility for the screening process. The Program will not support activities requiring full environmental impact assessment (Analisis Mengenai Dampak Lingkungan,

AMDAL) under the government's environmental management system. The Program will also apply a set of exclusion criteria (see **Table 2**) that will be embedded in the Program design. Additionally, the PLN ESMS Manual and its MGs require thorough screening for environmental and social risk and impacts in the impact assessment process. Screening process in the ESMS is meant to be limited to environmental and social risk management process and is separate from the engineering or technical risk management process. However, some implementing procedures and trainings are yet to be developed to fully implement the ESMS and training specifically regarding 'Risk screening criteria' is not yet available in the existing training database.

- ii. **Consideration of strategic, technical, and site alternatives.** Alternative analysis is not explicitly required under the AMDAL regulation (Government Regulation No. 22 of 2021), although it suggests avoidance and mitigation of significant impacts/risks. However, The impact assessment process (including screening and categorization stage) in the PLN ESMS Manual and its MGs requires each project to be reviewed against criteria (for example, site screening criteria, exclusion criteria, and so on) and significance risk rating (consequence versus probability) which, among others, are used to consider technical and site alternatives in the project design to avoid, minimize, and mitigate the risk and impact levels. The procedures, personnel, and detailed training to consider strategic, technical, and site alternatives according to ESMS are yet to be fully established.
- iii. **Explicit assessment of potential induced, cumulative, and transboundary impacts.** The transboundary and global risks and impacts are not statutorily required under the existing Environmental Law and its implementing regulation. However, The PLN ESMS Manual and its MGs requires PLN to conduct the impact mapping process to understand the relation among each identified impact. From this process, potential induced, indirect, and cumulative impacts can be identified.
- iv. **Identification of measures to mitigate adverse environmental risks and impacts that cannot otherwise be avoided or minimized.** The mitigation measures outlined in the national regulation (Government Regulation No. 22 of 2021) are classified into three levels: AMDAL (high risk), UKL-UPL (moderate risk), and SPPL (low risk). The regulation mainly relies on project types, project locations, project size, and project spatial planning status to determine the categorization that influences the depth of the respective management plan. Additionally, the PLN ESMS requires projects to develop mitigation measures that are proportional to the risk and impact based on the impact assessment and to incorporate these measures in the ESMP. The ESMS has provided guidelines to their respective mitigation measures in the MGs.
- v. **Clear articulation of institutional responsibilities and resources to support implementation of plans.** In Indonesian regulation, capacities for environmental and social management performance in public investment projects are based on several interrelated capacity development components, starting with detailed regulations and standards. However, the PLN ESMS has described parties within the PLN headquarters and main units that will have certain functions and responsibilities in its implementation. At the project level, specific personnel within the main units are responsible for ensuring environmental and social management.
- vi. **Responsiveness and accountability through stakeholder consultation, timely dissemination of relevant information, and responsive grievance redress mechanisms (GRMs).** As part of the EIA/AMDAL preparation process, engagement of stakeholders became a regulatory requirement in 1986. However, as AMDAL only covers the planning stage of an activity or project, the regulatory requirement for stakeholder engagement is limited to that early stage in an investment project and does not include GRM. Additionally, these requirements do not extend to preparation of UKL-UPL and SPPL. However, The ESMS MGs, particularly the SE-MG requires the project to establish meaningful consultations for all stakeholders including project-affected persons and

other relevant stakeholders (government, nongovernmental organization, and so on). It also requires the project to maintain an appropriate GRM to receive feedback from the stakeholders.

There are no significant inconsistencies between ESSA core principle 1 and the Gol's policies, laws, and regulations related to the E&S management system as well as to the PLN ESMS within the context of the Program operations. While numerous laws and policies are mainly consistent with core principle 1, some gaps identified above has been addressed through application of PLN ESMS to the Program. Upon adoption of the PLN ESMS, preparation of implementing procedures and finalization of personnel assignment need to be accelerated to implement the ESMS and its Management Guidelines. Relevant trainings to be made available in the existing training database, in particular on: 'Risk screening criteria', assessment of alternatives, assessment of potential induced, cumulative, and transboundary impacts. PLN has developed an ESMS Roadmap to provide adequate planning and resource allocation for implementation of the ESMS that include preparation of implementing procedures and guidelines as well as training programs.

Core Principle 2: Program environmental and social management systems are designed to avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program. Program activities that involve the significant conversion or degradation of critical natural habitats or critical physical cultural heritage are not eligible for PforR financing.

Indonesia's legal framework recognizes the need to conserve living natural resources and their ecosystems. Two main laws governing this are Law No. 5 of 1990, concerning Conservation of Biological Diversity and its Ecosystem and Regulation of the Minister of Environment and forestry P.20/MENLHK/SETJEN/KUM.1/6/2018 regarding Protected Flora and Fauna. Additionally, Law No. 11 of 2020, Job Creation Article 22 strengthens efforts to support cultural heritage preservation. Parties that own and occupy registered built heritage (bangunan cagar budaya) will be incentivized with land and building tax reduction. There is general alignment with the Core Principle 2, however, these laws are still inconsistently applied.

The PLN ESMS adopts the mitigation hierarchy of avoidance, minimizing, mitigating and offset of adverse environmental and social impacts. The ESMS Management Guidelines include specific guideline for biodiversity and cultural heritage management. Both MGs require PLN to manage risk and impact from the project toward biodiversity and cultural resource areas based on the potential risks and impacts identified in the screening and assessment process.

The principles in ESMS Biodiversity Management Guideline mainly aim to promote protection and conservation of natural habitats. However, it also includes principles for restoring (or rehabilitating) degraded, damaged, or destroyed areas to a state of beneficial use and assist in the recovery of the affected ecosystems. It also requires critical habitat assessments to be carried out for projects that are located with high probability of high conversation value areas. The Guideline places offsets as a last resort, only if significant residual adverse impacts remain after all technically and financially feasible avoidance, minimization, and restoration measures have been considered. While the ESMS Cultural Heritage Management Guideline provides guidance to identify, assess, and mitigate risk/impact of the project to protect cultural heritage from the adverse impacts of project activities and support its preservation.

The PLN ESMS will be applied to the Program. As part of ESMS implementation actions, relevant trainings to be made available in the existing training database, in particular to ensure adequate implementation

of cultural heritage management. Additionally, existing training modules need to be updated, in particular on 'Avoiding significant conversion or degradation of critical natural habitats or mitigate or offset if not technically feasible' and on 'Support and promote the protection, conservation, maintenance, and rehabilitation of natural habitats.

Core Principle 3: Program E&S management systems are designed to protect public and worker safety against the potential risks associated with (a) the construction and/or operation of facilities or other operational practices under the Program; (b) exposure to toxic chemicals, hazardous wastes, and otherwise dangerous materials under the Program; and (c) reconstruction or rehabilitation.

The Program will operate within a well-laid-out regulatory framework on environment, health, and safety within the context of the construction-related impacts of infrastructure development. Specific policies relevant to the Program's activities include (1) OHS, (2) community health and safety, (3) pollution control including hazardous material, and (4) measures to address child and forced labor. There is general alignment with the Core Principle 3, however, national laws are still inconsistently applied.

Indonesia has robust laws on OHS through its OHS Management System program. The template for the national bidding document for construction activities stipulates the requirement for contractors to establish a construction safety management system that includes cost estimation for implementing the required safety measurements. Contractors are also obliged to implement adequate measures to ensure the protection of construction workers and the communities within the construction area. Unfortunately, these initiatives are applied inconsistently at the contractor and subcontractor levels with minimum supervision from the government. Additionally, PLN has established an OHS Management System and PLN ESMS Labor and Working Conditions Management Guideline and and Community, Health, Safety, and Security Management Guideline also include requirements on health, safety, and security aspects for workers and community.

Indonesia also has ratified the ILO conventions as part of the national law, this stipulates prohibition of child and forced labor. National labor laws include rules that mandate all employers to follow the requirements of national legislation, including the provision of work agreements, minimum wages, social protection, working hours, OHS, prevention of forced labor and child labor, and the provision of a feedback and grievance redress mechanism (FGRM) for workers. Additionally, the PLN ESMS includes a commitment, where PLN will commit to not carrying out, being involved with, or supporting business activities that are associated with prohibited practices.

Pollution prevention and management and hazardous materials management are addressed since introduction of the 1982 Environmental Law. Additionally, hazardous material management aspects are regulated specifically in the ESMS Hazardous Material and Hazardous Waste Management Guidelines. The Program is not expected to use hazardous materials or result minimum hazardous waste. The ESMS adoption and implementation will include requirement for carrying out training/knowledge sharing on hazardous materials and hazardous waste. Some management of hazardous waste under the Program activities are beyond ESMS implementation, in particular the management of used/damaged panels of RSPVs that is the responsibilities of RSPV customers. PLN will need to prepare communication materials for RSPV customers on proper handling of used/damaged panels.

There are some national laws governing the management of impacts of natural hazards, including Law No. 32 of 2009, concerning Environmental Protection and Management, amended in the Job Creation Law

(Law No.11 of 2020), and Law 24/2007 on Disaster Management and associated legislation. Additionally, the ESMS Labor and Working Conditions and Community, Health, Safety, and Security Management Guidelines require assessment and mitigation measures for potential impacts caused by natural disaster. The management plans for these aspects rely on the screening of the site and baseline study on vulnerability of the area to ascertain the type of natural disaster. This requires an Emergency Response Plan to be developed.

Core Principle 4: Program E&S systems manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement and assists affected people in improving, or at the minimum restoring, their livelihoods and living standards.

Overall, Indonesia's applicable laws and regulations have complied with core principle 4. The land acquisition resulted by the Program is minimum. The land acquisition process and management of its impacts are mainly governed by Law No. 12 of 2012 regarding Land Procurement for Development of Public Interest has been amended in Law No. 6 of 2023 concerning Job Creation, Government Regulation No. 39 of 2023 regulates the implementation provisions of Law No. 6 of 2023 Chapter 8 on Land Acquisition for Development for Public Interest, Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 19 of 2021, Presidential Regulation No. 78 of 2023, which amends the Presidential Regulation No. 62 of 2018 on management of social impacts in the context of land acquisition, Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 6 of 2020 provides technical procedures/provisions to implement the management of social impacts in the context of land acquisition, Presidential Regulation No. 78 of 2023, which amends the Presidential Regulation No. 62 of 2018 on management of social impacts in the context of land acquisition, Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 6 of 2020 provides technical procedures/provisions to implement the management of social impacts in the context of land acquisition.

Available laws and regulations already include provisions related to the implementation of a land acquisition plan. Presidential Regulation No. 62/2028 requires a socioeconomic survey, social and environmental impact assessment, and a feasibility study for land acquisition for public interest. According to Law No. 2/2012, the government must have a land acquisition planning document (Dokumen Perencanaan Pengadaan Tanah, DPPT)/Land Acquisition and Resettlement Action Plan (LARAP), which requires analyzing potential E&S impacts due to land acquisition. Additionally, Government Regulation No. 19 of 2021 and the implementing Regulation of Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No. 19 of 2021 stipulate requirements for fair compensation. MAPPI Guidelines on Land Acquisition Assessment for Development of Land for Public Interest, defined SPI 204 (MAPPI, 2018), in which determination of the compensation amount is based on the "fair replacement value" of physical objects and non-physical component.

Omnibus Law No. 6/2023 stipulates mandatory public consultation for land acquisition before determining location. Such consultation is to be for public interest and is to involve the entitled parties, including project managers, service/facility providers, service/facility users, and affected communities. Government Regulation No. 19 of 2021, and the implementing Regulation of Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No. 19 of 2021, regulated that the affected people have the rights to get information related to project development and land acquisition process including location, estimation timeline, and compensation. While consultation regarding land acquisition impacts is also required under the Regulatory EIA (AMDAL) process, as regulated in the Government Regulation No. 22 of 2021 on Implementation of Environmental Impact and Management.

The PLN ESMS Land Acquisition and Resettlement Management Guideline includes provision for Voluntary Land Donation, applicable for distribution lines. Typically, PLN avoids building poles on private lands to the extent possible but if unavoidable, landowners are consulted in advance and their informed consent is secured. It also includes provision to identify and address social impacts from land acquisition and resettlement, including on vulnerable groups and non-titled affected people, compensation with lists the process to calculate compensation. The guideline also includes provision for addressing livelihood impacts.

Upon adoption and implementation of PLN ESMS, capacity gaps for proper implementation of land acquisition and resettlement and stakeholder engagement remain, particularly in the PLN regional units. Although the PLN corporate environmental and social team already has knowledge and experience in carrying out consultation and engagement during the land acquisition process, implementation performance varies between regions.

Core Principle 5: Program E&S systems give due consideration to the cultural appropriateness of, and equitable access to Program benefits, giving special attention to the rights and interests of Indigenous Peoples, and to the needs or concerns of vulnerable groups.

The national law and regulation in Indonesia recognize two official terms of IP: Customary Law Society (Masyarakat Hukum Adat, MHA) and Isolated Indigenous Communities (Komunitas Adat Terpencil, KAT). There are a number of national laws regulates on the IPs: Law No. 41 of 1999 on Forestry, which has been amended by Law No. 19 of 2004, main law regulates indigenous territory within forest areas; Constitutional Court Decree No. 35 of 2012, which confirms that Adat forests are no longer state forests, Village Law No. 6 of 2014 acknowledges the existence and rights of MHA, Law No. 27 of 2007 on Coastal Zone and Small Island Management acknowledges the existence of MHA provided they are recognized and requires consultations with MHA for any development in coastal areas, Law No. 23 of 2014 on Local Government recognizes the existence of Adat institutions (*lembaga adat*), Law No. 11 of 2010 on Cultural Heritage recognizes MHA as the owners of their cultural heritage and grants them authority to manage it, and Government Regulation No. 22 of 2021 on Implementation of Environmental Impact and Management indicates that consultations with the affected communities (including but not limited to IP) are required during the Regulatory EIA (AMDAL) process. Additionally, the Alliance of Indigenous Peoples of the Archipelago (Aliansi Masyarakat Adat Nusantara, AMAN), as the independent community concerning IP rights in Indonesia, uses the term Masyarakat Adat. In addition, identification and prioritization of customary forest legalization is registered under the Customary Territory Registration Organization.

However, there is no explicit requirement or provisions in the management of impacts on IP from development projects, or provisions to obtain IP consent related to project activities, which may affect their live. This may limit the IP's opportunities to benefit from exploitation of customary resources and indigenous knowledge (if any). Attention to vulnerable IP groups is covered under the existing regulations but this is limited to the recognition of the remote indigenous community by the Ministry of Social Affairs. There is also an emerging concern regarding the participation of vulnerable groups and gender balance in the implementation of infrastructure development projects. This new concern is due to the updated EIA/AMDAL policy and regulations and of increasing attention to conformity with SDGs. The EIA/AMDAL document, under its new standards, needs to consider minorities and vulnerable groups. This provision is however limited to requesting their participation in the public consultation of directly affected communities.

The PLN ESMS Indigenous People Management Guideline includes provision to undertake meaningful consultations if the IP are potentially affected. In practice, PLN project units have been using cultural-sensitive approaches in areas where traditional communities or IP presence and potentially impacted out of respect for IP and to obtain approval of project planning, for example, through traditional ceremonies before project commencement, especially if any acquisition of indigenous land or removal of cultural object is involved. This is as demonstrated through the documentation of activities provided during this assessment.

E INSTITUTIONAL CAPACITY AND PERFORMANCE ASSESSMENT

109. This section assesses PLN's existing institutional capacity and performance at all levels to manage environmental and social risks and impacts and outlines organizational roles and responsibilities in implementing the management system, as well as I-ENET Program-specific arrangements. Further analysis of the gaps identified in PLN's environmental and social management system in the context of the I-ENET Program is incorporated in the overall assessment of PLN's system (as presented in Annex 3). It builds on the assessment that has been undertaken for the previous ISLE-1 ESSA and PLN's experiences with other internationally funded projects and includes consideration of the early stages of ISLE-1 implementation.

E.1 PLN's Experience of Environmental and Social Risk Management in Similar Projects

110. From the previous ISLE-1 PforR's ESSA review results, it is evident that PLN has extensive experience with investment projects/programs financed by the World Bank and other multilateral development banks (MDBs) for generation, transmission, and distribution, using various financing instruments.

111. PLN has been monitoring environmental and social performance during the implementation of several ADB and KfW RBL programs, with focus on distribution and access expansion (that is, one for Sulawesi and Nusa Tenggara from 2018 to 2023, and another for Kalimantan, Maluku, and Papua from 2021 to 2025). PLN is successfully managing the health and safety of individuals, communities, natural habitats, or ecosystems due to air, water, or soil contamination, as well as health and safety risks to workers using the Environmental and Social Safeguards Technical Guidelines and the Code of Practice. No significant environmental and social impacts have occurred, and PLN's capacity in sound environmental and social management through application of the Guidelines and the Code of Conduct has been enhanced. However, challenges persist, as staff rotation and differences in environmental management procedures, even between MDB-funded projects, create confusions and delays in learning for new staff.

112. PLN also has experience in application of environmental and social exclusion criteria in the screening process. As part of implementation of the Indonesia Power Distribution Development PforR (P154805), which built about 106,000 km of distribution lines in Sumatra, according to the Implementation Completion and Results Report (ICR), PLN successfully applied the exclusion criteria in the initial activity screening process and managed the Program's environmental and social risks adequately by excluding activities (a) located in or adjacent to the protected area/forest or forest area, (b) causing physical or economic displacement of persons/households, and (c) impacting IP. Environmental and social training was provided to seven regional offices, where the PforR was implemented, on the use of screening forms, management of hazardous wastes, and good construction management. Additionally, during preparation of the ISLE-1 PforR, PLN corporate (DIV TEK), supported by the ISLE technical experts, carried out environmental and social screening for the identified investments based on exclusion criteria of the ISLE-1 PforR and will continue to do so throughout ISLE-1 PforR implementation. Similar exclusion criteria will be applied for this Program.

113. PLN has experience in the Indonesia Power Transmission Development (IPTD) Project Phase I (P117323) and II (P123994), where a Feasibility Study Stage ESIA and Land Acquisition and Resettlement Action Plan (LARAP) were developed as part of project financing requirements. PLN also implemented a Pumped Storage Technical Assistance Project (P112158), which involved the preparation of an ESIA, Cumulative Impact Assessment (CIA), and LARAP for the Upper Cisokan Pumped Storage (UCPS). Recently, under the Development of Pumped Storage Hydropower Jawa Bali System Project (P172256), PLN is updating the ESIA, LARAP, and other environmental and social instruments for the UCPS before commencement of the project construction while preparing an ESIA, Stakeholder Engagement Plan, and

LARAP for the Matenggeng Pumped Storage Project (which is still in progress at the time this I-ENET ESSA is being developed).

114. It is also noted that implementation of the ISLE Technical Assistance (P169259) is ongoing and being utilized to provide significant capacity development support for the operationalization of PLN's ESMS. The ESMS, which is currently being finalized, has also incorporated recommendations for improvement in PLN's capacity-building program, should significant environmental and social risk and impacts occur, resulting from its operation.

115. In addition, PLN has experience with Multilateral Investment Guarantee Agency (MIGA) projects where MIGA guarantees PLN's monthly payments to IPPs for selected geothermal and hydropower projects based on their eligibility, including environmental and social eligibility with the application of international standards. The guarantee facility has been closely monitored by PLN as per the agreement between PLN and MIGA for the effectiveness of impact mitigation efforts.

116. PLN has experience in implementing several projects financed by the World Bank and other MDBs and has a good track record in complying with the international standards on environmental and social risk management, including the World Bank's safeguard policies. Accordingly, PLN has been building up its environmental and social management capacity encompassing various stages of the project cycle.

E.2 PLN Corporate-level Management System

117. The ISLE-1 PforR ESSA has thoroughly assessed PLN's capacity in environmental and social risks and impacts management, including reviewing its existing Integrated Management System (IMS), which covered the key principles of the ESIA. The system incorporates compliance requirements for all Indonesia and local laws and regulations, international standardization, mainly ISO 14001 Environmental Management System, and ISO 9001 Quality management System. In addition, several environmental- and social-related regulations (Board of Directors Regulations [Perdir]) were issued to complement the IMS, such as Perdir 153/2019, on safeguard system and Board of Directors Decree (policy) 134.K.DIR/2007 on environmental, health, and safety. The PLN IMS serves as the basis for PLN to assess and manage potential significant environmental and social impacts of its operations. However, as was assessed in the ISLE-1 PforR ESSA, the IMS is mainly focused on environmental, health, and safety aspects, with limited reference for project impacts on livelihood restoration, IP, cultural heritage, and meaningful consultations and stakeholder engagement beyond national requirements on public consultations in the impact assessment process.

118. Following approval of the ISLE-1 PforR funding, a range of improvements are being conducted to address identified gaps in the existing IMS to meet the World Bank requirements. An integrated ESMS is being finalized and subject to World Bank approval. The core element of the ESMS (ESMS Manual) has been approved by the PLN Director of Transmission and System Planning and adopted on December 14, 2023, while the rest of the components (MGs and IPP Environmental and Social Guideline for Solar PV) are undergoing finalization. Once the complete package of the ESMS has been finalized, PLN will submit it for World Bank review and approval before it is applied in the ISLE-1 PforR and this Program.

119. For implementation of the ESMS, PLN has established an ESMS Steering Committee, under PLN's Director Decree No. 417/2022, led by the TRANS Directorate (as the Governing Board) and the DIV TEK (as the Chair). The Steering Committee comprises various divisions and subdivisions at the headquarters, which will work to ensure gradual implementation of the ESMS for selected internationally funded projects. The ESMS itself outlines organizational roles and functions that PLN divisions, subdivisions, and

regional units must take on. Among these, core roles and functions specified in the ESMS include the environment and social team, project planning team, project construction team, and project operation team, which coordinated from time to time within the respective project stage, as regulated in the ESMS. At the time this ESSA is prepared, PLN is amending its organizational structure at the headquarters, which may affect the naming and grouping of the current divisions/subdivisions stated in the ESMS. Regardless, it will be ensured that the existing or new divisions/subdivisions are available to fill the roles and functions prescribed in the ESMS (including as the member of Steering Committee).

120. The ESMS identifies the basic capacity that PLN divisions/subdivisions/regional units require to perform their roles in implementing the ESMS. It also identifies the training materials currently available within PLN and those that need to be developed. PLN divisions at the headquarters in charge of personnel capacity building (that is HTD Division and PLN University) are currently compiling an inventory of training syllabus and modules of topics that are already available in the PLN University archive database or in the regional training units ('UPDL'). As reported by HTD and PLN University, PLN typically hires third-party experts to develop training materials that have not yet been developed, with a longer-term plan of allowing PLN-owned personnel to be trained and gain more experience, so ultimately, the personnel could update those training materials in such a way that they become more relevant to address project-specific risks/impacts.

121. PLN, with the support of the World Bank, has developed an ESMS Roadmap that describes action plans to be taken by PLN to implement the ESMS. This roadmap estimates that gradual improvement/adjustment in PLN's way of business until it can fully implement the ESMS will span the period from 2024 to 2027. The action items in the roadmap include improvements or adjustments in PLN's administrative/managerial aspects, procedures and practices, organizational structures, and staffing/personnel-related actions. Regarding PLN's institutional capacity, the roadmap requires some actions that are expected to be delivered within 2024, mainly provision of an environmental and social focal point from PLN in the headquarters and regional offices, supported by consultants/technical experts. The focal points are required to drive various processes of ESMS implementation (for example, supporting the Steering Committee, conducting audits, developing templates/reports for ESMS monitoring, developing TORs for contractual agreements, developing, or updating Standard Operating Procedures [SOPs], and so on). They will also evaluate the existing training materials and work with HTD and PLN University to accelerate the preparation of missing training materials and expedite actual capacity building for project-related personnel.

122. From December 2023, PLN hired four individual technical experts in environmental and social under DIV TEK (with support from ISLE-TA). These experts conducted a technical review of the ESMS contents and based on that, will develop implementing procedures/work instructions to ensure that all provisions in the ESMS can be implemented at the project level. The hired environmental and social technical experts work from the PLN headquarters in Jakarta and do not directly oversee environmental and social performance at the project level. Based on that, PLN is planning to establish a structural position for environmental and social personnel at regional units to support the technical environmental and social experts at the headquarters in overseeing the project. This plan, initiated approximately in January 2024, is yet to be detailed/finalized to date.

E.3 PLN Unit/Project Management System

123. For investments relevant to the I-ENET Program, at the project level, UIDs have different environmental and social systems developed for respective projects they are responsible, operating

independently of the PLN's own systems (as some already have their own integrated management system certified), though following the corporate's IMS. The planning, construction, and operation of distribution networks (including distribution lines and transformers) and EVCS as well as installation of RSPV, AMI, and SCADA/ADMS in the Program's geographical boundaries are the responsibility of six UIDs, that is, UID Jaya, UID Banten, UID Jabar, UID Jateng and DIY, UID Jatim, and UID Bali, in coordination with the PLN headquarter units. The UID's scope of responsibility includes environmental and social management of the investments.

124. UIDs in the Program geographical boundaries have developed several environmental and social assessment documents for construction and/or upgrade of the distribution networks in the form of UKL-UPLs and SPPLs. For distribution lines passing through forestry areas, the UID will coordinate with the local authorities depending on the type of forest area (with provincial governor office for protected and production forest and with Natural Resources Conservation Center (*Balai Konservasi Sumber Daya Alam*, BKSDA) to enter into a cooperation agreement for use of land (*perjanjian kerja sama*, PKS). Additionally, the UID have prepared an environmental and social assessment document in the form of a National Document for Environmental Evaluation (*Dokumen Evaluasi Lingkungan Hidup*, DELH) or Document for Environmental Management (*Dokumen Pengelolaan Lingkungan Hidup*, DPLH) for distribution lines that are already in operation but have not yet obtained environmental approval/permit due to technicalities in the approval process. The environmental and social assessment documents evaluated during ESSA preparation shows that the assessments were done in a comprehensive manner and already included potential significant impacts such as impacts to biodiversity, pollution control and management, hazardous waste management, OHS and security aspects, community engagement, and management for the risk of fire. The implementation progress of these impact management measures are also being periodically reported to the relevant institutions. While on the permitting issue, UIDs supported by PLN Corporate level has been coordinating with MOEF to resolve this issue through carrying out series of meetings. Even though resolving this issue is beyond the Program, distribution line networks that operate without obtaining all relevant permits are considered non-compliance and will not be excluded from this Program.

125. Regarding management of social impacts/risks from distribution lines, including management of minor impacts from land acquisition (or VLD) , each of the assigned UIDs supported by UP2K will be responsible for undertaking the required measures to ensure compliance with the ESMS and relevant social MGs (including the LAR-MG, CH-MG, and SE-MG). These would include conducting screening and impact assessments; preparing reports or impact mitigation plans; and documenting compensation, VLD, and consultation processes as relevant. The UID will apply the relevant MGs, under the supervision of the corporate environmental and social team, with the support of the environmental and social expert team contracted under the ISLE-TA. Additionally, before (or during the initial stage of) the Program commencement, topic-specific training modules on each MG will be developed by the corporate team (oversight by the ESMS Steering Committee). These trainings will also be provided for the relevant personnel/team in the UID.

126. It is understood that in the RSPV business, the RSPV customers may choose RSPV services vendor for installation and O&M of RSPV. The management of RSPV installation and/or operation will be under this vendor, making them the main responsible party for ensuring appropriate management of potential impacts/risk on OHS risks from RSPV installation and community health and safety from the RSPV operation, as well as allegation of forced labor risks in the solar supply chain. Based on discussions with one of the vendor partners, during the ESSA preparation, the installation of RSPV will be done by trained and certified personnel, while the site location will be thoroughly screened and assessed before any

installation, including determining the structural safety of the building. Even though structural safety and stability are not required in applying for PLN's approval for construction and installation of RSPV, RSPV vendor partners considered this step to ensure that the building can withstand the load from the solar panels and its infrastructure. In the cases where the RSPV customers only opted for direct purchase model, the RSPV vendor will not be involved in O&M of RSPV; therefore, the customers will be responsible for the management of used/damaged panels.

127. The ESMS (including relevant MGs on community health, safety and security, and labor and working conditions) will be used as reference for practical guidelines in managing the identified impacts/risks. Considering PLN's limited direct role in the overall RSPV business, the enhanced measures to prevent allegations of forced labor in the supply chain will be built into the relevant document from PLN to RSPV customers, which will require the RSPV facilities to adhere to the Indonesian law, which includes the prohibition of forced labor. A specific declaration will also be required from PLN's direct contractors if PLN is implementing or procuring RSPV.

128. As part of ESSA preparation, an existing UKL-UPL document developed for establishment of EVCS by PLN's regional main unit (UID) of Bali in 2022 was reviewed. This document is prepared as mandated by the MOEF under its Directive Letter No. S.562/powk/P2T/PLA4/3/2022. The document includes the establishment of EVCS in Bali Province, including 15 fast charging, 2 ultra-fast charging, and 12 movable home charging EVCSs, known to be established in Bali in relation with the G20 Conference in October 2022. Based on review of UKL-UPL of EVCS establishment in Bali Province, it was understood that the project considers some potential environmental and social impacts with low risk (reportedly due to low probability level), that is, (a) pre-construction: negative perception from public; (b) construction: traffic disturbance, aesthetic disturbance (including sanitary wastewater), and OHS incident; (c) operation: fire incident and OHS incident; and (d) post-operation: noise emission, dust emission, and traffic disturbance. Some management and monitoring measures have been assigned to respective impacts. However, some notable gaps against the principle of ESMS, IFI standards, and best practices should be considered in future impact assessment processes. They include the following:

- (a) Some management action items that are likely required to address the identified impacts are not mentioned, such as, development work risk assessment, development of detailed work, and emergency response procedures and dissemination (for example, through toolbox/tailgate meeting), equipment inspection, personnel competency screening, reporting and communication methodology, and specific requirements to do some high-risk work (for example, Lock-Out and Tag-Out [LOTO] procedures for electrical work, scaffolding and body harness for work at height, and so on).
- (b) There is no management and monitoring action items mentioned for identified impact from sanitary wastewater during construction (for example, provision of portable toilet or permission for workers to use available public toilet with appropriate septic systems).
- (c) UKL-UPL did not identify possible use of hazardous material; however, during operation or post-operational stage, it is expected that some hazardous waste is produced (for example, lube oil and so on); hence, it still needs to be managed appropriately.
- (d) UKL-UPL does not specify grievance mechanism from the public apart from regular direct interview by PLN.
- (e) UKL-UPL does not specify emergency response process that involves nearby communities (for example, if a community notices that that EVCS or charge EV is on fire).

- (f) UKL-UPL does not specify security measure against criminal acts (for example, theft of EVCS components, vandalism, and so on), particularly when the project is near community residences.

129. A few EVCS units located in Bali Province and West Java were visited during ESSA preparation, and the ESSA team found that most of the EVCS units were already implementing the environmental and social management measures as prescribed in their UKL-UPL document. However, considering the gaps in UKL-UPL presented above, there are some improvements required in the operation of EVCS. PLN plans to prepare guidelines or an Environmental and Social Code of Practices (ESCAP) to guide the construction, installation, and operation of EVCS, for both PLN-owned and third party-owned EVCS.

130. EVCS can be owned by PLN itself or in collaboration with third parties. Based on information available from UID Bali and West Java, there is no need for new land for EVCS installation. This approach is applied to accelerate EVCS development and minimize social issues in the field. All EVCS installations are carried out on existing infrastructure, both in buildings owned by PLN, government buildings, and buildings owned by third parties.

131. As of September 2023, UKL-UPL for EVCS no longer can be combined for each province instead an UKL-UPL need to be prepared for each EVCS location through OSS. When an EVCS is relocated, a new UKL-UPL will need to be prepared. There is no written record of the above arrangement between PLN and MOEF; however, this has created further delays in preparing environmental and social assessment and obtaining environmental approval/permit before operation of the EVCS.

132. PLN UIDs also have experience in implementing program-level environmental and social risk management based on policies of IFIs such as the World Bank, ADB, KfW, and AIIB, which include risk screening, activities and investments of transmission lines construction/upgrades, distribution/substation construction, RSPV, and EVCS. The environmental and social screening form has been utilized to screen high-risk activities for the Sustainable and Reliable Energy Access Program (SREAP), an ADB RBL Program, in Western and Central Java. The screening was done for distribution lines, substations, and EVCS investments included as part of the RBL program. The screening mainly focused on the biodiversity aspect (forestry status of the project location), land acquisition and impact to the livelihood aspect, and impacts to IPs.

133. Furthermore, PLN UIDs' roles and responsibilities include installation of new/replacement metering equipment. Each UID has issued its own work instruction following PLN corporate standards. The work instructions will also be applied for installation of AMI. Each UID will involve certified contractors to carry out this service to which only trained personnel will be assigned. To date, no OHS incident has been reported related to installation of metering equipment.

F ENVIRONMENTAL AND SOCIAL RECOMMENDATIONS AND ACTIONS

134. The following recommendations were made considering specific environmental and social risks identified during the preparation of the ESSA. Further details of the recommendations are presented in Table 6.

135. The recommended measures (on the following page) were shared in writing with PLN and included in the Project Appraisal Document. The draft ESSA report will be circulated to relevant stakeholders with an executive summary in Bahasa Indonesia before finalization. Public consultation will be held on Month Date2024 (This ESSA will be updated upon completion of public consultation).

136. The World Bank will undertake periodic monitoring of the progress of the proposed environmental and social PAPs. Such monitoring will be part of joint-regular implementation support missions between PLN and the World Bank and DLI verification processes by independent verification agent. Technical support for the implementation of the proposed action plans will be provided on a need basis.

Table 6: Environmental and Social PAPs

No.	Action	Responsibility	Timing	Completion Measures
PAP 1	PLN shall maintain, allocate sufficient resources to, and apply to all activities throughout the Program, an ESMS with a Steering Committee with technical experts	DIV TEK, DIV OKI, DIV PPI, DIV MEB, DIV MKJ, DIV RSD, PUSDIKLAT, UID Jaya, UID Banten, UID Jabar, UID Jateng and DIY, UID Jatim, and UID Bali	Recurrent/ Annual	Letter issued by PLN confirming to the Bank PLN's annual work plan for ESMS implementation and capacity building as per the ESMS Roadmap, all in form and substance satisfactory to the Bank.
PAP 2	PLN shall develop and disseminate guidance on (i) construction, labor and waste management for RSPV, including damaged panels and batteries (ii) SOPs for installation of RSPV; and (iii) prevention of forced labor in the solar supply chain	DIV K4L, DIV TEK, UID Jaya, UID Banten, UID Jabar, UID Jateng and DIY, UID Jatim, and UID Bali	Within 12 months of Program effectiveness	Letter issued by PLN Corporate to UIDs on requirement for dissemination of the guidance to RSPV vendors and customers, all in form and substance satisfactory to the World Bank.
PAP 3	<p>PLN to develop and disseminate guidelines or ESCOP to guide construction, installation, and operation of EVCS in accordance with PLN ESMS, national regulations, and World Bank environmental and social Core Principles, all in form and substance satisfactory to the World Bank. The ESCOP includes, but is not limited to, the following aspects:</p> <ul style="list-style-type: none"> • Environmental and social measures for limited civil work activities • Safety measures for location selection of the EVCS (screening for EVCS location based on safety issue) • OHS measures for installation processes (including skills and experience required) • OHS measures for operation of EVCS • Emergency preparedness and response in anticipation of fire and explosion risks during EV charging. 	DIV K4L, DIV TEK, UID Jaya, UID Banten, UID Jabar, UID Jateng and DIY, UID Jatim, and UID Bali	Within 12 months of Program effectiveness	Letter issued by PLN Corporate to UIDs for adoption of the EVCS ESCOP in preparation, construction, and operation of EVCS

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ANNEX 1. RESULTS AREAS AND DISBURSEMENT-LINKED INDICATORS (DLIS)

Results Area	DLIs	Description	Financial Allocation (US\$, millions)
Results Area 1: Increased capacity, resilience, and reliability of the grid	DLI 1. Increased capacity of the distribution grid	DLR 1: 3,600 MVA of new or upgraded distribution transformers (cumulative) have been connected to PLN's low and medium voltage distribution grid in the Java, Madura, and Bali Region.	50
	DLI 2. Increased delivery of electricity to customers	DLR 2: Volume of PLN's annual electricity sales to its customers in the Java, Madura and Bali Region has been increased by 42,000 GWh (cumulative), compared to the baseline of 202,765 GWh in 2023	100
	DLI 3. Increased reliability of the distribution grid	DLR 3: SAIDI in the Java, Madura and Bali Region has been decreased by 12 percent (cumulative), compared to the baseline of 100 percent in FY2023.	50
Results Area 2: increased digital transformation and efficiency of the grid	DLI 4. Advanced meters installed and operational	DLR 4: 3,750,000 additional advanced meters (cumulative) have been installed and became operational in the Java, Madura, and Bali Region.	100
	DLI 5. Supervisory Control and Data Acquisition and Advanced Distribution Management System implemented	DLR 5.1: PLN has approved a roadmap for the implementation of SCADA ADMS systems in the Java, Madura, and Bali Region, in accordance with the details set forth in the Verification Protocol. DLR 5.1: PLN has upgraded the Master SCADA in two distribution control centers in Java, Madura, and Bali Region, in accordance with the details set forth in the Verification Protocol.	10
Results Area 3: Increased integration of distributed energy resources	DLI 6. Increased implementation capacity for distributed energy resources	DLR 6.1: PLN has approved a roadmap for the implementation of Distributed Energy Resources in the Java, Madura, and Bali Region, in accordance with the details set forth in the Verification Protocol. DLR 6.2: PLN has conducted training and capacity-building programs for at least 8,000 staff (23% of which are women) in emerging Distributed Energy Resources and associated power sector technologies.	10
	DLI 7. Increased integration of RSPV capacity	DLR 7: 300 MW of rooftop solar power generation capacity (cumulative) have been installed and connected to PLN's distribution grid in the Java, Madura, and Bali Region.	100
	DLI 8. Increased integration of EVCS	DLR 8.1: 1,050 Public EVCS (cumulative) have been installed and became operational, with a connection to PLN's distribution grid, in the Java, Madura and Bali Region.	80

Results Area	DLIs	Description	Financial Allocation (US\$, millions)
		DLR 8.2: 15,000 of Home EVCS (cumulative) have been installed and became operational, with a connection to PLN's distribution grid, in the Java, Madura and Bali Region.	
	Total		500

ANNEX 2. ENVIRONMENTAL AND SOCIAL INITIAL SCREENING

INDONESIA

Indonesia - Electricity Network Transformation (I-ENET) (P180992)

PROGRAM-FOR-RESULTS FINANCING

Initial Concept Stage Environmental and Social Risk Screening January 2024

Program Development Objective and Result Indicators

1. The PDO is to increase the delivery, reliability, and sustainability of electricity supply in the Java, Madura, Bali region in Indonesia.
2. The progress toward achieving the PDO will be measured through the following key indicators:
 - Delivery of electricity increased (GWh)
 - Distribution lines added or upgraded (km)
 - Increase in distribution network capacity (MVA)
 - Distribution losses reduced in Java, Madura, and Bali region (%)
 - Advanced Metering Infrastructure deployed (#)
 - Reduction in System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI)
 - Solar PV (MW) and EVCS (#) integrated into electricity networks
 - Adoption of SCADA/ADMS and DER roadmaps by PLN.
3. These indicators would be reflected through the following RAs:
 - **RA1: Increased delivery, reliability, and efficiency of electricity supply.** Investments in construction and upgrade of low and medium voltage distribution lines and transformers, enabling infrastructure for SCADA/ADMS to support remote control and automation in networks, and deployment of AM).
 - **RA2: Increased integration of DER.** Integration of DER in electricity networks including investments in RSPV, off-grid small-scale PLN-owned solar PV and BESS, and EVCSs.
 - **RA3: Strengthened institutional capacity.** Support capacity building and training activities on energy transition and climate resilience, including on smart grid and DER technologies, mainstreaming gender aspects and increasing awareness on sexual exploitation and abuse/sexual harassment (SEA/SH), and climate resilience and network planning.

Program Boundary

4. The proposed I-ENET Program will cover expenditures in the Java – Madura – Bali region. The Program outcomes are expected to be achieved based on achievement of results in three areas: (a) increased delivery, reliability, and efficiency of electricity supply; (b) increased integration of DER; and (c) strengthened institutional capacity. The PForR is expected to support (a) investments in construction and upgrade of low and medium voltage distribution lines and transformers, enabling infrastructure for SCADA/ADMS, deployment of AMI; (b) investments in RSPV (and BESS for off-grid systems) and EVCS; and (c) capacity building and training activities on smart grid and DER technologies, gender and SEA/SH, and climate resilience. The proposed activities are expected to be small to medium scale. Activities that are likely to have significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or affected people are not eligible for financing under the World Bank PforR instrument and will be excluded from I-ENET Program.

Purpose of Initial Concept-Stage Environmental and Social Risk Screening

5. The initial concept-stage environmental and social risk screening aims to identify potential environmental and social risks and opportunities that may be associated with the Program that warrant further analysis through preparation of the ESSA. The screening process is conducted based on the information available at the concept stage, by identification of the likely environmental and social benefits and adverse impacts and risks associated with Program activities, and includes important contextual, institutional, capacity, or reputational risk issues that may have significance for Program design and implementation.

6. A more in-depth ESSA will be carried out during Program preparation to identify gaps considering the core principles and develop gap-filling mitigation to be applied under the Program, agreeable to the World Bank and PLN. The assessment of existing ESMSs and implementation capacity of PLN will also be included as part of the ESSA.

Key Results and Findings of the Initial Concept-Stage Environmental and Social Risks Screening

7. The initial risk screening methodology considers Program risks using four criteria: likely environmental effects, contextual risk factors, institutional capacity and complexity risks, and political and reputational risks. Table A provides detailed descriptions of the risk screening.

Likely Environmental and Social benefits

8. The Program is expected to lead to substantial and long-term environmental benefits by supporting Indonesia in transitioning to RE and reducing GHG emissions air and water pollution and use of water resources, especially for the Java-Madura-Bali region. In particular, the Program has positive environmental impacts by promoting the development of renewable and clean energy; reducing air and water pollution by increasing the deployment of RE and reducing dependency on fossil fuels; increasing national resilience to climate change with increased access to electricity and enable the population to recuperate faster from an economic perspective; and promoting good environmental and social management practices within PLN.

9. The Program's potential social benefits are substantial and long term. The Program aims to build and upgrade low and medium voltage distribution lines and RSPVs and Battery Energy Storage Systems (BESSs) for off-grid systems, thereby improving access of local community members without, or with

unreliable, access to electricity, providing them means to improve livelihood and living conditions. Experience shows that AMI will improve efficiencies in electricity consumption and overall reduce household expenditure on electricity. Construction and O&M activities of the Program likely generate many short-term workers and a smaller number of long-term employees. Employment opportunities for females would also be promoted through training and incentives under the Program's components. The local community in the Program area will likely benefit from the upgrade of infrastructure (for example, renovation of the existing inter-village roads and the Program's internal and access roads).

Adverse Environmental and Social Risks and Impacts

10. The Program will support small- to medium-scale investments ranging from (a) investments with low environmental and social impacts, such as AMI, enabling infrastructure for SCADA/ADMS to support remote control and automation in networks to (b) investments with moderate environmental and social impacts such as construction and upgrade of distribution lines and transformers and integration of DER such as RSPV, PLN-owned small-scale solar PV powerplants in combination with BESSs, and EVCSs in electricity networks. Activities with potential significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or local communities, including large-scale land acquisition and resettlement, are not eligible for financing under the World Bank PforR instrument and will be excluded from I-ENET Program.

(a) Environmental Risk

11. The environmental risk is considered Moderate and will further be assessed and confirmed as part of the ESSA. The Program's overall environmental outcome is expected to be positive; however, some environmental risks are identified, in particular (a) potential temporary and site-specific potential adverse environmental risks and impacts associated with the construction of small- to medium-scale infrastructure (low to medium voltage distribution lines and transformers and small-scale PLN-owned solar PV; (b) low probability of adverse effects on community and OHS from the transport of equipment and installation of RSPV, EVCSs, and AMI; and (c) potential impacts from operations of the investments from hazardous waste generation, use of water resources, fire and explosion risk from faulty wiring and battery storage systems and malfunction of the EVCSs. The impacts are predictable with low to moderate significance, reversible, and site specific, and can be avoided, minimized, or mitigated by alternative site location assessment, adoption of state-of-the-art technologies, good engineering design, and with proper handling of used solar panels in collaboration with primary suppliers.

(b) Social Risk

12. The social risk is estimated to be Moderate, which will be further assessed and determined as part of the ESSA, based on the assessment of the social risks intrinsic to the program activities, and their contextual, institutional, capacity, or reputational risks. While overall social impacts of the Program are positive, negative social impacts of limited scale and scope are likely to occur, such as limited land acquisition and health and safety risks to workers and local communities. Social risks may also exist in forced labor in the solar power supply chain and will be managed by requiring RSPV facilities to adhere to national laws prohibiting forced labor in the approvals issued by PLN, as well as requiring PLN's direct contractors and IPPs to sign a declaration on the prevention of forced labor in the supply chain, – with terms agreeable to the World Bank. Other political and reputational risks are associated with other RUPTL 2021 – 2030 activities that PLN will conduct, both in the Program areas and outside. The risk is considered not significant because activities supported by the Program are not anticipated to involve significant risks.

(c) Contextual Risk

13. The Program's contextual risk is also considered as Moderate. The location of Program activities expands to the Jawa-Madura-Bali region, which is considered a more developed part of Indonesia. Although the exact locations of project siting for investments are not known at this stage, they will likely be in urbanized areas with a small possibility of being located in or near sensitive habitats. Additionally, existing data do not indicate IP communities are present. However, further assessment will be conducted under the ESSA to further assess the risk if present.

(d) Institutional Capacity and Complexity Risk

14. **The Program's institutional capacity and complexity risk is also rated Moderate** because PLN has relatively well-established systems and capacity to manage the types and scale of investments expected under the Program. PLN also has considerable experience in executing World Bank projects, with demonstrated capacity in managing environmental and social risks for similar activities. Additionally, PLN has successfully implemented the ADB-funded RBL programs that focused on distribution network construction, while the scale and scope of environmental and social impacts under small-scale solar PV will be within the range that PLN is able to manage overall. PLN is currently finalizing the preparation of an ESMS Manual that is aligned with the World Bank Core Principles. As part of the efforts to establish its corporate ESMS, PLN developed the Environmental and Social MGs, based on but further expanding the existing guidelines that were developed with the support of the ADB for implementation of its RBLs. PLN has experience in risk assessments and mitigation required for applying the MGs, especially for the scale and scope of risks associated with activities implemented under the I-ENET Program. Upon adoption, PLN will use the ESMS to manage the environmental and social impacts of the Program. Capacity development support will be provided through the ongoing ISLE-1 PforR and prospective GreFi Project, both of which have RETFs that support the environmental and social capacity development of PLN.

Table A: Initial Environmental Impacts and Risks Screening

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
	Overall Program	<ul style="list-style-type: none"> The Program is expected to lead to substantial and long-term environmental benefits by supporting Indonesia in transitioning to RE and about reduction of GHG emissions and air and water pollution and use of water resources, especially for the Java-Madura-Bali region. In particular, the Program has positive environmental impacts by supporting Indonesia’s energy transition by promoting the development of renewable and clean energy; reducing air and water pollution by increasing the deployment of RE, which means less impact on community health; reducing dependency on fossil fuels; increasing national resilience to climate change with increased access to electricity and enabling the population to recuperate faster from an economic perspective; and promoting good environmental and social management practices within PLN. 	<ul style="list-style-type: none"> The Program’s potential social benefits are substantial and long term. The Program aims to build and upgrade low and medium voltage distribution lines and RSPVs and BESSs for off-grid systems, thereby improving access of local community members without, or with unreliable, access to electricity, providing them with the means to improve livelihood and living conditions. Experience shows that AMI will improve efficiencies in electricity consumption and reduce household expenditure on electricity overall. The Program’s construction and O&M activities will likely generate many short-term workers and a smaller number of long-term employees. The opportunities for employment for females would also be promoted through training and incentives under the Program’s components. The local community in the Program area will likely benefit from the upgrade of infrastructure (for example, renovation of the existing inter-village roads and the Program’s internal and access roads).
<p>RA 1: Increased delivery, reliability, and efficiency of electricity supply</p>	<ul style="list-style-type: none"> Construction and upgrade of low and medium voltage distribution lines and transformers 	<p>The likely environmental effects are rated Moderate.</p> <ul style="list-style-type: none"> The construction of low and medium voltage distribution lines will be situated along existing road infrastructure with the pole height between 5 and 6 m from road surface, and there will be no land clearing envisioned. The construction of infrastructure supported by the Program may potentially result in adverse risks and impacts related to moderate environmental degradation due to construction impacts on air quality (dust and emissions), noise and vibration level, and water and soil; inefficient use of energy and water resources as well as hazardous waste generation during construction activities; community health and safety risks related to 	<p>The likely social effects are rated Moderate.</p> <ul style="list-style-type: none"> The low and medium voltage distribution line networks are normally built within road ROW owned by the district or city or provincial government, and the siting of concrete poles on private lands is avoided to the extent possible. Only less than 0.2 m² of land is typically needed per pole, and the poles are between 5 and 6 m of height. Where poles need to be built on private lands, the owners’ agreement is normally secured in advance during the planning stage including regarding any impact or disturbance that may be caused on private assets, such as cutting

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
		<p>construction activities, including road accident risks from transport of equipment and use of heavy machinery; OHS risks related to construction activities; and disturbance to biodiversity and natural habitats due to construction activities. These impacts are predictable with low to moderate significance, reversible, and site specific, and can be avoided, minimized, or mitigated by alternative site location assessment, adoption of state-of-the-art technologies, and good engineering design. Potential impacts on biodiversity related to construction activities are rated negligible. Although the region has some identified areas with sensitive environmental settings, the activities will be situated along existing road infrastructure.</p> <ul style="list-style-type: none"> The impacts of operational distribution lines on the environment are considered negligible. The pole height is also expected to cause minimum to negligible overhead risks to birds and bats. Cumulative impacts are not anticipated. 	<p>of trees. While they are good practice, PLN may not fully apply international good practices on VLD.</p> <ul style="list-style-type: none"> Risks related to IP are not significant because existing data do not indicate the presence of IP communities in the Program areas. However, further assessment will be conducted under the ESSA to further assess the risk if present. There is a risk that vulnerable groups (including IP communities if present) may not benefit from the construction of distribution networks due to their disadvantageous positions in local communities. Other social risks, including community, health, and safety; labor; and cultural heritage risks associated with distribution lines, are areas in which PLN has experience. Social risks and impacts during the operational phase are considered minimum. Cumulative impacts are not anticipated.
	<ul style="list-style-type: none"> Investment on enabling infrastructure for SCADA/ ADMS 	<p>The likely environmental effects are rated Low.</p> <ul style="list-style-type: none"> The enabling infrastructure necessary for SCADA/ADMS implementation will include procurement and installation of switching devices and equipment. The devices and equipment will be installed in the existing premises/facilities of PLN. No civil works are anticipated. The potential impacts include waste management during installation for which PLN has existing processes in place to avoid potential impacts. 	<p>The likely social effects are rated Low.</p> <ul style="list-style-type: none"> The social risks and impacts due to procurement and installation of new or upgraded SCADA and ADMS are limited, as necessary devices and equipment will be installed in the existing premises/facilities of PLN. No land acquisition or physical relocation is expected; no impact is expected on vulnerable groups including IP communities (if present); and limited risks to local communities may occur due to waste management during installation, for which PLN has existing processes in place to avoid potential impacts.
	<ul style="list-style-type: none"> Deployment of AMI 	<p>The likely environmental effects are rated Low.</p> <ul style="list-style-type: none"> The activities will include installation of the AMI to replace the old and existing metering devices installed at PLN existing customers (household, private sectors, and industries). 	<p>The likely social effects are rated Low.</p> <ul style="list-style-type: none"> The installation of the AMI to replace the old and existing metering devices installed at existing houses, private firms, and factories will not result in land acquisition or resettlement nor affect vulnerable

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
		<ul style="list-style-type: none"> OHS risks include low electrocution risk when the AMI installation is done by un-skilled personnel. The AMI installation will be done only by trained personnel and will follow a standardized procedure for replacement of metering devices. Potential impacts also include waste management during installation for which PLN has existing processes in place to avoid potential impacts. 	<p>groups including IP communities (if present), or cause health and safety risks to local communities.</p>
<p>RA 2: Increased integration of distributed energy resources (DER)</p>	<ul style="list-style-type: none"> Investment in RSPV 	<p>The likely environmental effects are rated Moderate.</p> <ul style="list-style-type: none"> The deployment of on-grid RSPV in the PLN service area will be done by the RSPV vendors i. RSPV will be installed on the top of existing building; thus, there will be no land clearing. RSPV is mainly targeting commercial and industrial customers, with a smaller number of household customers. Construction of new buildings is not anticipated. Potential environmental degradation due to construction impacts on air quality (dust and emissions) and noise and vibration level as well as impacts from inefficient use of energy and water resources and hazardous waste generation during construction activities will be minimum considering its location and scale and nature of activities. Potential impacts on biodiversity related to construction activities are rated negligible. OHS risk related to construction activities is assessed as moderate. The construction activities involve inherent hazards mainly related to civil works activities, transport of materials and equipment, and risk of electrocution during installation. The activities are not expected to involve local non-skilled workforce, who may have limited experience and lack proper knowledge of appropriate OHS measures. There is low risk of construction-related incidents; however, the number of 	<p>The likely social effects are rated Moderate.</p> <ul style="list-style-type: none"> RSPV will be installed on the rooftop of existing houses, or commercial or industrial buildings, and will not require land acquisition or physical displacement. Community health and safety risks related to construction activities, including road accident risks from transport of equipment and use of heavy machinery, are considered as low considering the scale of activities as well as location that will mostly be in urban and peri-urban areas with good road infrastructure. Risks related to IP are not significant because existing data do not indicate the presence of IP communities in the Program areas, However, further assessment will be conducted under the ESSA to further assess the risk if present. There is a risk that vulnerable groups (including IP communities if present) may not benefit from RSPV because of their social positions, even though no negative impacts to their welfare or livelihoods are expected to occur. Social risks and impacts during the operational phase are considered minimum. The main risks include forced labor and discriminatory practices. Considering PLN's limited direct role in the overall RSPV business, the enhanced measures to prevent allegations of forced labor in the supply chain will be built into the relevant document from PLN to RSPV

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
		<p>workers for each individual project is considerably insignificant.</p> <ul style="list-style-type: none"> The impact of operation of RSPV is low, mainly related to generation of hazardous waste from the damaged/used panels. The hazardous waste generated by RSPV can easily be mitigated by proper handling of used solar panels in collaboration with primary suppliers. The panels are also expected to have long lifespan (about 20 years) before being damaged. The operation of RSPV may also result in low risk of glare/reflection from solar PV modules, leading to polarizing effects, which in turn may lead to fatalities of birds and bats, as they attempt to land mistaking it for water of the so-called 'Lake Effect' phenomenon. Cumulative impacts are not anticipated. 	<p>customers, which will require the RSPV facilities to adhere to the Indonesian law, which includes the prohibition of forced labor. A specific declaration will also be required from PLN's direct contractors if PLN is implementing or procuring RSPV. Cumulative impacts are not anticipated.</p>
	<ul style="list-style-type: none"> Investment in PLN-owned small-scale solar PV (and BESS) 	<p>The likely environmental effects are rated Moderate.</p> <ul style="list-style-type: none"> The construction of small-scale solar PV and BESS-based smart microgrids provide electrification to the remaining isolated communities in the Java, Madura, and Bali system. The Program will support PLN distributed solar PV and BESS initiatives through investments, technical assistance, and training. Being an off-grid system, solar PVs will not be connected with PLN's existing transmission systems. BESS will generally be built as an integral part of the solar PV facilities. The construction of infrastructure supported by the Program may potentially result in adverse risks and impacts related to moderate environmental degradation due to construction impacts on air quality (dust and emissions), noise and vibration level, water and soil; inefficient use of energy and water resources as well as hazardous waste generation during construction activities; community health and safety risks related to construction activities, including road accident risk from transport of equipment and use of heavy machinery; 	<p>The likely social effects are rated Moderate.</p> <ul style="list-style-type: none"> Construction of small-scale solar PV will likely require limited land acquisition not exceeding 1 ha per investment and physical displacement will not be allowed. PLN often uses voluntary donations for small-scale solar PV constructions. PLN normally selects sites where a significant share of productive lands does not need to be acquired or donated. In rural settings, where the Program will be implemented, PLN will be able to find a location for solar PV construction, with limited land acquisition impact, relatively easily. PLN will follow the LAR-MG that is being finalized by the PLN, which adopts good international practices on VLD. PLN normally avoids building solar PVs on sites used or occupied by IP communities. No IP communities are expected to be affected. The site selection processes involve consultations with local communities.

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
		<p>OHS risks related to construction activities; and disturbance to biodiversity and natural habitats due to construction activities. These impacts are predictable with low to moderate significance, reversible, and site specific, and can be avoided, minimized, or mitigated by alternative site location assessment, adoption of state-of-the-art technologies, and good engineering design.</p> <ul style="list-style-type: none"> • Potential impacts on biodiversity related to construction activities are rated Low. While the region has some identified areas with sensitive environmental settings and the exact site location is not yet defined at this stage, based on technical requirements, the sites are not expected to be located in dense forests with extensive trees and are least likely to be located in a protected forest or conservation area. • The potential impacts of operational of the small-scale solar PV to the environment are considered moderate and may include runoff, erosion, and sedimentation from land clearing for project preparation; limited demand of water resources for cooling or cleaning processes in solar PV; improper hazardous waste handling from damaged batteries and broken PV modules, which can contaminate soil and water bodies; limited potentially inject the heavy metals to the soil and groundwater from the water (that is, rainwater) by leaching from the installed modules and small cells used in electronic devices; and glare/reflection from solar PV module may result in polarizing effects, leading to fatalities of birds and bats, as they attempt to land mistaking it for water of the so-called 'Lake Effect' phenomenon. • The impacts of the BESS operation are considered moderate, mainly related to the disposal of damaged batteries and fire and explosion risks. 	<ul style="list-style-type: none"> • Other social risks including community, health, safety, security, labor, and cultural heritage risks are considered Low to Moderate and PLN has experience in managing them. • Social risk is rated Low to Moderate given the very small footprint required for BESS, which PLN normally builds on public lands including on the land it owns. Hazard and safety risks to local communities and risks to workers are considered low, especially as PLN has experience in the construction and operation of BESS.

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
	<ul style="list-style-type: none"> Investment in EVCSs 	<p>The likely environmental effects are rated Moderate.</p> <ul style="list-style-type: none"> The EVCS equipment will require about 21 m² and will be located in existing built facilities owned by PLN or its partners. Each station is expected to have the capacity of 60–200 W. Construction of new buildings is not anticipated. The construction and installation of EVCS facilities is assessed as low, mainly due to risk of electrocution during installation. The activities are not expected to involve local non-skilled workforce, who may have limited experience and lack proper knowledge of appropriate OHS measures. The operation of EVCS may include low probability of fire and explosion risks due to human error and/or equipment malfunction during EV charging. 	<p>The likely social effects are rated Low.</p> <ul style="list-style-type: none"> The direct footprint of an EVCS is very small. The EVCSs will be built on public lands or, if no alternative is found, private lands maybe acquired where no prior land use is observed and no impact on livelihood is expected. No impact on IP is expected, and little, if any, health, and safety risks are expected to local population. Labor risk is expected to be low too.
<p>RA 3: Strengthened institutional capacity</p>	<ul style="list-style-type: none"> Capacity building and training activities on smart grid and DER technologies, mainstreaming gender aspects and increasing awareness on SEA/SH, and climate resilience and network planning 	<ul style="list-style-type: none"> No environmental effects are expected. 	<p>The likely social effects are rated Low.</p> <ul style="list-style-type: none"> Mainstreaming of gender aspects requires a good understanding of social dynamics. The ongoing efforts by PLN to strengthen its capacity development program will likely strengthen gender considerations in PLN’s activities in general. The World Bank will provide necessary support under the ongoing BETF support to strengthen environmental and social aspects of the PLN’s capacity development programs.

RAs	Program Activities	Likely Environmental Effects	Likely Social Effects
	Overall Program	<p>Contextual risk factor: <i>Moderate</i></p> <ul style="list-style-type: none"> The location of Program activities expands to the Java-Madura-Bali region, which is considered a more developed part of Indonesia. Although the exact locations of project siting for investments are not known at this stage, they will likely be located in urbanized areas with a small possibility of being located in or near sensitive habitats. 	<p>Contextual risk factor: <i>Moderate</i></p> <ul style="list-style-type: none"> While the location of Program activities is unknown at this PCN stage, they will be implemented in Java, Madura, Bali region of Indonesia, where existing data do not indicate the presence of IP communities. However, further assessment will be conducted under the ESSA to further assess the risk if present.
	Overall Program	<p>Institutional capacity and complexity risks: <i>Moderate</i></p> <ul style="list-style-type: none"> The Program's institutional capacity and complexity risk is also rated Moderate since PLN has relatively well-established systems and capacity to manage the type and scale of the investments expected under the Program. PLN also has considerable experience in executing World Bank projects, with demonstrated capacity in managing environmental and social risks for similar activities. Additionally, PLN has successfully implemented the ADB-funded RBL programs that focused on distribution network construction, while the scale and scope of environmental and social impacts under small-scale solar PV will be within the range that PLN is able to manage overall. PLN is currently finalizing preparing an ESMS Manual that is aligned with the World Bank Core Principles. As part of the efforts to establish its corporate ESMS, PLN developed Environmental and Social MGs, based on but further expanding the existing guidelines that were developed with the support of the ADB for implementation of its RBLs. PLN has a level of experience in applying the MGs. Upon adoption, PLN will use the ESMS to manage the environmental and social impacts of the Program. Capacity development support will be provided through the ongoing ISLE-1 PforR and prospective GreFi Project, both of which have RETFs that support the environmental and social capacity development of the PLN. 	

ANNEX 3. CORE PRINCIPLES AND PLANNING ELEMENTS

This matrix is in line with the Interim Guidance Notes to Staff on Assessments (July 18, 2012, version). It is intended to guide assessment of the existing borrower program system to plan and implement effective measures for environmental and social risk management. They serve as a basis for provision of World Bank implementation support.

Table 3-1: Gap Analysis of National Framework and PLN ESMS against ESSA Core Principles

Core Principle #1: Program environmental and social management systems are designed to (a) promote environmental and social sustainability in the Program design; (b) avoid, minimize, or mitigate adverse impacts; and (c) promote informed decision-making related to a Program’s environmental and social effects.

Key Planning Elements	PLN’s ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
<p>Legal and regulatory system to guide ESIA’s, mitigation, management, and monitoring</p>	<p>PLN has adopted an ESMS that is developed in alignment with the national regulations, PLN existing standards, and IFI environmental and social standards. The ESMS suggests that any activity on environmental and social, including what are required by IFI, be conducted within the framework of regulatory EIA process as much as possible. For example,</p> <ul style="list-style-type: none"> • A screening and categorization based on ESMS to be conducted at the same time and process with the pre-feasibility and feasibility, if possible. • A comprehensive impact assessment based on ESMS to be conducted using the same process with development of national EIA (AMDAL or UKL-UPL), if possible. • An ESMP based on ESMS to be prepared using the same process with the national ESMP (RKL/RPL), if possible. • Monitoring report of the impact assessment to be prepared and reported using the same process with monitoring for RKL/RPL, if possible. 	<p>Indonesia has a robust EIA process, nuanced for different types, locations, sizes, and circumstances, including provision for an abbreviated EIA (UKL-UPL) for lower risk activities (likely to be associated with I-ENET PforR).</p>	<p>Some implementing procedures and trainings are yet to be developed to fully implement the ESMS.</p>	<p>Procedures and associated trainings are yet to be developed.</p>

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Sound processes for early recognition of potential environmental and social Risks, that is, screening	The ESMS Manual and its MGs require thorough screening for environmental and social risk and impacts in the impact assessment process. Screening process in the ESMS is meant to be limited to environmental and social risk management process and is separate from the engineering or technical risk management process.	Included in AMDAL/KA ANDAL and UKL/UPL Processes	Some implementing procedures may need to be developed to implement the ESMS MGs. Training specifically regarding 'Risk screening criteria' is not yet available in the existing training database.	Some implementing procedures may need to be developed to implement the ESMS MGs. Training specifically regarding 'Risk screening criteria' needs to be made available in the existing training database.
Consideration of strategic, technical, and site alternatives (including the 'no action' alternative)	The impact assessment process (including screening and categorization stage) in the ESMS Manual and its MGs requires each project to be reviewed against criteria (for example, site screening criteria, exclusion criteria, and so on) and significance risk rating (consequence versus probability) which, among others, are used to consider technical and site alternatives in the project design to avoid, minimize, and mitigate the risk and impact levels.	Alternative analysis is not explicitly required under the AMDAL regulation (Government Regulation No. 22 of 2021), although it suggests avoidance and mitigation of significant impacts/risks.	Procedures, personnel, and detailed training to consider strategic, technical, and site alternatives according to ESMS are yet to be fully established.	Develop procedures, assign personnel, and update trainings materials to consider strategic, technical, and site alternatives.
Explicit assessment of potential induced, cumulative, and transboundary impacts	ESMS Manual and its MGs requires PLN to conduct the impact mapping process to understand the relation among each identified impact. From this process, potential induced, indirect, and cumulative impacts can be identified.	The transboundary and global risks and impacts are not statutorily required under the existing Environmental Law and its implementing regulation.	Some implementing procedures may need to be developed to implement the ESMS MGs. Trainings specifically regarding 'Assessing potential induced, cumulative, and transboundary impacts' are yet to be available in the existing training database.	Develop implementing procedures to implement principles in the ESMS MGs, if required. Develop training material or update existing ones with the topic 'Assessing potential induced, cumulative, and transboundary impacts.'

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Identification of measures to mitigate adverse environmental and social risks and impacts that cannot be otherwise avoided or minimized	The ESMS requires the project to develop mitigation measures that are proportional to the risk and impact based on the impact assessment and to incorporate these measures in the ESMP. ESMS has provided guidelines to their respective mitigation measures in the MGs.	The mitigation measures outlined in the national regulation (Government Regulation No. 22 of 2021) are classified into three levels: AMDAL (high risk), UKL-UPL (moderate risk), and SPPL (low risk). The regulation mainly relies on project types, project locations, project size, and project spatial planning status to determine the categorization that influences the depth of the respective management plan.	Some implementing procedures may need to be developed to implement the ESMS MGs.	Develop implementing procedures to implement principles in the ESMS MGs, if required.
Clear articulation of institutional responsibilities and resources to support implementation of plans	The ESMS has described parties within the PLN headquarters and main units that will have certain functions and responsibilities in its implementation. At the project level, specific personnel within the main units are responsible for ensuring environmental and social management.	In Indonesian regulation, capacities for environmental and social management performance in public investment projects are based on several interrelated capacity development components, starting with detailed regulations and standards.	At the project level, specific personnel within the main units responsible for ensuring that the ESMPs are implemented need to be determined.	Define the responsibility for implementing ESMPs at the project level and ensure that adequate relevant training is provided.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Responsiveness and accountability through stakeholder consultation, timely dissemination of relevant information, and responsive grievance redress mechanisms (GRMs)	The ESMS MGs, particularly the SE-MG requires the project to establish meaningful consultations for all stakeholders including project-affected persons and other relevant stakeholders (government, nongovernmental organization, and so on). It also requires the project to maintain an appropriate GRM to receive feedback from the stakeholders.	As part of the EIA/AMDAL preparation process, engagement of stakeholders became a regulatory requirement in 1986. However, as AMDAL only covers the planning stage of an activity or project, the regulatory requirement for stakeholder engagement is limited to that early stage in an investment project and does not include GRM.	At the project level, parties in charge of these activities are yet to be determined clearly. In the actual condition, stakeholder consultation and GRM at the project level are often handled by the project health, safety, and environment officers.	Develop a position (or upgrade existing one) with clear responsibilities for stakeholder consultation and GRMs at the project level and ensure that adequate and relevant training is provided.

Core Principle #2: Program environmental and social management systems are designed to avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program. Program activities that involve the significant conversion or degradation of critical natural habitats or critical physical cultural heritage are not eligible for PforR financing.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Identify and screen for adverse effects on potentially important biodiversity and cultural resource areas and provide adequate measures to avoid, minimize, or mitigate adverse effects.	Avoidance, minimizing, and mitigating adverse impacts on biodiversity and cultural resource areas are regulated specifically in the following ESMS MGs: Biodiversity Management Guideline and CH-MG. Both MGs require PLN to manage risk and impact from the project toward biodiversity and cultural resource areas based on the potential risks and impacts identified in the screening and assessment process.	The country's legal framework recognizes the need to conserve living natural resources and their ecosystems. There is general alignment with the World Bank Core Principles.	To apply all relevant principles in the Biodiversity Management Guideline and CH-MG, the following remaining gaps were identified: <ul style="list-style-type: none"> Existing training modules on biodiversity and cultural heritage have not fully accommodated principles in the MGs regarding 	<ul style="list-style-type: none"> Improve biodiversity and cultural heritage screening for impact avoidance. Develop appropriate training, including topic-specific training modules on biodiversity, cultural heritage, and chance finds protocols, for relevant unit and/or personnel.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
			<ul style="list-style-type: none"> ○ Explanation on the development of mitigation measures to avoid, minimize, or mitigate adverse effects on biodiversity and cultural heritage ○ Biodiversity and cultural heritage exclusion list mechanism ○ Support and promote the protection, conservation, maintenance, and rehabilitation of natural habitats and cultural heritage ○ Avoid significant conversion or degradation of cultural heritage and critical natural habitats, or mitigate or offset if not technically feasible ○ Utilization of ecosystem services and living natural resources, such as fisheries and forests. <p>Though the MGs require screening, assessment, and</p>	<ul style="list-style-type: none"> ● Develop project-specific management plans, depending on the severity of impacts/risks of each activity, and mitigation measures may include habitat restoration, ecosystem service management, chance finds protocols, or cultural heritage management. ● Strengthen implementation, monitoring, and reporting, in coordination with the corporate environmental and social team.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
			management plan on managing impact on biodiversity and cultural heritage/cultural resources to be developed proportionally based on assessed risk/impact, for consistency purpose throughout PLN in carrying out the plan, some procedures to address these topics may need to be developed.	
<p>Update existing training modules on explanation on the development of mitigation measures to avoid, minimize, or mitigate adverse effect of biodiversity.</p>	<p>The principles in ESMS Biodiversity Management Guideline mainly aim to promote protection and conservation of natural habitats. However, it also includes principles for restoring (or rehabilitating) degraded, damaged, or destroyed areas to a state of beneficial use and assist in the recovery of the affected ecosystems.</p>	<p>Law No. 5 of 1990, concerning Conservation of Biological Diversity and its Ecosystem and Regulation of the Minister of Environment and forestry P.20/MENLHK/SETJEN/KUM.1/6/2018 regarding Protected Plants and Animals. Inconsistently applied.</p>	<p>To apply all relevant principles in the Biodiversity Management Guidelines, some remaining gaps were identified regarding training on conservation, maintenance and rehabilitation.</p>	<p>If any potential disturbance to the natural habitat is identified during the screening and impact assessment, update existing training modules on 'Support and promote the protection, conservation, maintenance, and rehabilitation of natural habitats.</p>

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Avoid significant conversion or degradation of critical natural habitats.	The ESMS Biodiversity Management Guideline requires critical habitat assessments to be carried out for projects that are located with high probability of high conversation value areas.	Law No. 5 of 1990, concerning Conservation of Biological Diversity and Its Ecosystem and Regulation of the Minister of Environment and forestry P.20/MENLHK/SETJEN/KUM.1/6/2018 regarding Protected Plants and Animals. Inconsistently applied.	Procedures, personnel, and detailed training to implement guidance to avoid significant conversion and degradation of critical habitat as per ESMS Biodiversity Management Guideline are yet to be fully established at the project level.	If any potential disturbance to the critical habitat is identified during the screening and impact assessment, develop procedures, assign personnel, and update training for guidance to avoid significant conversion and degradation of critical habitat as per the ESMS Biodiversity MG.
If avoiding the significant conversion of natural habitats is not technically feasible, employ measures to mitigate or offset the adverse impacts.	The ESMS Biodiversity Management Guideline places offsets as a last resort, only if significant residual adverse impacts remain after all technically and financially feasible avoidance, minimization, and restoration measures have been considered.	As above, main regulatory framework for biodiversity mitigation and offset includes Law No. 5 of 1990, concerning Conservation of Biological Diversity and Its Ecosystems.	Existing training modules on biodiversity do not fully accommodate principles in the MG regarding avoiding significant conversion or degradation of critical natural habitats or mitigate or offset if not technically feasible.	If any potential disturbance to the critical habitat is identified during the screening and impact assessment, update existing training modules on 'Avoiding significant conversion or degradation of critical natural habitats or mitigate or offset if not technically feasible'.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
<p>Consider potential adverse effects on physical cultural assets and provide adequate measures to avoid, minimize, or mitigate such effects.</p>	<p>The ESMS CH-MG provides guidance to identify, assess, and mitigate risk/impact of the project to protect cultural heritage from the adverse impacts of project activities and support its preservation.</p>	<p>Law No. 11 of 2020, Job Creation Article 22 strengthens efforts to support cultural heritage preservation. Parties that own and occupy registered built heritage (<i>bangunan cagar budaya</i>) will be incentivized with land and building tax reduction.</p>	<p>Strengthen the implementation and application of all relevant principles and measures observed in the CH-MGs. The following gaps remain:</p> <ul style="list-style-type: none"> • Training specifically tailored to enable proper implementation of the CH-MG. • Clarity in appointment of responsible personnel for cultural heritage impact management and overseeing implementation of chance finds Protocols (by contractor involved in earth works). 	<ul style="list-style-type: none"> • Update existing training modules to include (a) understanding cultural heritage assets and (b) developing mitigation strategies. • Strengthen capacity to undertake the screening and assessment of potential impacts on both tangible and intangible cultural heritages. • Have clarity in the assigned roles and responsibilities for cultural heritage impact management

Core Principle #3: Program environmental and social management systems are designed to protect public and worker safety against the potential risks associated with (a) the construction and/or operation of facilities or other operational practices under the Program; (b) exposure to toxic chemicals, hazardous wastes, and otherwise dangerous materials under the Program; and (c) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Promote adequate community, individual, and worker health, safety, and security through the safe design, construction, operation, and maintenance of Program activities.	Health, safety, and security aspects for workers and community are regulated specifically following ESMS MG, Labor and Working Conditions MG; and Community, Health, Safety, and Security MG	Indonesia has robust laws on OHS through its SMK3 (OHS Management System) Program. Unfortunately, these initiatives are applied inconsistently at the contractor and subcontractor levels.	Procedures, personnel, and detailed training to implement guidance in the ESMS Labor And Working Conditions and Community, Health, Safety, and Security MGs are yet to be fully established at the project level.	Develop procedures, assign personnel, and update training materials to implement the ESMS Labor And Working Conditions and Community, Health, Safety, and Security MGs, with special attention to contractor management.
Promote measures to address avoidance of child and forced labor.	The adopted ESMS includes a commitment, where PLN will commit to not carrying out, being involved with, or supporting business activities that are associated with prohibited practices.	The ILO conventions have been ratified by the Indonesian Government as part of the national law.	Training materials for prevention of child/forced labor ensuring its prevention, awareness, and screening mechanism, as well as monitoring mechanisms, in accordance with the Labor and Working Conditions MG, are not yet available.	Develop or update existing training materials in relation to child and forced labor, paying special attention to contractors and suppliers.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Promote the use of recognized good practices in the production, management, storage, transport, and disposal of hazardous materials.	Hazardous material management aspects are regulated specifically in the ESMS Hazardous Material MGs.	Pollution prevention and management and hazardous materials management are addressed since introduction of the 1982 Environmental Law.	Procedures, personnel, and detailed trainings to implement guidance in the ESMS Hazardous Materials and Waste MGs are yet to be fully established at the project level. Note that in the I-ENET program, hazardous materials that are expected to be used are minimal but still require a management plan, for example, lube oil, paint, thinner, cleaning agent, de-rusting agent, and so on.	Develop procedures, assign personnel, and update trainings materials to implement the ESMS Hazardous Materials and Waste MGs.
Provide training for workers involved in the production, procurement, storage, transport, use, and disposal of hazardous chemicals.	The ESMS Hazardous Material MG requires some training/knowledge sharing to be conducted.	Law No. 1 of 1970, about OHS and Ministry of Environment Regulation 6 of 2021, outline procedures and requirements for hazardous and toxic waste management	Training/knowledge sharing materials and media for hazardous material management, in accordance with the ESMS Hazardous Material MG, are not yet available.	Provide knowledge-sharing sessions (for example in toolbox meetings during construction or in posters during operation) on how to handle hazardous materials that are stored/used/transported.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Apply adequate measures to avoid, minimize, or mitigate risks for the community, individual, and worker exposure to natural hazards.	The ESMS Labor and Working Conditions and Community, Health, Safety, and Security Management Guidelines require assessment and mitigation measures for potential impacts caused by natural disaster. The management plans for these aspects rely on the screening of the site and baseline study on vulnerability of the area to ascertain the type of natural disaster. This requires an ERP to be developed.	Law No. 32 of 2009, concerning Environmental Protection and Management, amended in the Job Creation Law (Law No.11 of 2020) Law 24/2007 on Disaster Management and associated legislation.	Procedures, personnel, and detailed trainings to implement guidance in the Labor and Working Conditions and Community, Health, Safety, and Security Management Guidelines regarding comprehensive EPRP addressing natural disasters are yet to be fully established at the project level.	Develop procedures, assign personnel, and update training on EPRP for natural disasters.

Core Principle #4: Program environmental and social systems manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement and assists affected people in improving, or at the minimum restoring, their livelihoods and living standards.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
<p>Avoid or minimize land acquisition and related adverse impacts.</p>	<ul style="list-style-type: none"> • PLN is currently establishing ESMS and a set of MGs, including LAR-MG. • The LAR-MG has incorporated provisions for VLD, applicable for distribution lines. Typically, PLN avoids building poles on private lands to the extent possible but if unavoidable, landowners are consulted in advance and their informed consent is secured. 	<ul style="list-style-type: none"> • Law No. 12 of 2012 regarding Land Procurement for Development of Public Interest has been amended in Law No. 6 of 2023 concerning Job Creation. • Government Regulation No. 39 of 2023 regulates the implementation provisions of Law No. 6 of 2023 Chapter 8 on Land Acquisition for Development for Public Interest. • Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 19 of 2021. • Presidential Regulation No. 78 of 2023, which amends the Presidential Regulation No. 62 of 2018 on management of social impacts in the context of land acquisition. • Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 6 of 2020 provides technical procedures/provisions to implement the management of social impacts in the context of land acquisition. 	<p>PLN's capacity in the implementation and application of all relevant principles and measures observed in the LAR-MG remain to be seen. Additionally, the following gaps are identified.</p> <ul style="list-style-type: none"> • Lack of appointed personnel and detailed training to implement the LAR-MG. • Overall, limited experience within the organization (including UID) with regard to land acquisition and resettlement screening and impact assessment. • Need for strengthening the application of VLD provisions for distribution line activity. 	<ul style="list-style-type: none"> • The LAR-MG to be applied to the I-ENET PforR, particularly for distribution line activity. • PLN/UID will apply the guidelines on VLD in the LAR-MG, under the supervision of the corporate environmental and social team, and with the support of the ISLE-TA or the World Bank's other energy programs. • The PLN will maintain a proper record of voluntary donations conducted. • Training modules on LAR-MG to be developed and training to be provided for relevant personnel in the UID.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Identify and address economic or social impacts caused by land acquisition or loss of access to natural resources, including those affecting people who may lack full legal rights to resources they use or occupy.	The LAR-MG has incorporated provisions to identify and address social impacts from land acquisition and resettlement, including on vulnerable groups and non-titled affected people.	<ul style="list-style-type: none"> • Presidential Regulation No. 78 of 2023, which amends the Presidential Regulation No. 62 of 2018 on management of social impacts in the context of land acquisition. • Ministry of Agrarian Affairs and Spatial Planning/National Land Agency Regulation No. 6 of 2020 provides technical procedures/provisions to implement the management of social impacts in the context of land acquisition. 	<ul style="list-style-type: none"> • Capacity in the implementation of the LAR-MG to address and monitor the land acquisition and resettlement impacts on the affected people with non-recognizable/legal rights on land. • Detailed training module specifically on LAR-MG implementation yet to be developed. 	<ul style="list-style-type: none"> • Strengthening the application of the LAR-MG, through training for UIDs and supervision/monitoring from the corporate environmental and social team
Provide compensation sufficient to purchase replacement assets of equivalent value and to meet any necessary transitional expenses, paid before taking land or restricting access.	<ul style="list-style-type: none"> • The LAR-MG has incorporated provisions for compensation. It also lists the process to calculate compensation. • SPI 204, by MAPPI (2018) recognizes that compensation should be based on a fair replacement value of the affected land assets (both their physical and non-physical components). 	<ul style="list-style-type: none"> • Government Regulation No. 19 of 2021 and the implementing Regulation of Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No. 19 of 2021. • MAPPI Guidelines on Land Acquisition Assessment for Development of Land for Public Interest, defined SPI 204 (MAPPI, 2018), in which determination of the compensation amount is based on the “fair replacement value” of physical objects and non-physical component. 	<p>The current appraisal standard of SPI 204 is generally based on the fair replacement value and will be conducted for physical and non-physical objects, thus aligning with the World Bank Core Principles. This is also defined in the LAR-MG. However, the following gaps still exist:</p> <ul style="list-style-type: none"> • The quality of resettlement documents may not list all compensable impacts, including income loss, or provide details of the affected people’s socioeconomic data, which is required to identify the level of income or asset loss. • Gaps in the capacity of UID in the understanding of the LAR- 	Strengthening application of the LAR-MG, through training for UID and supervision/monitoring from the corporate environmental and social team

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
			<p>MG requirements and ensure consistent application of the compensation framework provisions, including for those with non-recognizable/legal rights on land.</p> <ul style="list-style-type: none"> Detailed training module specifically on LAR-MG implementation is yet to be developed. 	
<p>Provide supplemental livelihood improvement or restoration measures if taking of land causes loss of income-generating opportunity (for example, loss of crop production or employment).</p>	<p>The LAR-MG has incorporated provisions for addressing livelihood impacts.</p>	<ul style="list-style-type: none"> Government Regulation No. 19 of 2021 and the implementing Regulation of Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No. 19 of 2021. Presidential Regulation No. 78 of 2023, which amends the Presidential Regulation No. 62 of 2018, only describes cash compensation for social impact due to the land procurement process. MAPPI Guidelines on Land Acquisition Assessment for Development of Land for Public Interest, defined in the SPI 204 (MAPPI, 2018), in which determination of the compensation amount is based on the “fair replacement value” of physical objects and non-physical component. 	<ul style="list-style-type: none"> Although significant land acquisition and resettlement impact on livelihood from the I-ENET activities are unlikely, it is noted that overall, there is limited experience within the organization with regard to livelihoods restoration practice, while the national regulatory framework that would guide implementation of such a program is lacking. Detailed training module specifically on LAR-MG implementation is yet to be developed. 	<ul style="list-style-type: none"> Should livelihood impacts be identified, PLN/UID will apply the guidelines on addressing impacts and livelihood restoration monitoring in the LAR-MG, under the supervision of the corporate environmental and social team, under the support of the ISLE-TA or the World Bank’s other energy programs. Training modules on LAR-MG to be developed and training to be provided for relevant personnel in the UID.

Key Planning Elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of Gap-Filling Measures
Restore or replace public infrastructure and community services that may be adversely affected by the Program.	The LAR-MG has incorporated provisions to address potential land acquisition and resettlement impacts on public infrastructure and community services.	Government Regulation No. 19 of 2021 and the implementing Regulation of Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No. 19 of 2021	There are no regulatory gaps on the acquisition of affected public infrastructure and community services. These are clearly regulated in the current national land law.	No additional measures required, as land acquisition and resettlement impacts on public infrastructure and community services from the I-ENET activities are considered unlikely.
Include measures for land acquisition and related activities to be planned and implemented with appropriate disclosure of information, consultation, and informed participation of those affected.	The LAR-MG has incorporated provisions on appropriate disclosure of information, consultation, and informed participation of land acquisition and resettlement-affected people, with reference to the SE-MG (which include requirements to prepare a systemized Stakeholder Engagement Plan).	<ul style="list-style-type: none"> Government Regulation No. 19 of 2021, and the implementing Regulation of Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No. 19 of 2021, regulated that the affected people have the rights to get information related to project development and land acquisition process including location, estimation timeline, and compensation. Consultation regarding land acquisition impacts is required under the Regulatory EIA (AMDAL) process, as regulated in the Government Regulation No. 22 of 2021 on Implementation of Environmental Impact and Management. 	Capacity gaps for proper implementation of land acquisition and resettlement and stakeholder engagement remain, particularly in the regional team. Although the corporate environmental and social team already has knowledge and experience in carrying out consultation and engagement during the land acquisition process, implementation performance varies between regions.	Strengthening the application of the LAR-MG and SE-MG, through training for UID and supervision/monitoring from the corporate environmental and social team

Core Principle #5: Program environmental and social systems give due consideration to the cultural appropriateness of, and equitable access to, Program benefits, giving special attention to the rights and interests of Indigenous Peoples, and to the needs or concerns of vulnerable groups.

Key planning elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of gap-filling measures
Undertake meaningful consultations if the IP are	<ul style="list-style-type: none"> PLN is currently establishing ESMS and a set of MGs, including 	The national law and regulation in Indonesia recognize two official	Consultation requirements in the LAR-MG are consistent	<ul style="list-style-type: none"> The IP-MG to be applied to the I-ENET

Key planning elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of gap-filling measures
<p>potentially affected (positively or negatively), to determine whether there is broad community support for the PforR Program activities.</p>	<p>Indigenous People Management Guideline, which include provisions to undertake meaningful consultations if the IP are potentially affected.</p> <ul style="list-style-type: none"> In practice, PLN project units have been using cultural-sensitive approaches in areas where traditional communities or IP presence and potentially impacted out of respect for IP and to obtain approval of project planning, for example, through traditional ceremonies before project commencement, especially if any acquisition of indigenous land or removal of cultural object is involved. This is as demonstrated through the documentation of activities provided during this assessment. 	<p>terms of IP: Customary Law Society (<i>Masyarakat Hukum Adat</i>, MHA) and Isolated Indigenous Communities (<i>Komunitas Adat Terpencil</i>, KAT).</p> <ul style="list-style-type: none"> Law No. 41 of 1999 on Forestry, which has been amended by Law No. 19 of 2004, main law regulates indigenous territory within forest areas. The Constitutional Court Decree No. 35 of 2012, which confirms that Adat forests are no longer state forests. Village Law No. 6 of 2014 acknowledges the existence and rights of MHA. Law No. 27 of 2007 on Coastal Zone and Small Island Management acknowledges the existence of MHA provided they are recognized and requires consultations with MHA for any development in coastal areas. Law No. 23 of 2014 on Local Government recognizes the existence of Adat institutions (<i>lembaga adat</i>). Law No. 11 of 2010 on Cultural Heritage recognizes MHA as the owners of their cultural 	<p>with the World Bank Core Principles. However, PLN's capacity in the implementation and application of all relevant principles and measures observed in the IP-MG remain to be seen. Additionally, the identified key gaps include the following:</p> <ul style="list-style-type: none"> Capacity to identify and recognize IP presence and integrate these steps with the project management plan still require enhancement. Capacity in undertaking appropriate consultations with the affected IP, including (a) tailored approach to address concerns and feedback from the affected IP community (for example, as part of grievance mechanism or stakeholder engagement strategy) is not clearly and explicitly described; (b) documenting of consultation and tracking grievances; (c) meaningful consultation beyond the land acquisition planning 	<p>PforR, should any impact on IP occur from distribution line activity.</p> <ul style="list-style-type: none"> PLN/UID will apply the guidelines to consult with the potentially affected IP, under the supervision of the corporate environmental and social team, and with the support of the ISLE-TA or the World Bank's other energy programs. Training modules on IP-MG to be developed and training to be provided for relevant personnel in the UID.

Key planning elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of gap-filling measures
		<p>heritage and grants them authority to manage it.</p> <ul style="list-style-type: none"> • The Government Regulation No. 22 of 2021 on Implementation of Environmental Impact and Management indicates that consultations with the affected communities (including but not limited to IP) are required during the Regulatory EIA (AMDAL) process. • The Alliance of Indigenous Peoples of the Archipelago (<i>Aliansi Masyarakat Adat Nusantara, AMAN</i>), as the independent community concerning IP rights in Indonesia, uses the term <i>Masyarakat Adat</i>. In addition, identification and prioritization of customary forest legalization is registered under the Customary Territory Registration Organization 	<p>process, which may lead to broad community support.</p>	

Key planning elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of gap-filling measures
<p>Ensure that IP can participate in devising opportunities to benefit from exploitation of customary resources and indigenous knowledge, the latter (indigenous knowledge) to include the consent of IP.</p>	<p>The IP-MG describes the sharing of development benefits from the project as a part of stakeholder consultation, including the protection and of use customary resources and IP knowledge. The guideline does not regulate the commercial use of customary resource/cultural heritage; however, it is unlikely to be relevant to the I-ENET Program activities.</p>	<p>There is no explicit requirement or provisions in the management of impacts on IP from development projects, or provisions to obtain IP consent related to project activities, which may affect their live. This may limit the IP's opportunities to benefit from exploitation of customary resources and indigenous knowledge (if any).</p>	<p>Relevant measures for obtaining IP consent in the IP-MG are mainly related to land acquisition process. Remaining gaps include the following:</p> <ul style="list-style-type: none"> • Provisions for the use of customary resources and indigenous knowledge. • Capacity to implement the IP-MG, to ensure that the affected IP can benefit from the project. <p>It is understood that the ESSA concludes low likelihood of significant impacts from the I-ENET Program on IP.</p>	<p>Strengthening application of the IP-MG, through training for UID and supervision/monitoring from the corporate environmental and social team</p>
<p>Give attention to groups vulnerable to hardship or discrimination, including, as relevant, the poor, the disabled, women and children, the elderly, ethnic minorities, racial groups, or other marginalized groups; and if necessary, take special measures to promote equitable access to project benefits.</p>	<ul style="list-style-type: none"> • The ESMS and IP-MG have incorporated the definition of vulnerable groups such as children, individual with disabilities, living under poverty line, women, and IP. It also observed tailored consultations and special measures to be taken to address potential impacts on vulnerable IP groups. • Additionally, the PLN Sustainability Report 2021 explained that PLN programs refer to Sustainable Development Goal (SDG) 4 (Quality Education Program) resulting in the provision of support for disabled individuals/vulnerable groups. 	<ul style="list-style-type: none"> • Attention to vulnerable IP groups is covered under the existing regulations; however, this is limited to the recognition of the remote indigenous community by the Ministry of Social Affairs. • There is an emerging concern regarding the participation of vulnerable groups and gender balance in the implementation of infrastructure development projects. This new concern is due to the updated EIA/AMDAL policy and regulations and of increasing attention to conformity with SDGs. The EIA/AMDAL document, under 	<p>Remaining gaps exist in the capacity of project unit to implement the IP-MG, including IP identification, screening process, and undertaking consultations. Additionally, there is limited experience in achieving gender inclusion and vulnerable people participation targets.</p>	<p>Strengthening the application of the IP-MG, through training for UID and supervision/monitoring from the corporate environmental and social team.</p>

Key planning elements	PLN's ESMS	National Regulatory Framework	Gaps Analysis	Recommendation of gap-filling measures
	<p>This includes 8,558 beneficiaries, 847 micro and small enterprises across 20 provinces and total labor absorbed of 1,868 people. Meanwhile SDG 5 (Women Empowerment Program) resulting in 1,212 women beneficiaries, 16 micro and small enterprises/KWT across 21 provinces, with total labor absorbed of 496 people.</p>	<p>its new standards, needs to consider minorities and vulnerable groups. This provision is however limited to requesting their participation in the public consultation of directly affected communities.</p>		

Core Principle #6: Program environmental and social systems avoid exacerbating social conflict, especially in fragile states, post-conflict areas, or areas subject to territorial disputes.

The I-ENET activities is not expected to be developed in the fragile or post-conflict area; hence, no associated impacts are likely to occur.

ANNEX 4. SCOPING OF POTENTIAL CUMULATIVE IMPACTS

No.	Activities under Result Area	Potential VECs	Screening Results for Potential Cumulative Impact	Management Measures
1	Expansion of PLN's distribution network by 40,000 km and 3600 MVA in the Java, Madura, and Bali Region	Natural habitat	Direct impacts to natural habitats are negligible and cumulative impacts are not anticipated. The distribution line networks are usually situated on right-of-way (ROW) of existing roads owned by the local government, with pole heights between 5 and 6 m from the road surface. There will be minimum land clearance required for construction of distribution poles and the ROW of the distribution lines.	No measures required
		Sensitive flora and fauna species in the forest areas	The distribution lines route connects the existing settlements with the nearest distribution substation, and generally will not pass through forestry areas; however, there are some projects that stretch along the road, passing through different types of forestry areas: production forest, protected forest, conservation forest, and national parks. Due to also risks of adverse impact to biodiversity from lines passing through forested areas, these are excluded from the Program.	Sections of distribution lines passing through forested areas are excluded from the Program.
		Birds and bats species	The height of distribution poles is between 5 and 6 m from the road surface. Considering the height of the pole, the overhead risks to birds and bats are considered negligible. Cumulative impacts are not anticipated.	No measures required.
		Local community in the surrounding areas of new	Impacts to community health and safety during construction of new distribution lines is low. The	No measures required.

No.	Activities under Result Area	Potential VECs	Screening Results for Potential Cumulative Impact	Management Measures
		construction of distribution lines	equipment to be mobilized for construction of new distribution lines are limited and involvement of large vehicle is not anticipated. Cumulative impacts are not anticipated.	
		Cultural heritage sites and tourism spots.	Visual disturbance due to installation of multiple distribution cables are not anticipates. There will be no construction of new poles in the location where there are existing distribution poles. Cumulative impacts are not anticipated.	No measures required.
2	Installation of 3,7500,000 advanced meters in the Java, Madura, and Bali Region.	No potential VECs identified	No potential cumulative impacts identified. The advanced meters are replacing the existing electricity meters in household level.	Not applicable
3	Deployment and installment of multiple EVCS in one region.	No potential VECs identified	No potential cumulative impacts identified.	Not applicable
4	Facilitation of the integration of 16,150 public EVCS and home EVCS to PLN's distribution network in the JAMALI Region.	No potential VECs identified	No potential cumulative impacts identified.	Not applicable
5	Facilitation of the integration of 300 MV RSPV capacities to PLN's distribution	Birds and bats	RSPV may result in a low risk of glare/reflection from solar PV modules, leading to polarizing effects, which in turn may lead to fatalities of birds and bats, as they attempt to land mistaking it for water of the so-called 'Lake Effect' phenomenon. However, based on PLN	No measures required.

No.	Activities under Result Area	Potential VECs	Screening Results for Potential Cumulative Impact	Management Measures
	network in the JAMALI Region.		<p>records, the largest individual RSPV capacity to date is only 7.9 MW, consisting of approximately 15 panels (total area about 30 m²). The individual impact is considered negligible to low.</p> <p>Cumulative impacts are not anticipated considering that the RSPV will be built on existing building that will not be located directly next to each other, even in industrial area, each building will be separated by road and other facilities i.e., parking lot, garden, pedestrian routes; therefore, the creation of large expanse of solar panels that may result the lake-effect phenomenon is not anticipated.</p>	
		Soil and water resources	<p>The operation of RSPV may generate hazardous waste from improper handling and disposal of used/damaged panels. The panels are also expected to have long lifespan (about 20 years) before being damaged, with small possibility of production defects and damaged from wrong installation technique. These potential impacts will be mitigated by ensuring RSPV customers to properly handle and dispose used/damaged panels in collaboration with the RSPV vendors/primary suppliers; and ensuring that only certified vendors are allowed to do the installation.</p> <p>Cumulative impacts are not anticipated since the damaged panels will only be accepted for disposal by licensed waste management operators.</p>	No measures required

ANNEX 5. PUBLIC CONSULTATION

To be added upon completion of Public Consultation.