PROGRAM RESULTS ASSESSMENT

A. Program Results Framework

1. **Country results framework.** The Government of Indonesia uses three kinds of results frameworks for national development planning: (i) the National Long-Term Development Plan (*Rencana Pembangunan Jangka Panjang Nasional* [RPJPN]), 2005–2025; (ii) the 5-year National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional* [RPJMN]), the targets of which align with the RPJPN; and (iii) the sector plans of ministries and line agencies.[1] The RPJMN, 2015–2019 promotes inclusive economic and environmentally sustainable growth, and sets out 31 national action programs grouped into three priority areas, including energy security and regional equity, notably between the country's western and eastern regions.[2] Eastern Indonesia's development is lagging behind that of Java and Bali, with poverty rates significantly higher in West Nusa Tenggara (*Nusa Tenggara Barat* [NTB]), East Nusa Tenggara (*Nusa Tenggara Timur* [NTT]), and four out of six provinces in Sulawesi.[3] Eastern Indonesia's gross domestic product per capita is less than half the national average.[4] To address this, the government has made it a priority to boost and accelerate investment in infrastructure significantly under the RPJMN, which explicitly includes the "outer" and eastern regions as geographical priorities.

2. **Energy sector goals and targets.** The government's Energy Sector Action Program is linked with its infrastructure and environment action programs. The RPJMN's stated goal is "enhanced energy security." Measures to achieve this include expanding energy infrastructure and investments, increasing energy efficiency and accessibility, diversifying the energy mix with new and renewable energy sources, reducing greenhouse gas emissions, and increasing private participation. Overall, the government aims to increase the national electrification ratio from 84% in 2014 to 97% by 2019.[5] The Electricity Power Supply Business Plan (*Rencana Usaha Penyediaan Tenaga Listrik* [RUPTL]) provides rolling 10-year electricity development plans.[6] The RUPTL, 2017–2026 outlines PLN's targets in Sulawesi and Nusa Tenggara, which are to (i) expand its 20-kilovolt system from 47,256 circuit-kilometers in 2016 to 58,764 circuit-kilometers in 2020, (ii) increase the number of distribution transformer units to 50,721 by 2020 (2016 baseline: 40,788 units); (iii) increase the number of customers from 5.62 million in 2016 to 6.99 million in 2020; and (iv) increase electricity sales from 11.3 terawatt-hours in 2016 to 15.7 terawatt-hours in 2020.

3. **Results areas in national electricity planning.** PLN uses a series of key performance indicators (KPIs) to track five corporate results areas:

(i) **Results area 1: Enhanced customer focus and services**. Progress is tracked by KPIs relating to customer satisfaction, number of customers, recovery time, wait times for connections to medium- and low-voltage networks, the system average interruption duration index, system average interruption frequency index, and the number of feeder technical interruptions.

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[1] A. S. Alisjahbana. 2014. *Presentation at the International Conference on Economic Modelling Bali*. 18 July.

[2] Government of Indonesia, Ministry of National Development Planning (*Badan Perencanaan Pembangunan Nasional*). 2015. *Medium-Term National Development Plan, 2015–2019.* Jakarta.

[3] In 2014, the national poverty rate was estimated at 11%, compared to 17.1% in NTB, 19.6% in NTT, 13.6% in Central Sulawesi, 12.8% in Southeast Sulawesi, 17.4% in Gorontalo, and 12.1% in West Sulawesi (National Bureau of Statistics). http://www.bps.go.id/linkTabelStatis/view/id/1488

[4] Recalculated from 2013 data in ADB. 2016. *Achieving Universal Electricity Access in Indonesia.* Manila.

[5] Electrification ratios are 97% in Malaysia, 100% in Singapore, 96% in Thailand, and 98% in Viet Nam.

[6] PLN. 2017. *Electricity Power Supply Business Plan, 2017–2026.* Jakarta.

(ii) **Results area 2: Increased product and process effectiveness.** Progress is tracked by KPIs on electricity sales, distribution losses, the frequency of interruptions per 100 kilometers, and the proportion of transformers not operating or out of service.

(iii) **Results area 3: Enhanced human resource management.** KPIs relate to the productivity of employees, human capital readiness, and organization capital readiness.

(iv) **Results area 4: Improved financial management.** KPIs relate to operating expenditures, production costs, the average sale price per kilowatt-hour, the accounts receivable collection period, inventory turnover, and progress in project and contract implementation.

(v) **Results area 5: Enhanced leadership performance.** This is tracked by assessing the implementation progress of various leadership programs.

4. **Program focus and rationale.** Indonesia comprises about 17,504 islands spread across three time zones. It has an energy system made up of separate island grids, which in Eastern Indonesia are isolated, of poor quality, and underdeveloped. The electrification ratios in some Eastern Indonesian provinces are disproportionately low—74.1% in West Sulawesi, 66.8% in Southeast Sulawesi, 68.1% in NTB, and 58.9% in NTT. Although they only account for around 10% of the country's population, the eight provinces in Eastern Indonesia[7] account for about 17% of the population without electricity.[8] The proposed Sustainable Energy Access in Eastern Indonesia—Electricity Grid Development Program aims to increase access to reliable electricity services in Eastern Indonesia by strengthening and expanding electricity distribution networks to connect businesses and households. This will broaden livelihood and education opportunities, spur economic growth, and contribute to reducing poverty and enhancing the quality of life in Eastern Indonesia. The program will complement a proposed sector loan for small- and medium-sized natural gas-fired power stations, which will further enhance energy sustainability and security, and contribute to climate change mitigation.

5. **Financing modality.** A results-based lending (RBL) modality will finance a portion of the overall grid development in Eastern Indonesia. The RBL modality is appropriate as it (i) uses PLN's own program systems, thus providing a platform for institutional strengthening; (ii) focuses attention on results rather than expenditures, leading to a stronger evaluation culture in line with the government's intent to move toward performance-based regulation; (iii) is well-aligned with the nationwide PLN program, and is therefore able to scale up innovations from the RBL program; (iv) has lower transaction costs, since developing the distribution network involves thousands of small-scale activities and expenditures;[9] and (v) will enable PLN, government stakeholders, and development partners to convene around achieving the results and outcomes of the program to enhance collaboration.[10]

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[7] The eight provinces are North Sulawesi, Central Sulawesi, Gorontalo, South Sulawesi, Southeast Sulawesi, West Sulawesi, NTB, and NTT. The PLN groups these into four *wilayahs* (regions): Sulutenggo (North and Central Sulawesi, and Gorontalo); Sulselrabar (South, Southeast, and West Sulawesi); NTB; and NTT.

[8] Recalculated from 2013 data in ADB. 2016. *Achieving Universal Electricity Access in Indonesia.* Manila.

[9] The most recent loan for power distribution (Loan 2619-INO: Java-Bali Electricity Distribution Performance Improvement Project) experienced significant delays, with several cases of rebidding and contractor underperformance. It applied a "ring-fenced" procurement approach typical for ADB loans, and procurement packages were consolidated into larger but fewer packages to ease ADB's administration. However, this approach effectively excluded the smaller contractors that normally carry out distribution contracts, and did not take advantage of PLN's own system for medium- and low-voltage grid development, as described in section III.B.

[10] In April 2016, the World Bank approved a $500 million results-based program for power distribution in Sumatra complementing the ADB RBL program approved in 2015. A similar collaboration effort with development partners is

6. **Program results framework: Impact and outcome.** The program's impact is aligned with the RUPTL's national goal of enhancing the quality of life in Indonesian society by promoting the use of sustainable electricity as a key driver of increased economic activity. The expected program outcome is expanded access to more reliable electricity services for residential, commercial, and industrial customers in the Eastern Indonesian provinces of NTB, NTT, and Sulawesi. The outcome is linked to the results areas in the national electricity results framework, while the KPIs for the RBL program outcome are identical or similar to those used by PLN in their own results areas or tracking of performance indicators (i.e., number of customers, electricity sales rates, and frequency of feeder line permanent interruptions).

7. **Outputs.** Two output-level results make up the results chain below the outcome level. This means that if the two outputs are fully achieved and the risks managed well, the outcome will be achieved.

(i) **Output 1. Distribution system strengthened and expanded**. This output will help address the need for an expanded and strengthened distribution system, and consequently improve electrification rates, reduce overloading, and address reliability issues for the local population and businesses.

(ii) **Output 2. Innovation and institutional capacity enhanced**. This output will support PLN's efforts to innovate and strengthen institutional capacity for environmental management and increased efficiency. The program will (a) support innovation through pilot-scale smart grid projects, which will integrate the expanded use of intermittent renewable energy sources and better manage demand fluctuation; (b) expand the use of digital prepaid meters to reduce non-technical losses, payment defaults, and servicing costs in remote areas; (c) improve PLN's asset and waste management with the safe disposal of several years' backlog of used equipment, including hazardous waste; and (d) track the timely implementation of distribution system contracts.

8. **Flexibility and sustainability**. The program's results framework was developed to fit with the RUPTL, 2017–2026 and align with the broader national planning framework of the 5-year RPJMN, 2015–2019. Sufficient flexibility has been built into the program, notably in the formulation of outputs, outcome, and targets of the disbursement-linked indicators (DLIs) to allow PLN to proceed at its own pace toward achieving the targets.

B. Disbursement-Linked Indicators

9. Eight DLIs have been identified (Table 1). These indicate the areas crucial for the successful implementation of the RBL program. The DLIs contain three outcome indicators and five output indicators. At the outcome level, DLI 1 measures the expanded access to electricity services, DLI 2 measures growth in energy sales, and DLI 3 focuses on the reliability of the electricity supply. DLIs 4 and 5 reflect infrastructure improvements, leading to increased transformer units and expanded distribution lines. DLI 6 reflects the program's support for enhancing institutional capacity for efficiency and innovation by tracking the initiation and progress of pilot smart grid projects in selected program areas, and DLI 7 will enhance operational efficiency and optimize resources by incentivizing the expanded use of digital prepaid meters. DLI 8 tracks the process of improving systems and procedures for safely disposing of used equipment and waste. Most of these indicators are already being tracked by PLN's management information

expected for Eastern Indonesia with KfW considering up to $250 million in cofinancing for Sulawesi and Nusa Tenggara, subject to further review and approvals.

systems and therefore do not require separate measurement efforts. The program design and monitoring framework is in Appendix 1, and the results framework is in Appendix 2.[11]

Table 1: Disbursement-Linked Indicators

Indicator	Disbursement Allocated ($ million)	Share of Total ADB Financing (%)
Outcome		
DLI 1 Expanded access to electricity services: Number of total customers in Sulawesi and Nusa Tenggara increased by an average annual rate of at least 5.6% (at least 1.37 million more customers by 2020 from the 2016 baseline)	120.0	20.0
DLI 2 Growth in delivered electricity services: Total annual electricity sales increased by an average annual rate of at least 8.5% (an increase of at least 4,374 gigawatt-hours by 2020 from the 2016 baseline), with an equal or higher growth rate for commercial customers	96.0	16.0
DLI 3 Improved reliability of services: Feeder line permanent interruptions[a] in the distribution system reduced by an average annual rate of at least 5% (a reduction of more than 3.61 interruptions per 100 circuit-kilometers by 2020 from the 2016 baseline)	48.0	8.0
Outputs		
Distribution system strengthened and expanded		
DLI 4 Number of distribution transformer units installed increased by an average annual rate of at least 5.6% (at least 9,933 more units by 2020 from the 2016 baseline)	96.0	16.0
DLI 5 The length of medium-voltage distribution lines installed increased by an average annual rate of at least 5.6% (at least 11,508 circuit-kilometer increase by 2020 from the 2016 baseline), with an equal or higher growth rate in Lombok and Flores	96.0	16.0
Innovation and institutional capacity enhanced		
DLI 6 Pilot-scale smart grid projects implemented in at least four areas by 2021	48.0	8.0
DLI 7 Operational efficiency and resource optimization enhanced, with at least 75% of total customers using digital prepaid meters or smart meters by 2021 (from 48% in 2016)	48.0	8.0
DLI 8 Asset and waste management improved, with 90% of used PLN-owned equipment from the 2016 disposal inventory safely disposed of by 2021	48.0	8.0
Total	**600.0**	**100.0**

ADB = Asian Development Bank, DLI = disbursement-linked indicator, GWh = gigawatt hour, kV = kilovolt, PLN = State Electricity Corporation (Perusahaan Listrik Negara).

[a] PLN defines permanent interruptions as those over 5 minutes in duration.

Sources: ADB estimates; PLN's management information systems; Electricity Power Supply Business Plan (*Rencana Usaha Penyediaan Tenaga Listrik*), 2017–2026.

10. Overall, the DLIs and the other performance indicators provide fairly ambitious, yet achievable, measures of progress toward program outputs and outcome. Consulting with experienced PLN planners in selecting DLIs and setting targets ensured a proper balance between robustness and realism. For example, the analytical work for the RUPTL, 2017–2026 showed that growth was projected to decline for Sulawesi in the coming 5-year period, leading to a significant revision in the projected trend of energy sales over the same period (Figure).

C. Managing Risks and Improving Capacity

11. The program is the second RBL energy program in Indonesia. While counterparts are now more familiar with the approach, the program's focus on Eastern Indonesia introduces some new elements and additional risks. Overall, the program-related risks are assessed as moderate to

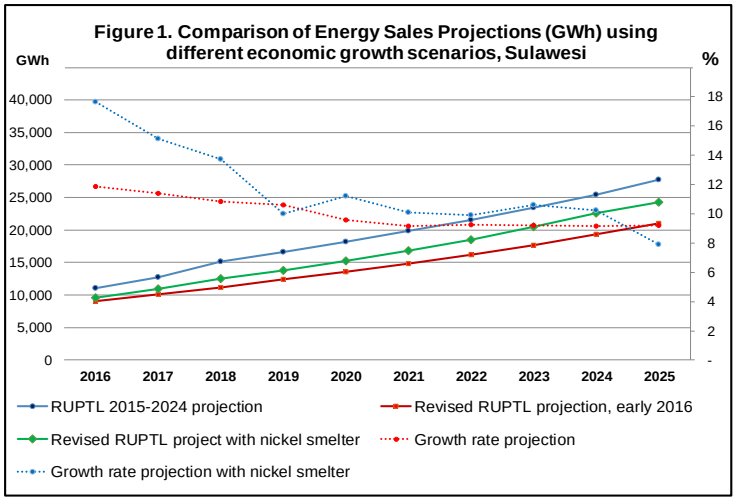
[11] Program Results Framework (accessible from the list of linked documents in Appendix 2).

substantial. These include:

(i) Underestimations of growth trends in the economy and the customer base (population and businesses), which may stretch the capacity of PLN and the market;
(ii) The failure of plans to attract investment in Eastern Indonesia (for example, economic growth projections with and without the development of nickel smelters in Sulawesi are significant enough to influence PLN's corporate planning [Figure]);
(iii) Inadequate understanding of the way RBL works among counterparts in PLN's *wilayahs*, leading to a lack of commitment and ownership;
(iv) Inadequate institutional capacity and insufficient staff competency resulting in implementation delays and extra costs;
(v) Undue delays in delivery and logistics due, for example, to unforeseen staff and work process changes at PLN offices;
(vi) Unforeseen increases in the prices of commodities, supplies, transportation, and wages; and
(vii) Inadequate motivation and acceptance among households and local authorities, which may delay the introduction of new technologies and innovations.

12. If PLN's funding targets are not met, this would undermine the program, since PLN is meant to fund a significant portion of the program and most of the inputs. Measures to mitigate these and other risks have been integrated in the program. For instance, the cash flow will be monitored carefully and, if necessary, additional financing will be mobilized from other partners, including private partners. The Integrated Risk Assessment and Mitigating Measures provides a fuller risk assessment.[12]

Figure 1. Comparison of Energy Sales Projections (GWh) using different economic growth scenarios, Sulawesi



RUPTL= Electricity Power Supply Business Plan (*Rencana Usaha Penyediaan Tenaga Listrik*)
Source: State Electricity Corporation (*Perusahaan Listrik Negara*).

[12] Integrated Risk Assessment and Mitigating Measures (accessible from the list of linked documents in Appendix 2).